Tropospheric Radiative Divergence During Phase III of the GARP Atlantic Tropical Experiment (GATE)

By

Stephen K. Cox
and
Keith T. Griffith

Department of Atmospheric Science
Colorado State University
Fort Collins, Colorado

Colorado State University

Department of Atmospheric Science

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ABSTRACT

The methods used to construct the GATE Phase III (August 30 - September 18, 1974) radiative divergence budgets have been described. Vertical profiles of longwave, shortwave and total radiation for various areas and time scales comprise the end product. The basic areal unit from which larger area mean values are constructed is the 1/2 degree latitude by 1/2 degree longitude element. The basic time unit from which longer temporal means are obtained is 1 hour.

The technique involves the compositing of twenty-eight shortwave and twenty-five longwave vertical divergence profiles based on SMS-1 satellite data and synoptic data. The model divergence profiles were derived from several radiative transfer computational routines with adjustments to accommodate the radiation data collected during the GATE experiment.

The determination of cloud top pressure distribution from geostationary satellite 11 μm data is described, including two types of adjustments to improve accuracy. The first adjustment accounts for the contamination of the 11 μm satellite sensor by the high water vapour contents of the tropical atmosphere. The second correction compensates for the finite distance into cloud required to achieve radiative "blackness".

Visible data from the SMS-1 satellite have been employed in determining the percentage of cloud-free area. The technique used for determining clear threshold values, including a sun glint correction, is described. The designation of cloud base distribution as a function of satellite observed infrared radiation is discussed.

Tables of the longwave, shortwave and total radiative divergence profiles and the cloud top pressure distribution are given for a variety of space and time scales. Daily twenty-four hour mean values are presented for nine different areas ranging in size from approximately one quarter of the B-scale array to the entire A/B array.

Seven different time periods are considered for the Phase III mean case (20 days), a five day convectively disturbed composite case and a five day convectively suppressed composite case. These periods are (all in local standard time [LST]) 0000-0600, 0600-1200, 1200-1800, 1800-2400, 0000-2400, 0600-1800 (daytime), and 1800-0600 (nighttime). There are two areal domains for the Phase III mean and the two composite cases: the A/B array and the B array. Standard deviations are also given which represent either spatial or temporal variability as appropriate.

An analysis of the GATE Phase III radiative divergence profiles generally shows less upper tropospheric divergence and more middle level divergence than previous climatological estimates. A relative minimum divergence value in the 900 to 1000 mb layer is persistently characteristic of the GATE Phase III estimates.

The differences between the earlier climatological estimates and those presented in this study are due primarily to the extensive middle and upper tropospheric cloudiness in the GATE area, the large mean values of total precipitable water vapour ($\sim$ 5.1 cm) and the inclusion of the effects of the water vapour pressure broadened continuum in the present radiation calculations.

The cloud top pressure statistics compiled in this study confirm previous results showing a diurnal variation in total cloud amount peaking in the 1200-1800 LST interval. This tendency is strongest in convectively disturbed situations and appears also in a diurnal progression of cloud top heights reaching a maximum penetration into the upper troposphere in the same six hour period.

The B-scale radiative divergence profiles reflect the satellite-diagnosed cloud structures. The convectively disturbed days show significantly more upper tropospheric longwave divergence and daytime shortwave convergence than either the Phase III mean or the convectively suppressed sample. Conversely, at pressures greater than 400 mb the longwave divergence and shortwave convergence for the disturbed days are significantly less than for the remainder of the Phase III period.

Over the six hour local time periods 0000-0600, 0600-1200, 1200-1800, and 1800-2400 all layers of the atmosphere experience a net radiative loss of energy, however actual radiative heating of some layers is evident near midday. For the convectively suppressed case all levels above 700 mb show heating for the 1000-1400 LST period and the 900 to 1000 mb layer shows heating for the 0900-1500 LST interval. The total troposphere shows a net radiative gain over the same six hour interval. For the enhanced convection case the warming is generally confined to the 100-400 mb layer and the 0800-1600 LST time interval with no net heating of the entire troposphere occurring during the day. The magnitudes of the diurnal variability of the horizontal gradients in the radiative divergence fields appear adequate to explain at least some of

the diurnal variations in cloud cover and precipitation reported by other authors.

While there are dramatic differences between the disturbed and undisturbed tropospheric longwave and shortwave daytime components, the daytime tropospheric total radiative divergence is remarkably stable for all observed cloud top distributions during Phase III. The daytime longwave tropospheric divergence has a maximum to minimum range of 92 Wm^{-2} $[912\ mb]^{-1}$ and the shortwave component has a nearly identical range of 91 Wm^{-2} $[912\ mb]^{-1}$. However, compensation between the two components limits the daytime total radiation to a range of variation of only 20 Wm^{-2} $[912\ mb]^{-1}$. While it is theoretically possible to have a range in total tropospheric divergence as large as 78 Wm^{-2} $[912\ mb]^{-1}$, during this 20 day period the cloud top distributions in the B array were such that only a 20 Wm^{-2} range in this quantity was observed. This characteristic constancy of the daytime total tropospheric divergence values is a potentially very useful tool in the inference of maritime tropical surface energy budgets from satellite data.

ACKNOWLEDGEMENTS

The duration of the research program which is responsible for the radiation budget estimates has exceeded five years. Many individuals and organizations have contributed to the successful completion of this program. We shall mention only a few key individuals recognizing that we have omitted others who have made substantial contributions in one way or another.

We gratefully acknowledge the contributions of Dr. Bruce Albrecht during the GATE field phase design and execution stages of this research. In the analysis and manuscript preparation the untiring efforts of Stephen Knox, Pauline Martin and Sandra Wunch have been essential. Professor Richard Reed has kindly furnished us with temperature and moisture data which were an intermediate product of his own research.

The aircraft research flight facilities of NOAA and NCAR were instrumental in providing the opportunities to gather verification data. The NCAR computing facility furnished the computer time required for processing vast amounts of satellite data and making the radiation computations.

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I.0 METHODOLOGY

The GARP Atlantic Tropical Experiment (GATE) was performed off the west coast of Africa during the summer of 1974. The radiation subprogramme of GATE had as its central objective the specification of the vertical profiles of the radiative divergence. These radiation studies were intended to supply "an essential factor required to study the formation of tropical clouds and the interaction of tropical cumulus convection and the larger cluster phenomena" (Kraus, 1973).

In order to avoid misunderstandings concerning the terminology of this radiative budget study, we shall define the terms used to represent the radiative parameters at the outset. Three spectral regions are considered: shortwave (.3 μm to 3.0 μm), longwave (3.0 μm to 100 μm) and total radiation (shortwave plus longwave; .3 μm to 100 μm). The units of divergence are watts per square meter per pressure interval. The term convergence, meaning a gain of radiative energy, is usually reserved for use with the shortwave (SW) component. The term divergence, meaning a loss of radiative energy, is usually used in connection with the longwave (LW) and the total radiation. However, both terms refer to power per unit area per unit pressure and differ only in the implied sign of the radiative balance. All numerical values representing radiative balance quoted in this study use a positive number to signify an energy gain and a negative number to denote an energy loss. The word tropospheric implies the 100 mb to 1012 mb layer. We recognize that the tropopause was not always at 100 mb nor was the surface pressure always 1012 mb, but the errors induced by these approximations are insignificant for our purposes.

The following sections describe the method used to derive the vertical profiles of the radiative divergence over the GATE A/B array. The radiative divergence values are given separately for the LW component, the SW component, and the total radiation. Layer values of the radiative flux divergence, in units of watts per square meter per pressure thickness interval, are quoted at 100 mb intervals from the surface to 100 mb, for various space and time scales.

1.1 Basic approach

The problem is to determine a single vertical profile of longwave (LW) or shortwave (SW) radiative divergence that represents the mean state of an area 1/2 degree latitude by 1/2 degree longitude (hereafter referred to as a box). Figure 1 depicts the partitioning of the A/B array and the numbering scheme for identifying individual boxes. Of course, the typical regime of the GATE A/B array does not exhibit homogeneity over areas as large as this (1 box = approximately 3000 Sq. km). We have, therefore, arrived at the mean radiative state of the box by averaging radiative profiles over more homogeneous sub-areas. The size of the sub-areas within each box was determined by the spatial resolution of the SMS-1 sensors. We assume radiative uniformity over these sub-areas and assign a typical divergence profile based on the satellite information and a number of other parameters to be described later. It is these sub-area divergence profiles that are area weighted and averaged to obtain the final values for each box.

The mean divergence profiles for each box were determined by sequentially performing the following two steps:

1) using satellite and synoptic observations we are able to specify

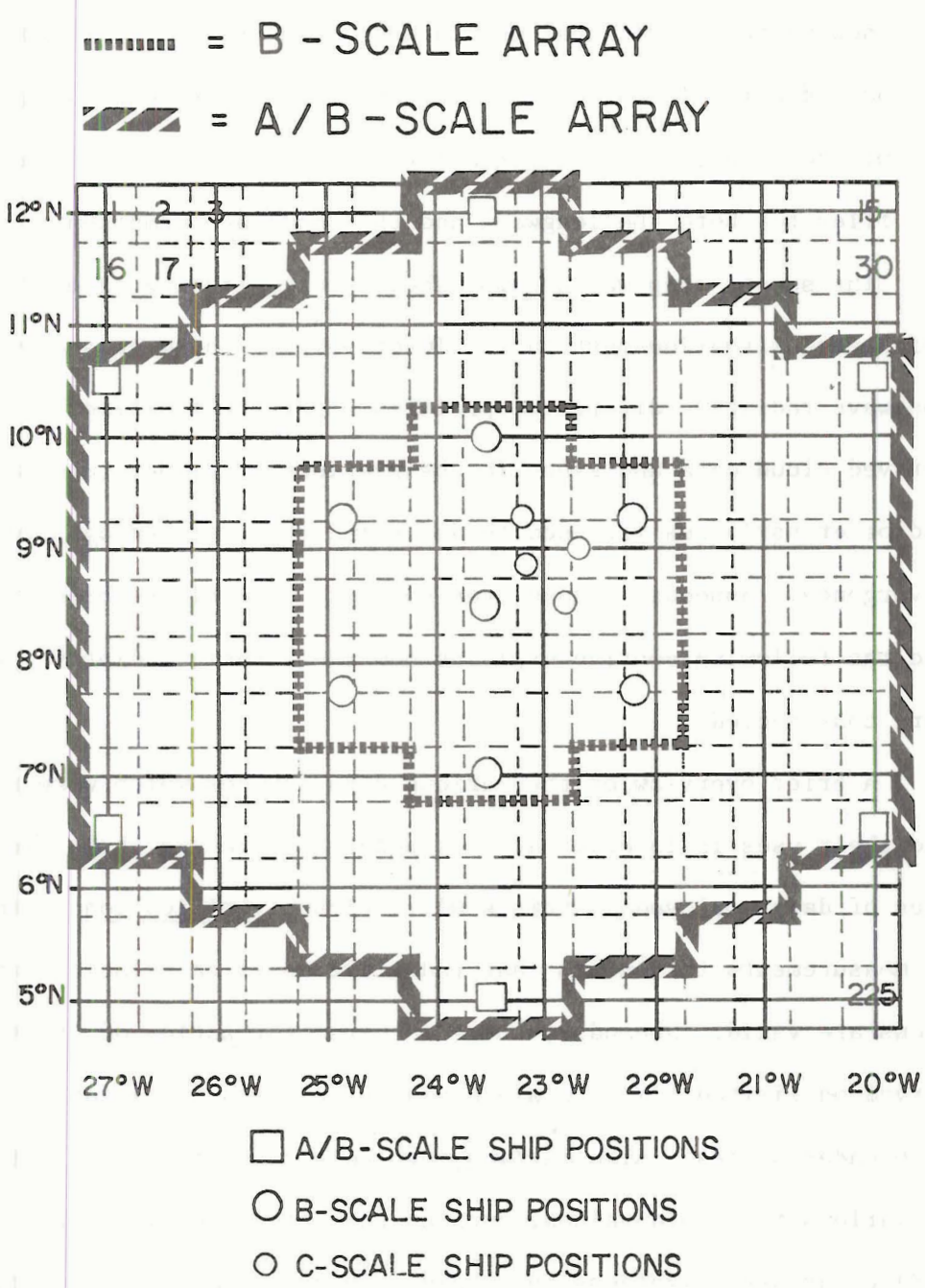


Figure 1. Graphical depiction of A/B and B-scale arrays, as defined in this report. Dashed lines enclose 1/2 degree latitude by 1/2 degree longitude boxes, solid lines represent geographical latitude and longitude. Integer values centered within dashed boxes represent numbering scheme used in identifying specific areas.

the cloud, moisture and temperature fields present in any given area of the A/B array at any time, and

2) knowing these principal modulators of the radiative fluxes and basing our calculations in part on measurements made during GATE, we are able to construct realistic radiative flux divergence profiles for both the longwave and the shortwave components.

The second step was accomplished by establishing categories into which each situation must fall. Twenty-eight shortwave and twenty-five longwave radiative divergence profiles which are functions of satellite derived cloud data and synoptic observations of temperature, moisture and other variables are used to determine the area average radiative divergence. Appendix A tabulates each of these fifty-three profiles and the following section explains how these basic radiative profiles were constructed.

A brief overview of the various data sources which were available and their uses is in order at this point. There are three use categories of data employed in this study. First, verification is the use of measurements to confirm that radiative model calculations and assumptions are valid. Secondly, there is parameterization of variables observed on limited time and space scales in terms of variables available on broader scales. Also falling into this category is the determination of various threshold values, such as the satellite (10-12 μm) infrared (IR) clear sky brightness threshold. Thirdly, there is operational utilization, the application of the large data sets to the production of the hour by hour, box by box final product. Table 1 depicts the three categories and the principal data sets that were used in each.

USE OF OBSERVATIONS IN CONSTRUCTION OF GATE A/B, B SCALE RADIATION BUDGETS

Verification	Parameterization	Operational Utilization
1) Aircraft Radiation Measurements	1) Holle, et al. (1976) All sky camera	1) SMS-1 IR Brightness Frequency Distributions Polifka and Cox (1976)
2) Surface Radiation Measurements	2) Arkell and Hudlow (1977) GATE Radar Atlas	2) P-T-Q over A/B array Reed (1977)
3) SMS-1 Visible Data	3) Krishnamurti (1977) Sea Surface Temperature	
	4) SMS-1 Visible Data	

Table 1. List of data sets used in the construction of the GATE radiation budgets and application of each data set.

1.2 Calculation of the characteristic radiative divergence/convergence profiles

The characteristic profiles of radiative divergence/convergence were generated from several standard computational routines (Cox, 1973; Cox, et al. 1976) combined with new observational information gathered during GATE (Griffith and Cox, 1977 ; Albrecht, 1977). In addition, some new calculations on solar absorption in clouds (Welch and Cox, 1978a,b) were incorporated. The point of view adopted was that if we knew accurately the cloud locations and the temperature and moisture regimes, we would be able to confidently calculate the resultant radiative divergence fields.

1.2.1 Longwave divergence profiles

The longwave component (3 μm to 100 μm) was calculated using an integral emissivity radiative transfer routine described by Cox (1973). The gaseous constituents were treated exactly as outlined in that report. The pressure (P), temperature (T) and moisture (Q) profiles used in these calculations were obtained from a Phase III mean of the five U.S. B-scale ships. These data were obtained from the CEDDA "Handbook of Selected U.S. GATE Rawinsonde Statistics" compiled by R.W. Reeves (1976). However, the cloud components were treated using a technique described by Griffith and Cox (1977) in which the cloud infrared emissivity was related to its water content using a broadband mass absorption coefficient.

Measurements of cloud water content reported by Griffith and Cox (1977) and Willis (1977) were used as representative of the GATE area. A relationship of generally decreasing water content with decreasing

pressure was found to be the rule. A mass absorption coefficient of 0.045 $m^2 g^{-1}$ was used at all levels thereby allowing cloud emissivity to be determined by variations in cloud water content and cloud thickness. Table 2 lists the values of water content assumed in this study.

Cloud Top Pressure (mb)	Assumed average cloud ice or liquid water content (gm^{-3})	Cloud penetration distance for satellite 11 μm radiance measurements (meters)
100	0.01	1660
200	0.02	830
300	0.05	332
400	0.10	166
500	0.20	83
600	0.33	50
700	0.50	33
800	1.00	20
900	1.00	20
1000	1.00	20

Table 2. Average cloud water content values and radiance penetration distances (See Section 1.3) as a function of cloud top pressure.

Two classes of cloud regimes were considered: thin clouds in which the cloud base occurred in the same 100 mb layer as the cloud top and thick clouds whose bases were at 950 mb, regardless of cloud top location. The Phase III mean B-scale temperature and mixing ratio profiles yield a lifting condensation level value very close to 950 mb. The thin clouds were typically altostratus and cirrostratus decks while the

thick clouds were either of the convective variety, towering cumulus and cumulonimbus, or multiple layer, overlapping stratiform clouds.

This partitioning was necessary due to the absence of cloud base distribution data on other than a statistical basis. There simply was no adequate observational platform available to obtain cloud base data on a time and space scale to match the satellite determination of cloud top distribution. A later section will address the question of how the cloud base designation was accomplished and the sensitivity of the final product to that determination.

Test calculations were made to determine what cloud top location accuracy would be necessary to achieve the GATE Radiation Sub-Programme accuracy requirement of $\pm$ 2.4 Wm^{-2} per 100 mb (0.2°C/Day per 200 mb layer). We found that in the great majority of cases, the 100 mb long-wave divergence values were quite insensitive to cloud top placement within a 100 mb standard pressure layer. Only when the cloud top was close to the lower pressure boundary was there any uncertainty about the partitioning of the divergence between the two layers. Nevertheless, the cloud-top-forced flux divergence was always assigned to a single 100 mb standard layer. For pressures less than 500 mb, the cloud top may not be closer than 250 meters to the lower standard pressure boundary in order to qualify for inclusion in that 100 mb layer. For cases closer than 250 meters, the cloud effect is assigned to the next lower layer. For pressures greater than 500 mb, this distance criterion becomes 100 meters, to allow for the increasing water content and the change from ice phase to liquid water. The cloud top pressure levels listed in Appendix Tables A2 and A3 illustrate the effects of these criteria. An extensive study of the effects of cloud radiative properties

on budget studies was made by Starr (1976). This work should be consulted for further details on the sensitivity of the budgets to cloud parameters.

Other simplifying assumptions have been made regarding cloud emissivity. The combination of cloud water content and cloud thickness is assumed to always be sufficient to obtain a cloud emissivity of 1.0. This assumption is valid except in the case of high, thin, low emissivity cirrus clouds. These cases would be misinterpreted as middle clouds, because of the combination of the cold high cirrus and the warm ocean background. The result would be that high cloud cover will be underestimated and middle cloud cover overestimated, with attendant misplacement of the cloud-associated cooling and heating. The magnitude of this problem was assessed by comparing the visible SMS-1 data to the IR SMS-1 data over the same area for total percentage of clear area. This technique will detect the case of thin cirrus clouds, overlying a clear area, whose visible albedo is low enough to be indistinguishable from the clear area, but whose IR emissivity exceeds approximately .05. No significant effect of this kind could be found. The possibility of these thin cirrus clouds overlying middle or low cloud decks still exists. However, in those cases, the misplacement of cloud top will be much less severe. The net impact of thin undetected cirrus clouds on the radiative profiles is therefore small.

The LW radiative effects of aerosols have also been neglected. The studies of Minnis and Cox (1978) have shown that the effects of aerosols upon LW radiative divergence in the GATE A/B array are minimal except in the infrequent, heaviest dust outbreaks. Data collected by Carlson (1977) show that the heaviest dust concentrations passed well

north of our area of interest. In addition, no observational data of aerosol concentrations on an appropriate space scale were available. These factors lead us to believe that no serious errors will ensue by omitting aerosol effects from the radiative budgets of the GATE A/B array.

1.2.2 Shortwave convergence profiles

The shortwave component (.3 μm to 3 μm) was calculated using an integrated absorptivity model as outlined in Cox et al. (1976). Pressure, temperature and moisture parameters were obtained from a Phase III mean of the five U.S. B-scale ships. These data were obtained from the CEDDA "Handbook of Selected U.S. GATE Rawinsonde Statistics" compiled by R.W. Reeves (1976). Cloud absorption was incorporated based on the calculations of Welch and Cox (1978a,b) and the GATE aircraft observations of Griffith and Cox (1977). The work of Davis, et al. (1978) indicates that for cloud absorption, the infinite cloud assumption of the model introduces no significant errors.

Analysis of test computations revealed that quite fine cloud top resolution would be required because of the strong gradients of absorption in the cloud top. Accordingly, twenty-eight cloud top categories were established. It was assumed that the clouds were at least 1 km thick, at which point the cloud absorption had dropped to a negligible value.

Having made the assumption of a 1 km minimum cloud thickness, the location of cloud base has no further effect on the shortwave convergence profile. In this respect, the SW component is much less sensitive to the specification of the cloud field than is the LW component.

Absorption by aerosols has been neglected on the basis of Carlson's (1977) observations that the heaviest dust concentrations passed to the north of the A/B array. Minnis and Cox (1978) reported significant solar absorption by dust but their observations were all north of the A/B array. In addition, the lack of quantitative aerosol observations leaves us little choice but to neglect their influence.

The shortwave profiles given in Appendix A Tables A4 through A7 represent the average shortwave convergence over a 12.0 hour daylight period. We have assumed that the solar day is exactly 12.0 hours long, although it was slightly longer throughout the GATE experiment. We have taken advantage of the symmetry of the sun's path by dividing our six hour averaging periods at local noon. Thus, the same mean convergence profile models are used to represent both the 0600-1200 and the 1200-1800 LST periods as well as the full 12.0 hour daylight period, 0600-1800 LST. However, these profiles cannot be applied on an hour by hour basis. Since they are six hour means, they will clearly be underestimates at small zenith angles and overestimates at large zenith angles. We have applied a weighting factor correction to the hourly cloud fields to adjust for the effect of changing solar zenith angle on atmospheric absorption. This is equivalent to establishing convergence profiles as a function of zenith angle, but is computationally much simpler.

The radiative profiles just described and the final radiative budget figures are expressed as the average radiative flux gain (convergence) or loss (divergence) for a pressure interval in watts per square meter per 100 mb layer for the six hour period. The surface layer from 1000 mb to 1012 mb is the only exception - the radiative flux divergence

is based on a 12 mb layer in that case. This is done to avoid the confusion and ambiguity that sometimes accompanies the use of °C/day or °C/h in this application. The reader may convert the energy units to rates of temperature change as needed. Appendix B contains information on making these conversions.

1.3 Determination of cloud top pressure distribution and area coverage

The key elements of the radiative budgets, i.e. the individual radiative profiles, were described in the previous section and are given in Appendix A. We now shift our attention to the process of choosing the appropriate profiles to represent each 1/2 degree area element.

The primary input information was the GATE SMS-1 satellite brightness data, both visible and infrared. This massive data set was condensed, edited and earth-located by Smith and Vonder Haar (1976). Further reduction of the data was performed by Polifka and Cox (1977) in which the GATE A/B array was divided into 225 1/2 degree latitude by 1/2 degree longitude boxes and frequency distributions of both IR and visible brightness were tabulated for each 1/2 degree x 1/2 degree area element.

The first step was to determine the percentage of the area that was cloud-free. This was done initially by analyzing the visible data. A correlation was then established between the percentage of area determined as clear using the visible data, and the required threshold value in the IR brightness distribution that would produce the same percentage of clear area. This procedure was chosen because it has the ability to

independently check on the accuracy of our IR brightness vs. cloud top pressure algorithm.

The basic assumption made in processing visible data was that in clear areas, the satellite would be viewing the ocean surface which will have a much lower albedo and, therefore, a much lower brightness than cloudy areas. The only complication arises in assigning the exact threshold value to discriminate clear from cloud. This determination was made by correlating the visible satellite data with days and hours that were reported to be clear by the all-sky camera analysis of Holle, et al. (1977). These thresholds were established as a function of the distance of the area element in question from the center of the sun glint as viewed from SMS-1. The sun glint, which results from specular reflection of the sunlight from the ocean surface, becomes an important factor in determining the clear brightness threshold around midday in the A/B array. The tacit assumption made here is that the presence of any cloud will raise the visible brightness level above the clear sky (ocean surface) value.

Figure 2 depicts the visible clear sky brightness count threshold as a function of distance from the sun glint center. Note that the distinction between cloud and clear area is blurred when close to the sun glint center. This is indicated by the damping of the curve at distances less than 300 nm. The broad slowly-changing portion of the curve between 2200 and 800 nm is centered around a brightness count of 72. The work of Rockwood and Cox (1978) indicates that a brightness count of 72 corresponds to a system albedo (earth + atmosphere) of approximately 14%. The effects of anisotropy and drift of the visible sensor calibration have been neglected in deriving this relationship.

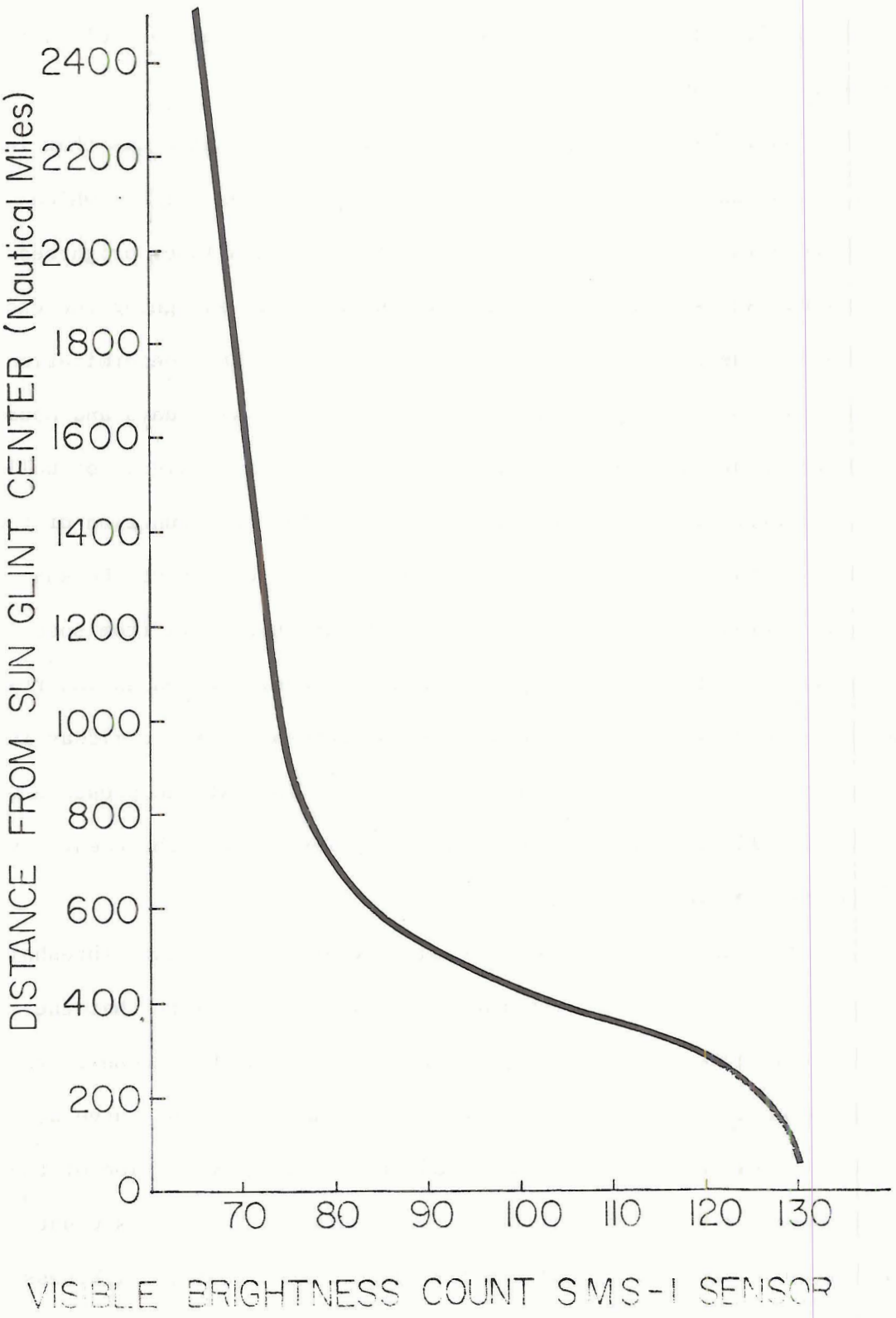


Figure 2. Clear sky visible brightness count (SMS-1 satellite) as a function of distance from the sun glint center.

Having made the association of a certain IR threshold value with clear skies and having verified these thresholds using visible satellite data, the sky cover determination method is now independent of day or night. This means that the nighttime determination of cloud top distribution and clear area may be handled identically to the daytime case.

Following the determination of the percentage of cloud-free area in the area element of interest, the IR brightness frequency distributions were further analyzed to yield information on the vertical distribution of the cloud tops. The first step in finding the cloud top pressures was to convert the brightness count to a temperature. This was done using an algorithm developed by Smith (1977). The VISSR (Visible Infrared Spin-Scan Radiometer) calibration routine accounted for both the long-term drift of the instrument and the short-term, hour to hour drift that was apparent during Phase III of GATE.

The association of a pressure level with the satellite observed equivalent temperature was the next step. Temperature vs. pressure relationships for each box and for each six hour time period were obtained from GATE data compiled by Reed (1978). This completed the association of a brightness count with a pressure level. We refer to this relationship as the apparent cloud top location.

Two more corrections were made to relate brightness count to a true cloud top pressure. The first correction accounts for the fact that the 10.5 μm to 12.5 μm IR channel used by the VISSR satellite radiometer is not truly a "window". There is substantial emission by water vapour in this spectral interval especially for the large water contents found in the GATE area. This correction is typically as large as 9°C at the ocean surface, decreasing in

a non-linear fashion to zero around 500 mb. This water vapour correction varies with the total precipitable water in the atmosphere, its vertical distribution, and the temperature profile. Using the moisture data of Reed (1978) for the A/B array, the vapour correction was applied to each individual box. We did, however, parameterize it in terms of total precipitable water, ignoring the effect of variable vertical distributions of water vapour and temperature. We assumed the relative vertical moisture distribution and the actual vertical temperature distribution to be the same as that obtained from a Phase III average of the five U.S. B-scale ships. Figure 3 displays the variation of the water vapour correction as a function of total precipitable water for several pressure levels.

The view angle of the satellite also changes the effective vapour path length. This can induce as much as 1.0°C change across the A/B array. A first order correction for this has been made assuming a stationary satellite.

The second major correction deals with the relationship of the satellite-sensed cloud top to the actual cloud top. This discrepancy arises from the fact that a penetration of some finite distance into the cloud is required to achieve radiative "blackness". This distance is a function of the cloud water content and mass absorption coefficient and, therefore, is basically a function of cloud top pressure. We have adjusted the cloud top pressures upward (lower pressure) to reflect these factors. The correction reaches a maximum of 1.6 kilometers for apparent cloud top pressures of 100 mb and a mimimum of 20 meters for a cloud top at 950 mb. Table 2 in Section 1.2.1 lists the cloud penetration distances as a function of cloud top pressure.

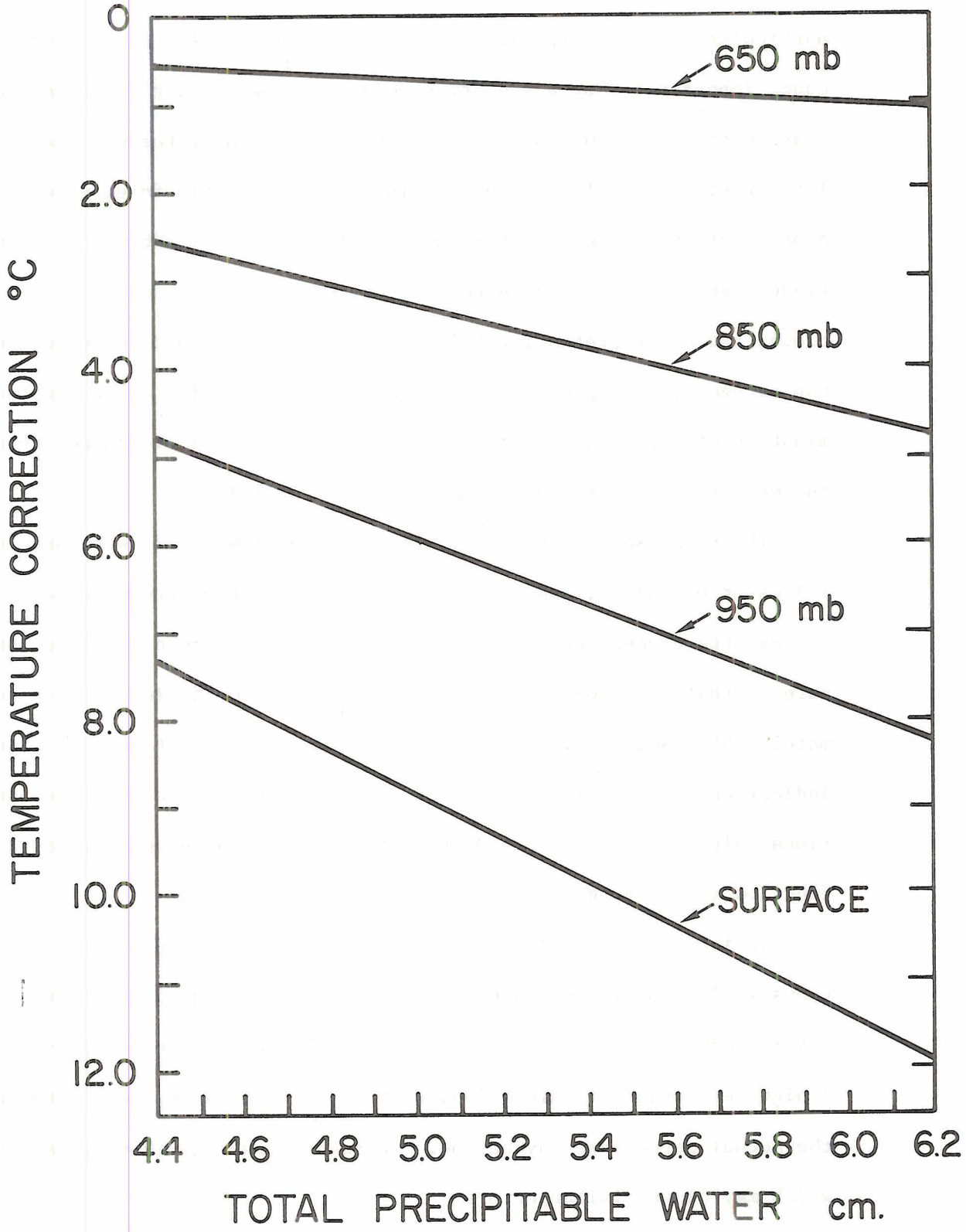


Figure 3. Satellite cloud top IR temperature correction as a function of total precipitable water for several levels in the atmosphere.

Most of the foregoing discussion has been concerned with assigning cloud top pressure. The satellite is, of course, best suited for that particular task on a spatial scale the size of the A/B array. Of nearly equal importance from a radiative point of view, is the location and distribution of cloud base. In terms of direct measurement, the satellite provides no information on this parameter. Therefore, we developed a means of statistically representing cloud base distribution. As mentioned earlier, two LW divergence profiles, one representing thick clouds and one representing thin clouds, were developed for each cloud top category. The procedure to be described next will allow a determination of the relative proportion of thick to thin clouds and thus, the weighting factors to be used with each profile.

The radar data compiled by Arkell and Hudlow (1977) were used as an indicator of thick cloud amount. We correlated the percentage of a 1/2 degree area element covered by radar echo with the mean cloud top pressure in that same box and obtained correlation coefficients of approximately .55. While this is a less than ideal method, it does provide some indication of the thick-thin cloud distribution for use in the computational algorithm. Figure 4 decpits the thick cloud percentage as a function of cloud top pressure.

Obviously, in any statistical treatment such as this, some situations will be misinterpreted, e.g. the case of a high dense cirrus layer produced by a now inactive cumulonimbus cell. We would assign a high percentage of thick cloud to this high cloud top case although the actual percentage may be low. There are several other situations which may cause similar errors.

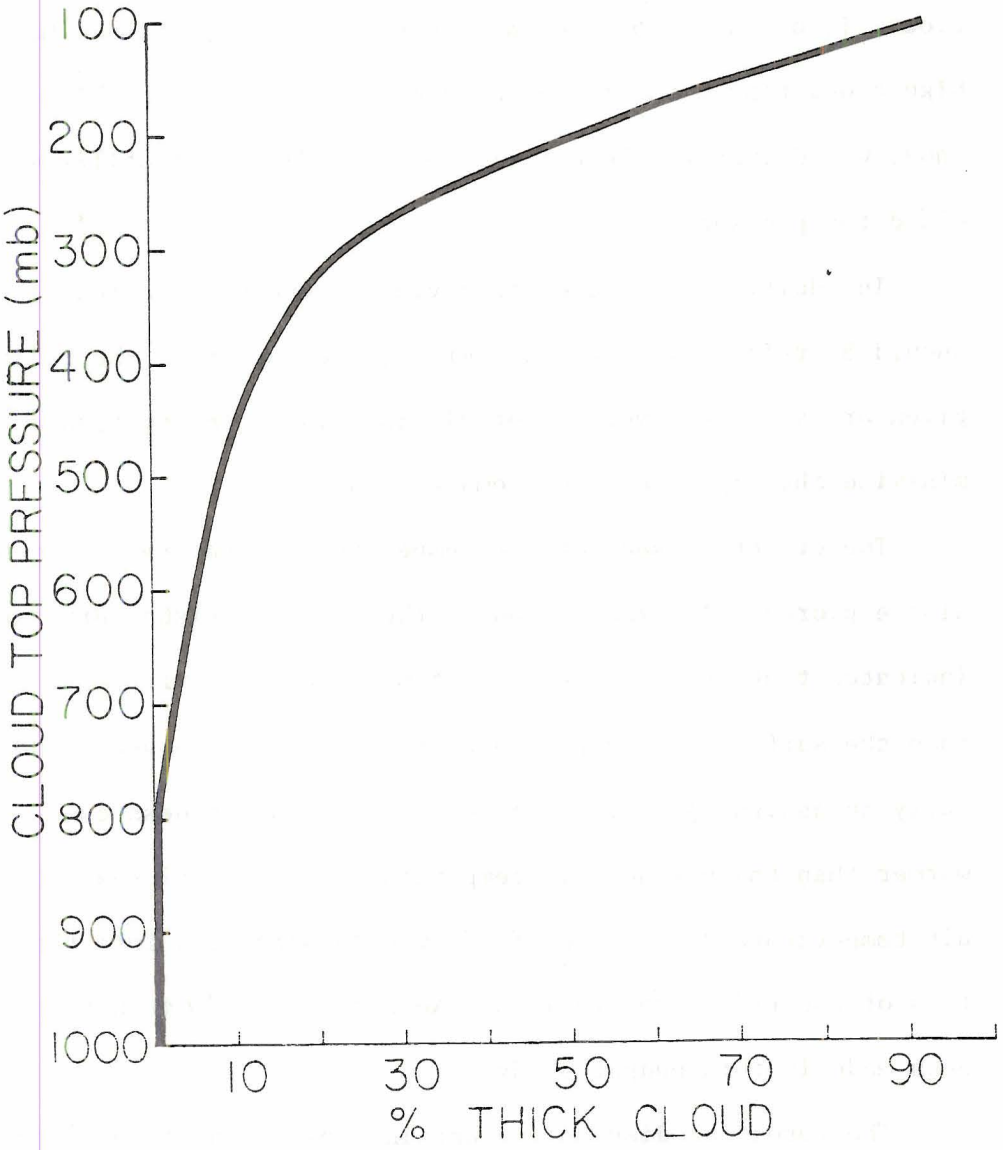


Figure 4. Percentage thick cloud as a function of cloud top pressure.

The final impact of these errors on the radiative budgets may not be very great for several reasons. Multiple layers of stratiform cloud that may be present following the cessation of active convection, do not yield significantly different radiative divergence profiles than solid cloud, if one does not demand high vertical resolution. Many of the high cloud tops with little radar echo may fall into this category and thus, would improve the correlation of radiative profiles with the mean cloud top pressure.

In addition, the cases that violate the correlation discussed above should be relatively rare; therefore, the fact that the radiative values given are six hour averages of six individual one hour data sets, should minimize the impact of the anomalous case.

The effect of sea surface temperature on the radiative budgets was also explored. An examination of the data of Krishnamurti et al. (1976) indicates that the ocean surface temperature was virtually always warmer than the surface air temperature; therefore, there should be no ambiguity in assigning a pressure level to any brightness count that is warmer than the surface air temperature. A typical sea surface vs. air temperature difference of 1°C was incorporated into the construction of the radiative profiles. No other use of ocean temperature has been made in this budget study.

The foregoing discussion contains some assumptions about the nature of the satellite radiometer and the character of the cloud fields being observed. It is essential that the user of these data be aware of these limitations in order to interpret them intelligently.

We implicitly assume that the cloud target viewed by the satellite is a solid, uniform, dense layer. In fact, the cloud field may be

broken or scattered, and the IR sensor will respond with a radiative temperature that is a combination of the cold cloud and the warmer background surface. A similar situation arises when the cloud target is a uniform layer but has an emissivity less than 1.0. The background radiation will be transmitted and contaminate the cloud reading. Many other permutations of interpretation errors may be imagined. All of these cases will result in a poor assignment of cloud top location with resultant inaccuracies in the assignment of radiative profiles.

Even in the case of the homogeneous dense layer the cloud top location will depend on the disparity between the actual cloud water content and that which we have assumed. In a similar manner, variations in the cloud mass absorption coefficient will have an impact on cloud top location. These two items are not of major importance but do contribute to the uncertainties.

The response time of the SMS-1 satellite sensor, particularly the IR radiometer, should be considered as the target radiance changes rapidly. There may be considerable blurring of the signal caused by the inability of the radiometer to stabilize on a new value with sufficient speed.

Figure 5 shows a comparison of raw SMS-1 IR equivalent temperatures with broadband (5 - 50 μm) IR equivalent radiative temperatures observed from the NCAR Sabreliner. The parallel horizontal bars correspond to the visually determined cloud top height. The SMS-1 time response and the cloud penetration distance may both be seen in this comparison.

The characteristics mentioned above along with the other limitations inherent in handling this type and quantity of data (uncertainties in cloud base, lack of aerosol data, etc.) make the application of

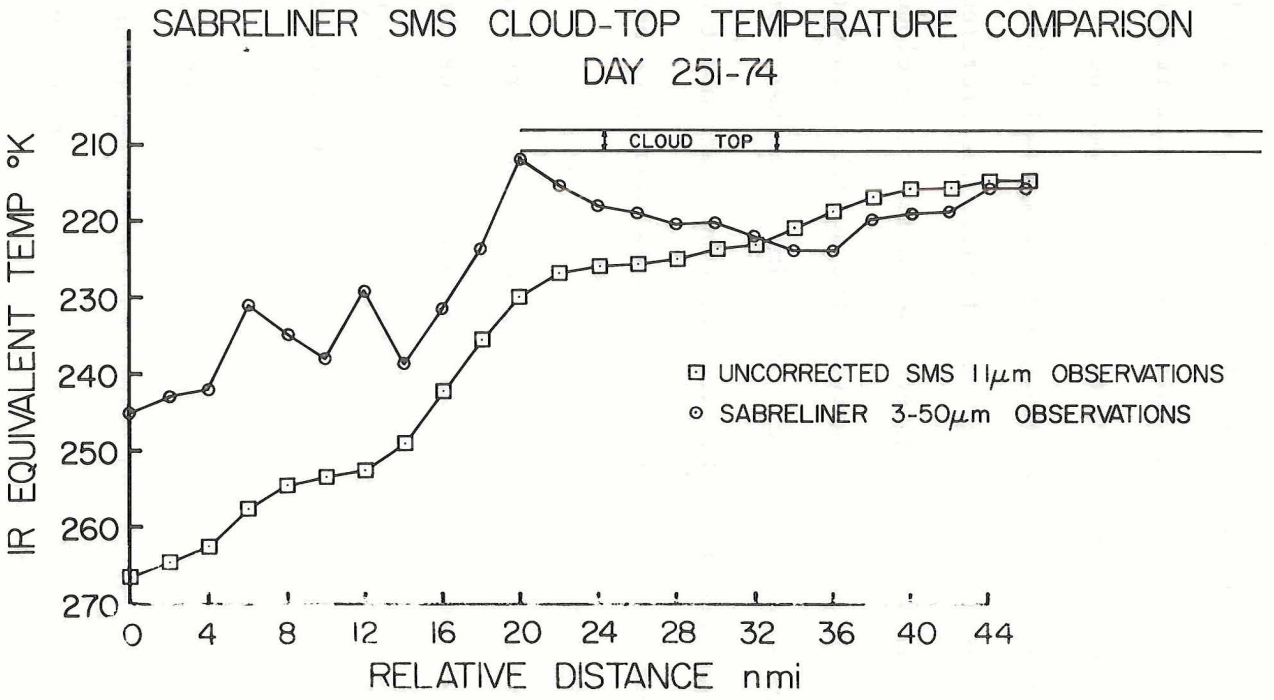


Figure 5. Comparison of raw SMS-1 IR equivalent temperatures with broadband (5-50 μm) IR equivalent radiative temperatures observed from the NCAR Sabreliner. The parallel horizontal bars correspond to the visually determined cloud top.

the technique to small time and space scales less reliable. The required accuracies in determining cloud emissivity, cloud top height and areal coverage, cloud reflectivity, cloud absorptivity, etc. as stated by Starr (1976) are more stringent than can possibly be achieved on the space and time scales required. However, the area averaging and time averaging used in this study (minimum 3000 Sq. km. and 6 hour periods) should substantially ameliorate this deficiency. Compensating errors in anomalous or ambiguous cases hopefully yield a result that, in the mean, is nearly as accurate as if we had possessed all of the detailed data for a rigorous radiative transfer computation. More detailed discussion of the uncertainties in radiative budgets as a function of uncertainties in cloud properties is given by Starr (1976) and will not be repeated here.

1.4 Methodology summary

The methods used to construct the GATE Phase III radiative divergence budgets have been described. Vertical profiles of longwave, shortwave and total radiation for various areas and time scales comprise the end product. The basic areal unit from which larger area mean values were constructed was the 1/2 degree latitude by 1/2 degree longitude element. The basic time unit from which longer temporal means were obtained was 1 hour.

The technique involved the compositing of twenty-eight shortwave and twenty-five longwave vertical divergence profiles based on SMS-1 satellite data and synoptic data. The model divergence profiles were derived from several radiative transfer computational routines with adjustments to accommodate the observational data collected during the GATE experiment.

The determination of cloud top pressure distribution from SMS-1 IR data was described, including two types of adjustments to improve accuracy. The first adjustment accounted for the contamination of the 11 μm satellite sensor by the high water vapour contents of the tropical atmosphere. The second correction compensated for the finite distance into cloud required to achieve radiative "blackness".

Visible data from the SMS-1 satellite have been employed in determining the percentage of cloud-free area. The technique used for determining clear threshold values, including a sun glint correction, was described. The designation of cloud base distribution as a function of IR satellite brightness was discussed.

Finally, a discussion of the assumptions affecting the accuracy and applicability of these budgets was presented. A cautionary note explained the limitations of the technique when applied to small time and space scales.

II. ANALYSIS

The following sections discuss the primary characteristics of the GATE Phase III (August 30 - September 18, 1974) radiation divergence estimates. The GATE values are first compared with previous climatological estimates [Dopplick (1972) and Katayama (1967b)] and the effects of clouds on the derived products are illustrated. Cloud top pressure distribution statistics are computed and discussed. Average, night, day and 24 hour estimates are then presented for the Phase III mean case and two composite cases, one convectively suppressed (Julian Days 243, 244, 250, 251, 258) and one convectively disturbed (Julian Days 245, 248, 256, 257, 259). The combined vertical and horizontal diurnal variability of the radiation balance is examined by means of pressure vs. latitude cross sections and "slab" views of the A/B array for various pressure levels. A time series plot of the total tropospheric divergence (TTD) is presented for the B-scale array. Next, the relaxation of the variability of the TTD and its solar and longwave components, both as a function of area and time, is explored. In the final set of figures, north-south (N-S) and east-west (E-W) cross sections over the entire A/B array of LW, SW and total tropospheric divergence are presented for the Phase III mean case and the two convectively stratified composite cases.

Many of the graphs in this section plot the vertical divergence profiles using continuous lines to connect the data points. This is done primarily as an aid in visually interpreting the plots. However, the data points represent the mean over the layer in question and should be used as such. Interpolation to smaller pressure intervals

may not yield accurate results. A brief explanation of the terminology used to describe the radiative budgets is found in Section 1.0 and the definition of A/B and B array is found in Figure 1. The reader is referred to those sources to facilitate understanding of the following sections.

2.1 Comparison with climatological estimates

Figure 6 compares the Phase III average 24 hour LW divergence and SW convergence profiles with a climatological estimate for June, July and August, 10°N latitude given by Dopplick (1972). There are significant differences between the two profiles throughout the troposphere. These differences are due primarily to the effects of cloud structure observed during the GATE Phase III period. A significant amount of middle level clouds associated with nondisturbed conditions and a large average amount of water vapour ($\sim$ 5 precipitable centimeters) contribute to a middle tropospheric LW divergence maximum for the GATE Phase III average while Dopplick's LW divergence shows a relative minimum in this 500-700 mb layer. Conversely between 200 and 400 mb and again, between 800 and 1000 mb Dopplick's LW divergence values significantly exceed these GATE values. Comparing Dopplick's SW component to the GATE Phase III SW curve reveals a single crossover point at approximately 400 mb. At pressures lower than 400 mb, the GATE Phase III SW convergence exceeds Dopplick's while at higher pressures Dopplick's values are greater. In addition, the tropospheric SW convergence computed by Dopplick significantly exceeds the Phase III mean value. Here again, these differences are primarily cloud-structure related.

The relative minimum LW divergence feature shown at 950 mb is a recurrent feature of the GATE Phase III radiation budget estimates. It

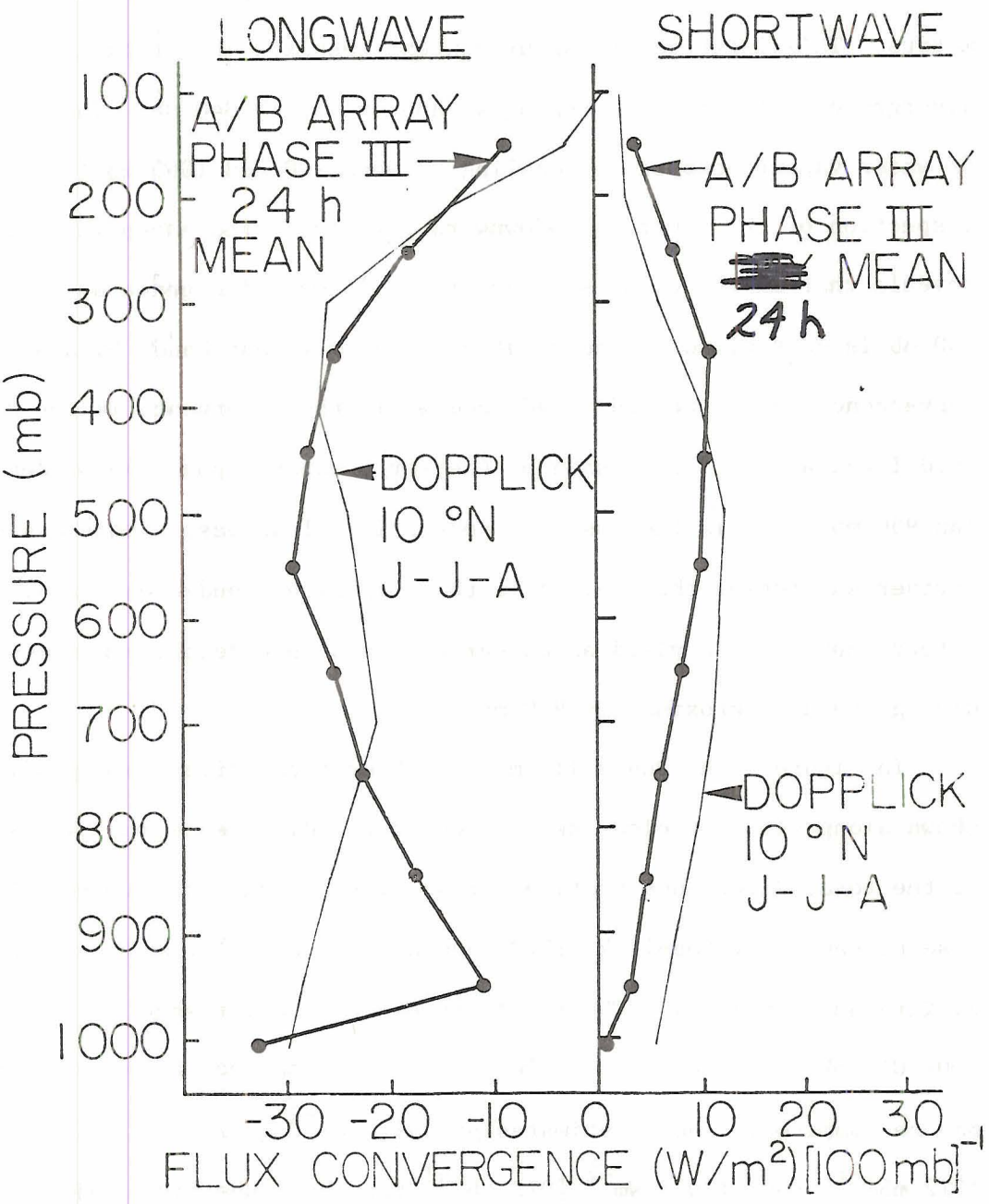


Figure 6. GATE Phase III A/B-scale array 24 hour mean SW and LW convergence profiles compared with the climatological estimates of Dopplick (1972) for June, July, August for 10°N latitude.

is caused by a combination of factors. First, the average water vapour content of the GATE Phase III atmosphere was 5.1 precipitable centimeters. This large water vapour content resulted in a relative maximum divergence in the 8-12 μm region at approximately 840 mb. This "cloud of water vapour" suppresses cooling between 900 and 1000 mb (Cox, 1973). Inspection of the upward and downward infrared irradiances separately reveals that in the clear sky case this minimum divergence at 950 mb is controlled in the rotational water vapour bands by a maximum convergence in the upward irradiance while the divergence in the downward irradiance is suppressed by the large water vapour overburden. The 950 mb level is the assigned convective cloud base; this assignment further suppresses the cooling in the composite cloud-clear case. These effects compound to yield an exceptionally stable relative minimum LW divergence at approximately 950 mb.

In Figure 7 the Phase III mean 24 hour total divergence profile is shown along with the clear sky 24 hour total divergence and estimates of the total divergence profile for an average June-July-August, 10°N case presented by Dopplick (1972) and a 10°N, 20-40°W, July case given by Katayama (1967a,b). The total tropospheric divergence for the layer 100-1012 mb from the works of Dopplick, Katayama and the present study may be compared. These estimates are -127 Wm^{-2} $[912\ mb]^{-1}$, -102 Wm^{-2} $[912\ mb]^{-1}$, and -120.8 Wm^{-2} $[912\ mb]^{-1}$ for the respective works.

In order to understand the possible reasons for the above differences let us inspect the vertical profiles in more detail. Both Dopplick's and Katayama's profiles show significantly greater divergence for pressures between 200 and 400 mb and less divergence between 500 and 800 mb than the Phase III mean case. These differences have three principal

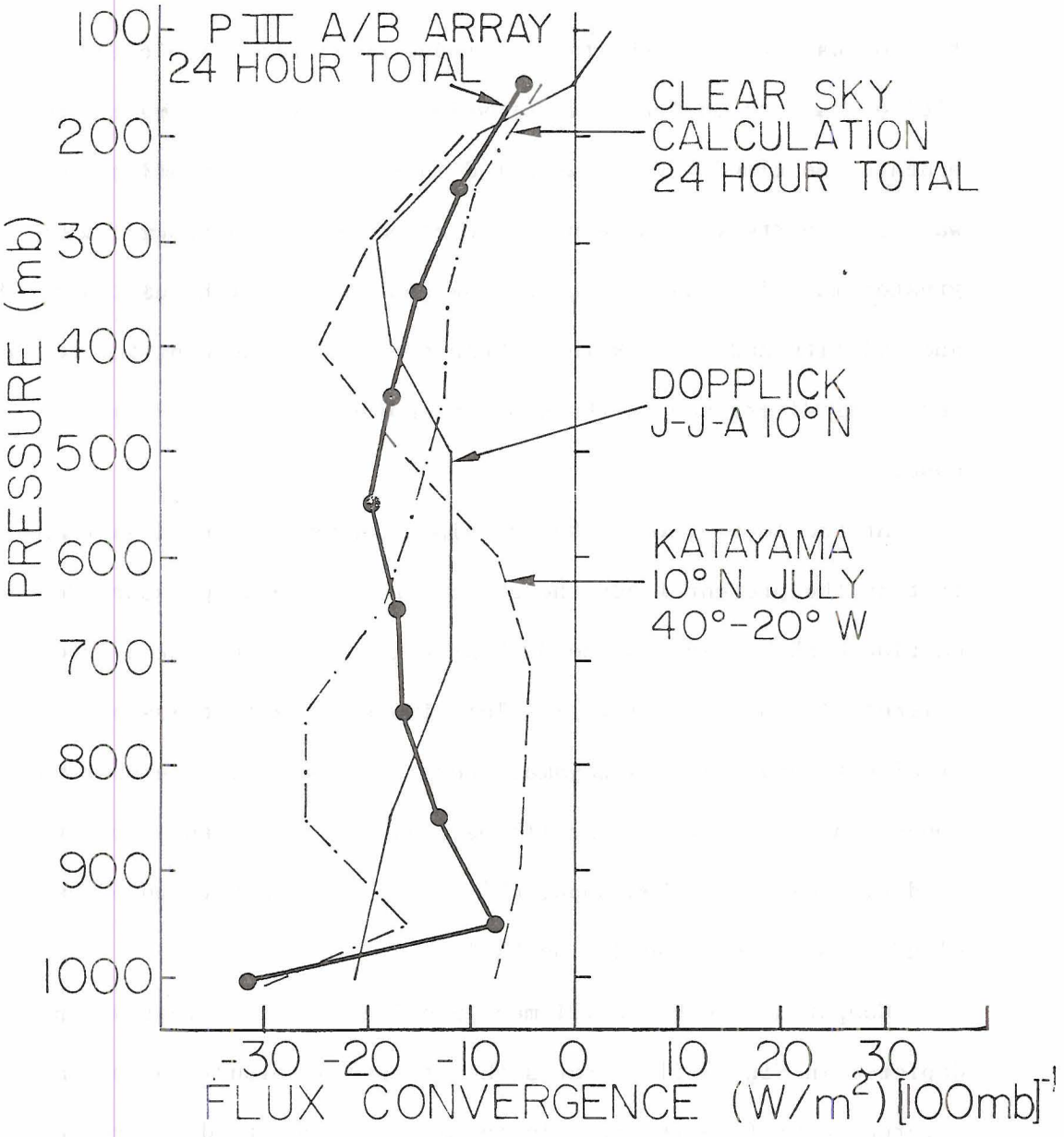


Figure 7. GATE Phase III A/B-scale array 24 hour mean total convergence profile (SW plus LW) compared with Dopplick (1972), Katayama (1967a,b) and a clear sky calculation.

causes. First, both Dopplick and Katayama assign clouds to discrete pressure levels as a function of cloud type. For example, an upper level cloud at 10°N latitude would always be assigned the same cloud height and thickness. This assumption has the effect of concentrating the longwave cooling/shortwave warming associated with cloud top at one altitude and an analogous suppression of longwave divergence within and beneath the cloud. Also, as noted in the Fig. 6 comparison of the longwave and shortwave components, the cloud shortwave absorptivity is greater in this study following the results of Welch and Cox (1978a,b) and Griffith and Cox (1977b). These two effects account for the suppressed total divergence in the upper troposphere for the Phase III mean case.

At the lower levels the principal reason for the disagreement is that in the present study the effect of the vapour pressure dependent continuum absorption in the 8-12 μm region has been taken into account [Bignell (1970), Cox (1973)]. This important effect was not included by either Dopplick or Katayama. Referring again to the shortwave component in Fig. 6, the Phase III mean SW heating in the lower troposphere is definitely less than Dopplick's; this is probably caused by the large cloud amounts observed during GATE.

Comparing the Phase III mean profile with the clear sky profile depicted in Fig. 7 illustrates the effects of clouds on the radiative divergence profile itself. In the mean, clouds tend to produce greater total divergence for pressures less than 625 mb and less total divergence for higher pressures.

In order to further assess the role of clouds in altering the atmosphere's radiation budget, Figure 8 presents the Phase III average radiation components and the calculated clear sky components using Phase III average temperature and moisture profiles. For pressures less than 600 mb the role of clouds on the longwave divergence is to increase the divergence by 2 to 4 Wm^{-2} $[100\ mb]^{-1}$; for pressures greater than 600 mb the divergence is decreased by as much as 15 Wm^{-2} $[100\ mb]^{-1}$. This represents a dramatic difference in the vertical distribution of the longwave divergence between the Phase III mean and the clear case. Comparison of the SW component profile for the Phase III mean and the clear SW case shows that clouds produce more solar heating at pressures less than 375 mb and less heating at higher pressures than the clear case. Turning now to the 12 hour daytime total radiation divergence in Figure 8 we see that effects of clouds on the solar and longwave components tend to cancel in the layers 100 to 375 mb and 650 to 1000 mb while in the middle troposphere (650 to 375 mb), the two components reinforce one another showing substantially greater ($\sim$ 5 Wm^{-2} $[100\ mb]^{-1}$) total divergence in this layer than the clear case.

To summarize, the net effect of clouds on the mean GATE Phase III 24 hour total divergence profile is to increase the radiative divergence for pressures less than 625 mb and to decrease the divergence for pressures greater than 625 mb. The 24 hour total radiative divergence values in the 100 to 625 mb layer for the clear case and Phase III mean are -10.9 Wm^{-2} $[100\ mb]^{-1}$ and -13.7 Wm^{-2} $[100\ mb]^{-1}$ respectively; the same quantities for the 625-1012 mb layer are -22.0 and -13.8 Wm^{-2} $[100\ mb]^{-1}$ respectively. That the clouds cause significantly greater cooling of the upper troposphere while suppressing the cooling of the

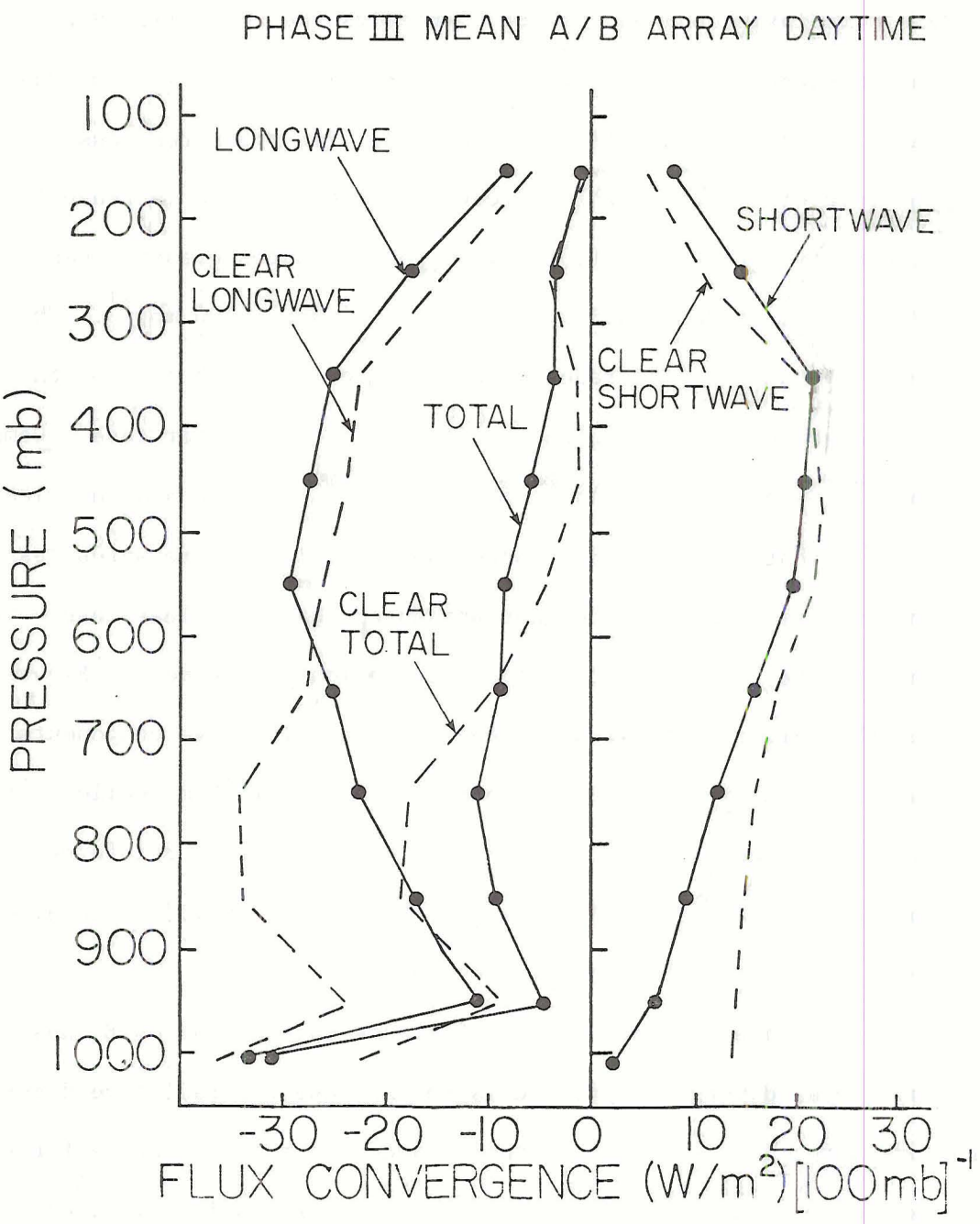


Figure 8. The role of clouds in modifying the atmosphere's radiation budget is illustrated by comparing the GATE Phase III A/B-scale array daytime LW, SW and total convergence profiles to the clear sky calculations.

lower troposphere is of special significance. This vertical redistribution of the radiative flux divergence has significant implications on the required cumulus scale energy fluxes (Yanai, Esbensen and Chu [1973]), large scale energetics (Albrecht and Cox [1975]) and the stability characteristics of the GATE atmosphere.

2.2 Cloud top pressure distribution statistics

The dominating effects of clouds upon the mean divergence profiles were discussed in the previous section. Because clouds play such a major role in determining the radiative divergence, it is appropriate to discuss in more detail some of the cloudiness statistics generated for this study. All cloudiness data presented in this section refer to cloud top distributions sensed by the SMS-1 satellite 11 μm channel and corrected as explained in Section 1.3 of this paper. It should be noted that the satellite data detect the highest cloud tops and consequently, lower clouds may be obscured. Users of the cloud top distribution data compiled in this paper should be wary of this limitation of the data.

Figure 9 presents the average cloud top distributions for the B array during Phase III. These data are presented for four local time periods 0000-0600; 0600-1200; 1200-1800; and 1800-2400 LST. There is in this 20 day sample an indication of a diurnal variation in cloud top height distribution in the middle and upper troposphere. For the 0000-0600 and 0600-1200 LST periods the cloud top pressure most frequently observed was between 500 and 600 mb; from 1200-1800 LST this maximum shifts to the 200 to 300 mb layer and from 1800-2400 LST the maximum is found in the 400 to 500 mb layer. Total cloud amount is also larger for the 1200-2400 LST period.

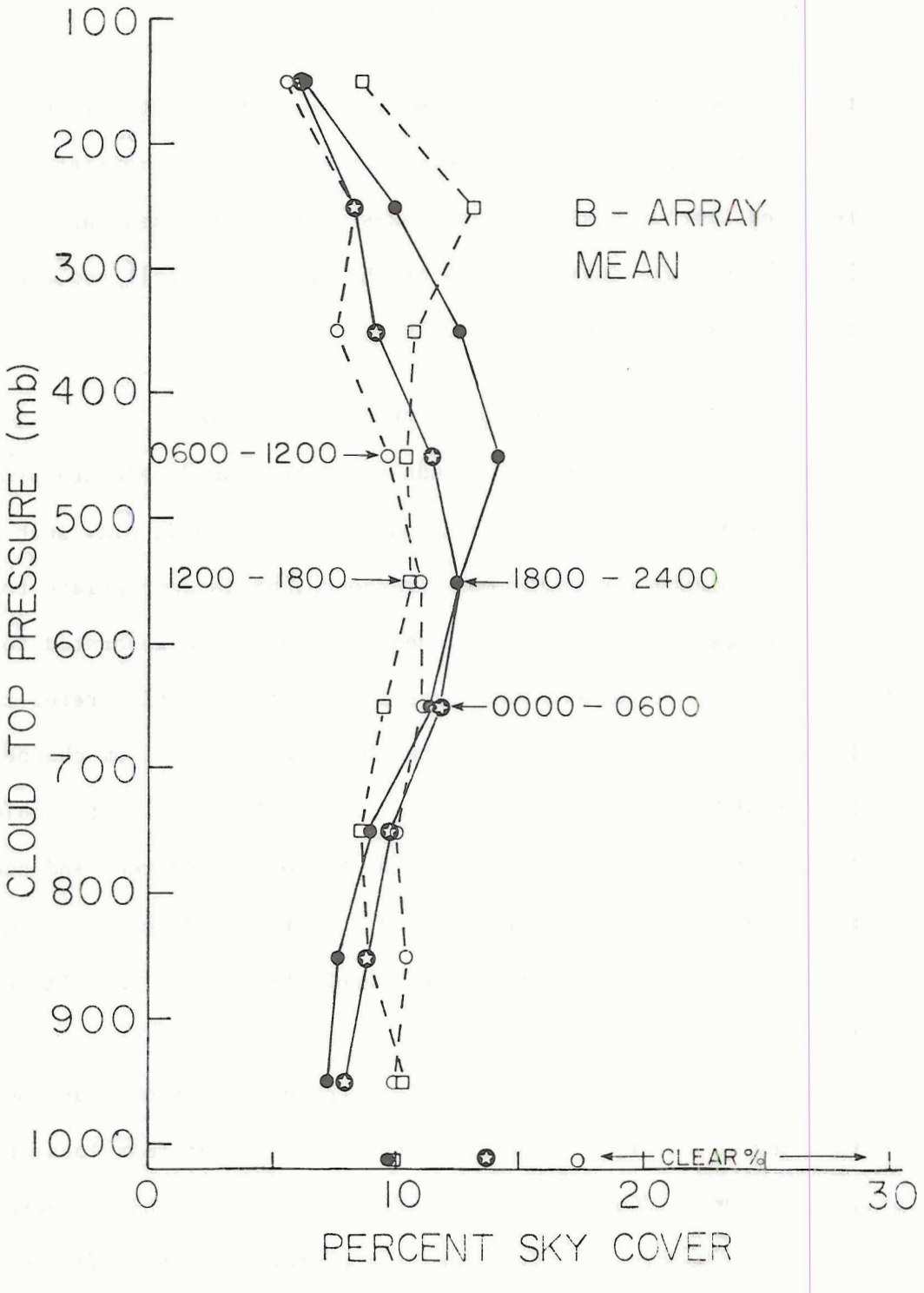


Figure 9. GATE B-scale array cloud top pressure distribution statistics and percentage clear area for the Phase III mean case over the time periods 0000-0600, 0600-1200, 1200-1800, 1800-2400 local standard time.

A five day convectively disturbed composite case (Julian Days 245, 248, 256, 257, 259) is portrayed in Fig. 10. There is a clear diurnal variation in both upper tropospheric cloudiness and total cloud amount. Cloud top amounts in the 100 to 200 mb layer are approximately twice as large from 1200--1800 LST as during other local time periods. Similarly the layers 300 to 400 mb and 200 to 300 mb show significantly greater cloud top amounts during the time periods 1200-1800 and 1800-2400 LST. The total sky cover shows a corresponding maximum during these same time periods.

The cloud top distribution for the five day suppressed composite case (Julian Days 243, 244, 250, 251, 258) shown in Fig. 11 shows no readily interpretable diurnal cycle. Although there is variation, the time continuity one would expect with a diurnally coupled phenomenon is not there. Therefore, it appears that the more disturbed cases dominate the Phase III average cloud top distributions and are responsible for the diurnal variation shown in Fig. 9.

Table 3 gives the 24 hour mean cloud top amount estimates as a function of height over the B-scale array for the Phase III mean case and the disturbed and undisturbed samples. The effects of the varying cloud top height distribution upon the radiative divergence profiles are discussed in the following section.

2.3 GATE Phase III radiative divergence profiles

Figures 12, 13, and 14 show a further analysis of some of the GATE Phase III data shown in Figures 6 and 7. Individual longwave, shortwave and total components are shown for the daytime, nighttime and 24 hour periods. The Phase III average (20 days), the five most

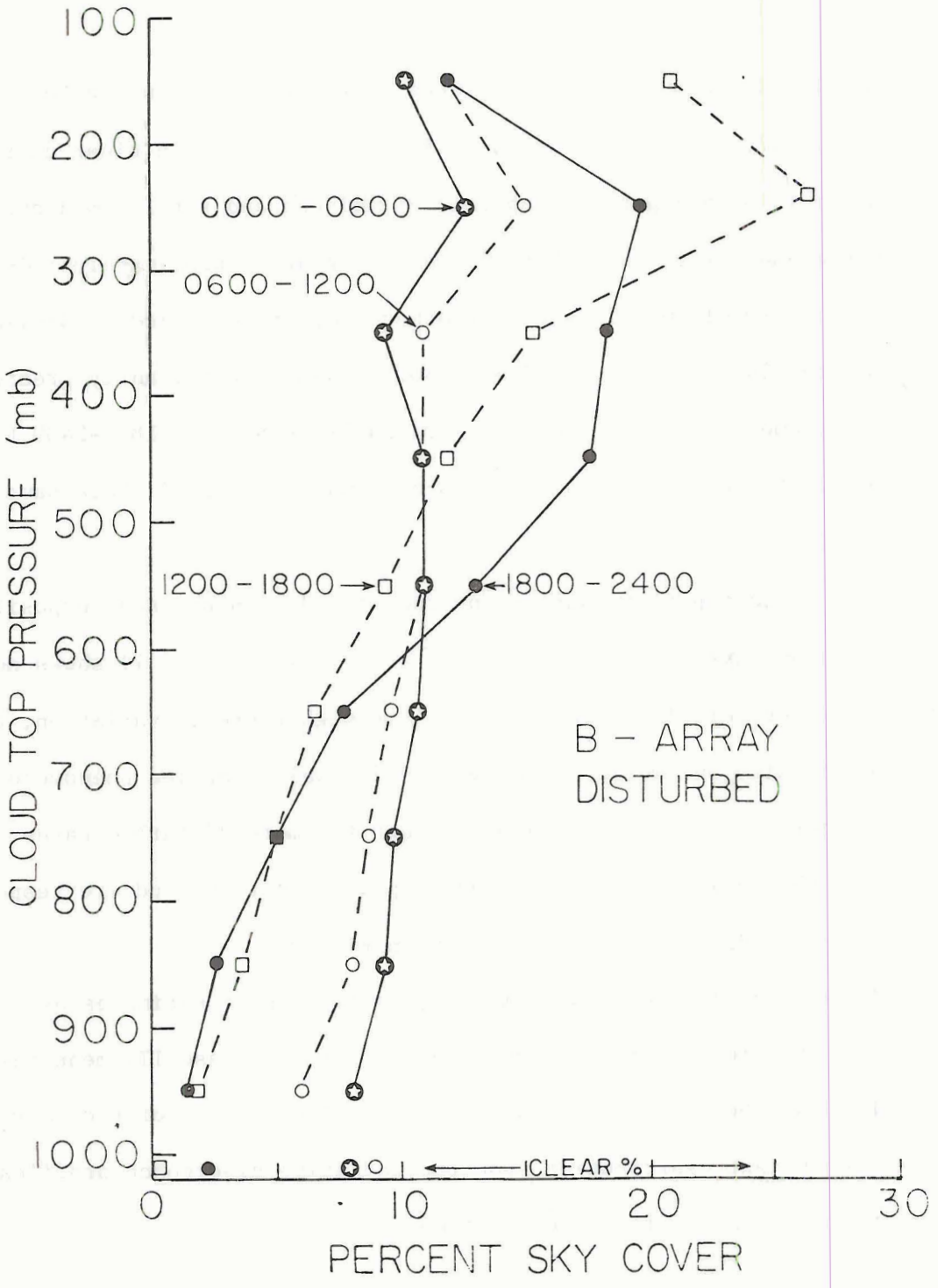


Figure 10. GATE B-scale array cloud top pressure distribution statistics and percentage clear area for the five day disturbed composite case over the time periods 0000-0600, 0600-1200, 1200-1800, 1800-2400 local standard time.

Pressure (mb)	Phase III	Disturbed	Undisturbed
100	6.7	13.7	.8
200	9.8	18.4	3.3
300	10.0	13.6	4.3
400	11.5	12.8	7.0
500	11.6	10.9	12.6
600	10.9	8.8	12.6
700	9.2	7.0	10.7
800	8.9	5.9	10.5
900	8.8	4.2	15.0
1000			
Clear	12.6	4.8	23.2

Table 3. Twenty-four hour mean cloud top pressure distributions over the B-scale array for Phase III, the five most disturbed days and the five most suppressed days.

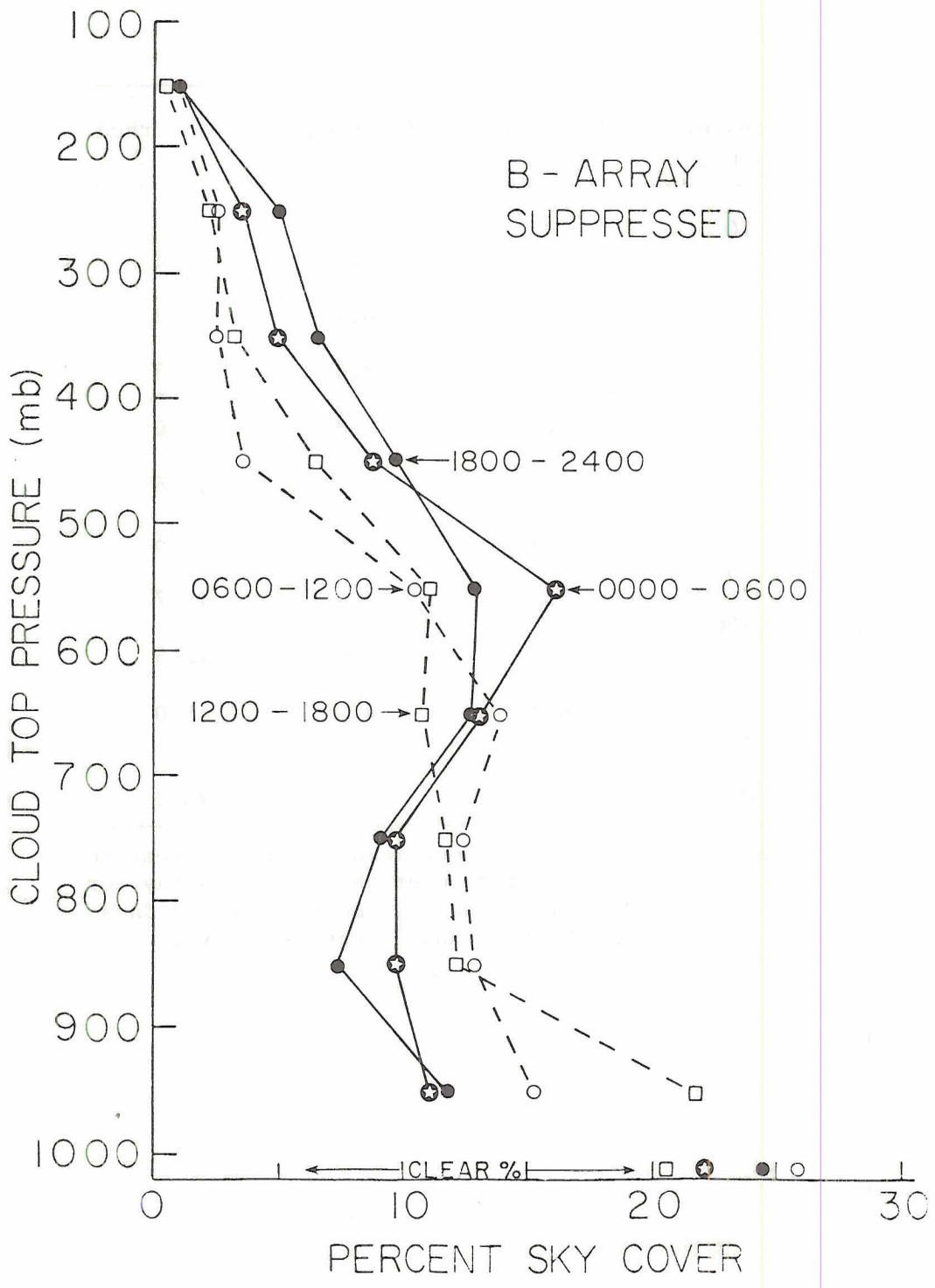


Figure 11. GATE B-scale array cloud top pressure distribution statistics and percentage clear area for the five day suppressed composite case over the time periods 0000-0600, 0600-1200, 1200-1800, 1800-2400 local standard time.

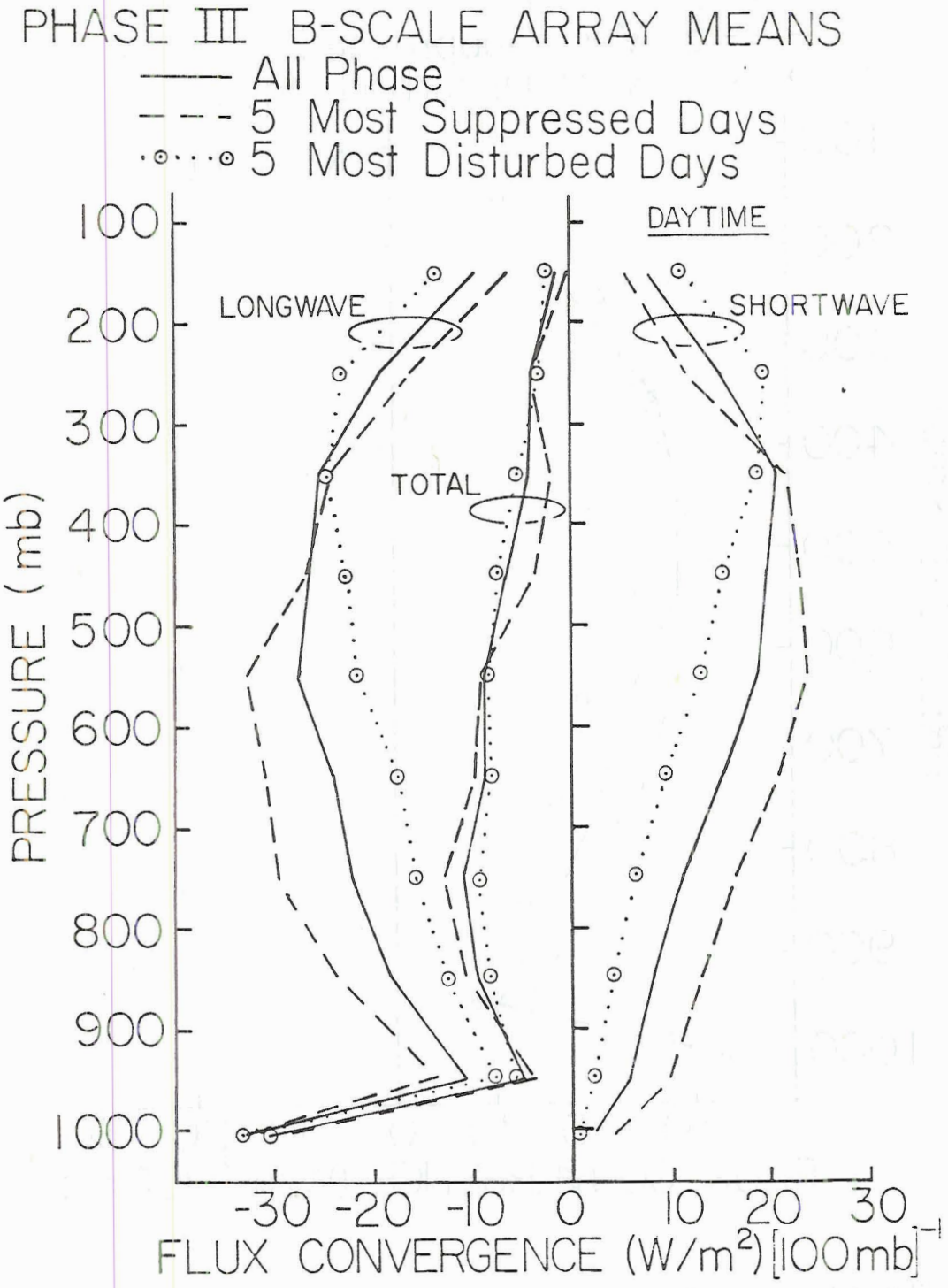


Figure 12. GATE Phase III B-scale array daytime LW, SW and total convergence profiles for the full Phase III mean, the five day disturbed and the five day suppressed composite cases.

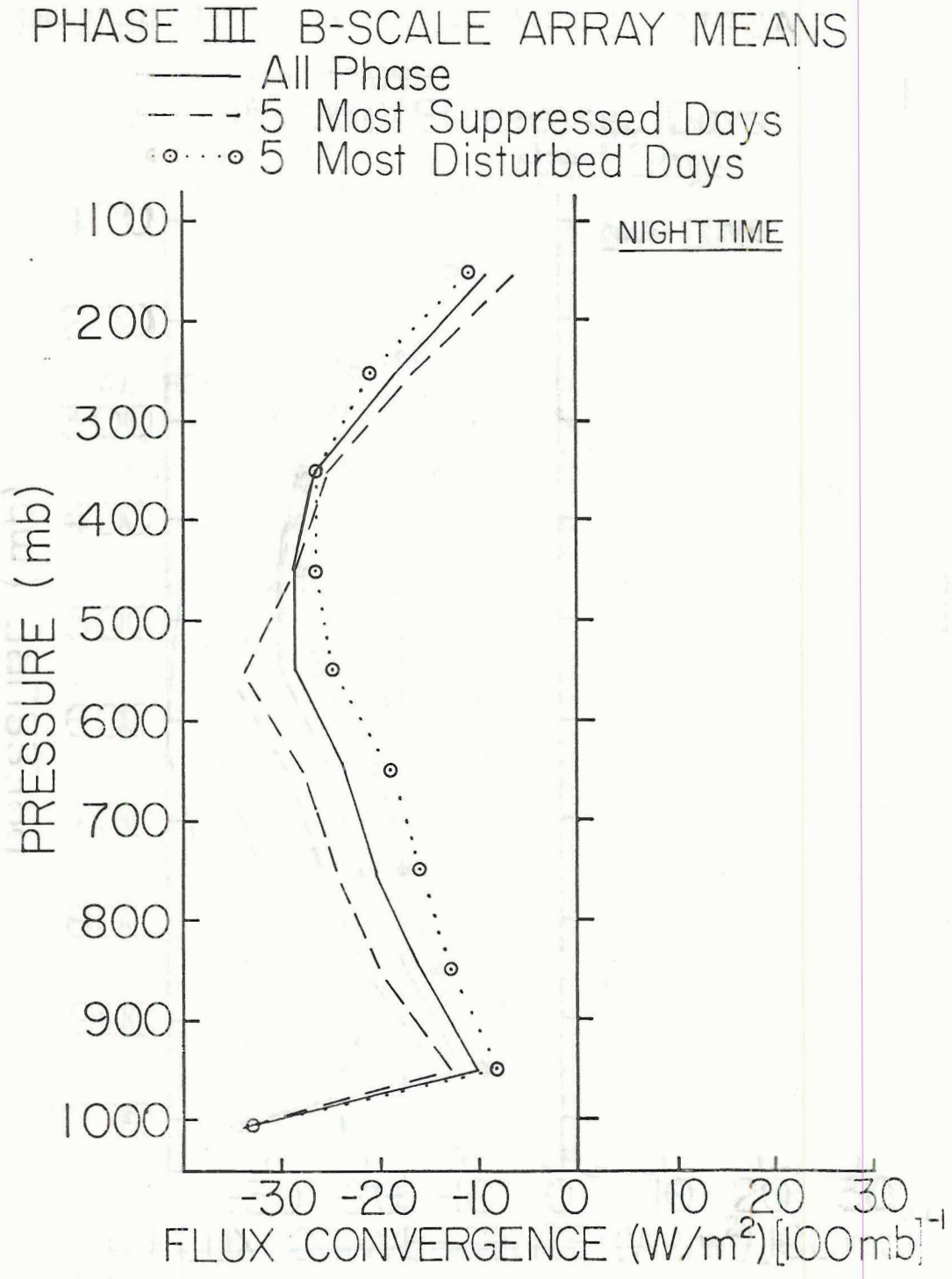


Figure 13. GATE Phase III B-scale array nighttime LW, (total) convergence profiles for the full Phase III mean, the five day disturbed and the five day suppressed composite cases.

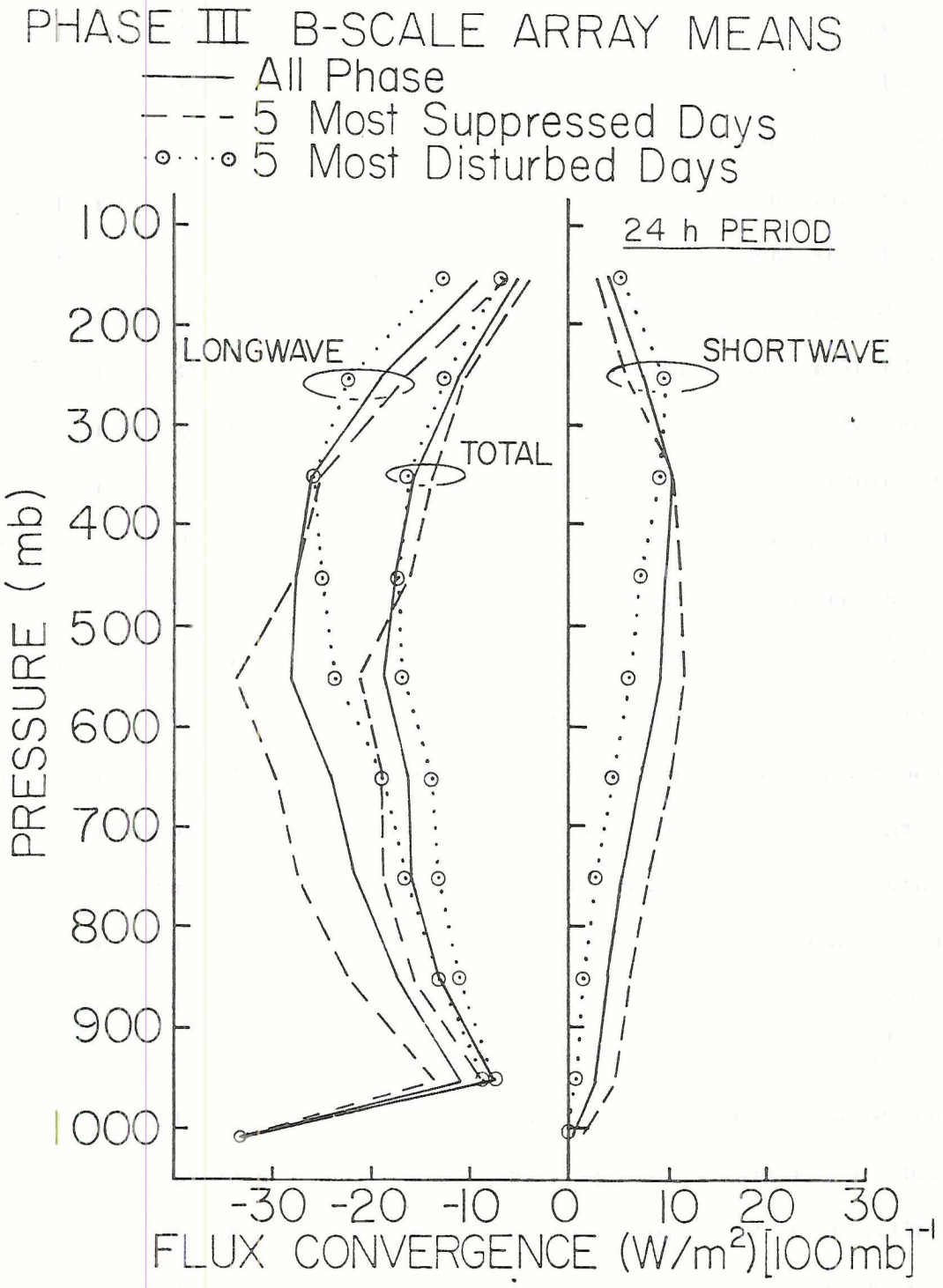


Figure 14. GATE Phase III B-scale array 24 hour LW, SW and total convergence profiles for the full Phase III mean, the five day disturbed and the five day suppressed composite cases.

convectively disturbed days and the five most convectively suppressed days which were selected after an inspection of rainfall data, are displayed. The differences among the three members of each set of profiles are primarily caused by differences in cloud structure. Figure 12 presents the LW, SW and total components for the 12 hour daytime period. Besides the general characteristics of the Phase III mean profile discussed in Section 2.1, Fig. 12 illustrates the differences in the SW and LW components which an area the size of the GATE B array shows during different stages of convection. In both the LW and SW components the suppressed and the disturbed curves cross in the 300 to 400 mb layer. In essence, the high clouds associated with the deep convection result in greater upper tropospheric LW divergence and SW convergence in the cloud tops. Below this level, these same clouds suppress both the SW and LW curves. In contrast, the middle and lower cloud regimes associated with the suppressed case enhance both the LW divergence and SW convergence of the middle and lower troposphere. The middle tropospheric maxima shown in both LW divergence and SW convergence values are caused by extensive middle level cloudiness observed on two of the five suppressed days. The existence of this cloudiness was confirmed from both surface and satellite observations. In addition, when the water vapour rich lower troposphere is not shielded by clouds, LW divergence and SW convergence by the vapour becomes more significant as was illustrated in Fig. 8. Interestingly, the differences among the total radiative divergence profiles for the 12 hour daytime period are significantly less than among the components themselves, however, there is a distinct two layer structure in the difference between the disturbed and the suppressed case. The top layer

extending from 100 to 550 mb shows the disturbed area losing more radiative energy than the undisturbed case. Conversely, between 500 and 900 mb the suppressed days lose more energy than the disturbed sample. The 12 hour nighttime case is shown in Fig. 13 where only the LW component is present. Comparing the LW profiles in Fig. 12 with those in Fig. 13 shows that there is less nighttime contrast between the suppressed and disturbed days than in the daytime. This is consistent with the diurnal cloud structures diagnosed in Section 2.1. However, the LW curves in Fig. 13 should be compared with the total curves in Fig. 12 since at night the LW represents the total radiative forcing. The night case shows a similar two layer structure, however, the layer where the disturbed case loses more energy than the suppressed is significantly higher (400-100 mb) and for the layer from 400 to 1000 mb the suppressed case loses more radiative energy than its counterpart. Also, even though the LW differences between the cases were less at night than during the day, the nighttime divergence difference between 400 mb and the surface is approximately 5 times greater than the total curves show for the daytime case in Fig. 12. The diurnal behavior of the radiation profiles will be discussed in more detail in Section 2.4

Figure 14 depicts the 24 hour values of the LW, SW and total profiles. It represents the simple average of the profiles presented in Figures 12 and 13. No further discussion will be given of this figure as it is readily interpretable from the discussion given previously.

It should be noted that these suppressed and disturbed composites do tend to significantly mask the magnitudes of the actual vertical and horizontal divergence gradients. They are means of 5 different days over a fairly large area, the B-scale array. Some information on

the gradients that occur on smaller time and space scales can be found in the next two figures and in the cross sections of Figures 17, 18 and 19.

The variability of the radiative divergence profiles is illustrated by comparing Figures 15 and 16 which present the two extreme LW tropospheric divergence cases deduced for a 6 hour period for the B array during Phase III. These figures represent a highly convective or disturbed case, Fig. 15 from day 245, 1200-1800 LST, and a suppressed case, Fig. 16 from day 258, 1200-1800 LST. The observed cloud top distributions are also shown for these two cases. The LW tropospheric divergence for the disturbed case is -123.7 Wm^{-2} $[912\ mb]^{-1}$ and -216.3 Wm^{-2} $[912\ mb]^{-1}$ for the suppressed case, a 54% variation about the mean. The differences in the vertical distributions of the LW and SW components are just as dramatic and clearly show the magnitude of the variability in the separate components of the radiative budget in a tropical area the size of the B-scale array ($\sim$ 124,000 km^2). However, the daytime total tropospheric divergence for these two widely different cases is -53.4 Wm^{-2} $[912\ mb]^{-1}$ for the disturbed case and -57.6 Wm^{-2} $[912\ mb]^{-1}$ for the suppressed case. This remarkable constancy is discussed further in Section 2.5.

2.4 Diurnal variation in the GATE Phase III radiative divergence profiles

The presence of the diurnal variation in cloudiness shown in Figures 9 and 10 may induce a significant diurnal modulation in the radiative divergence profiles. The change in solar irradiance as a function of time during the day also induces a diurnal variation on the radiative

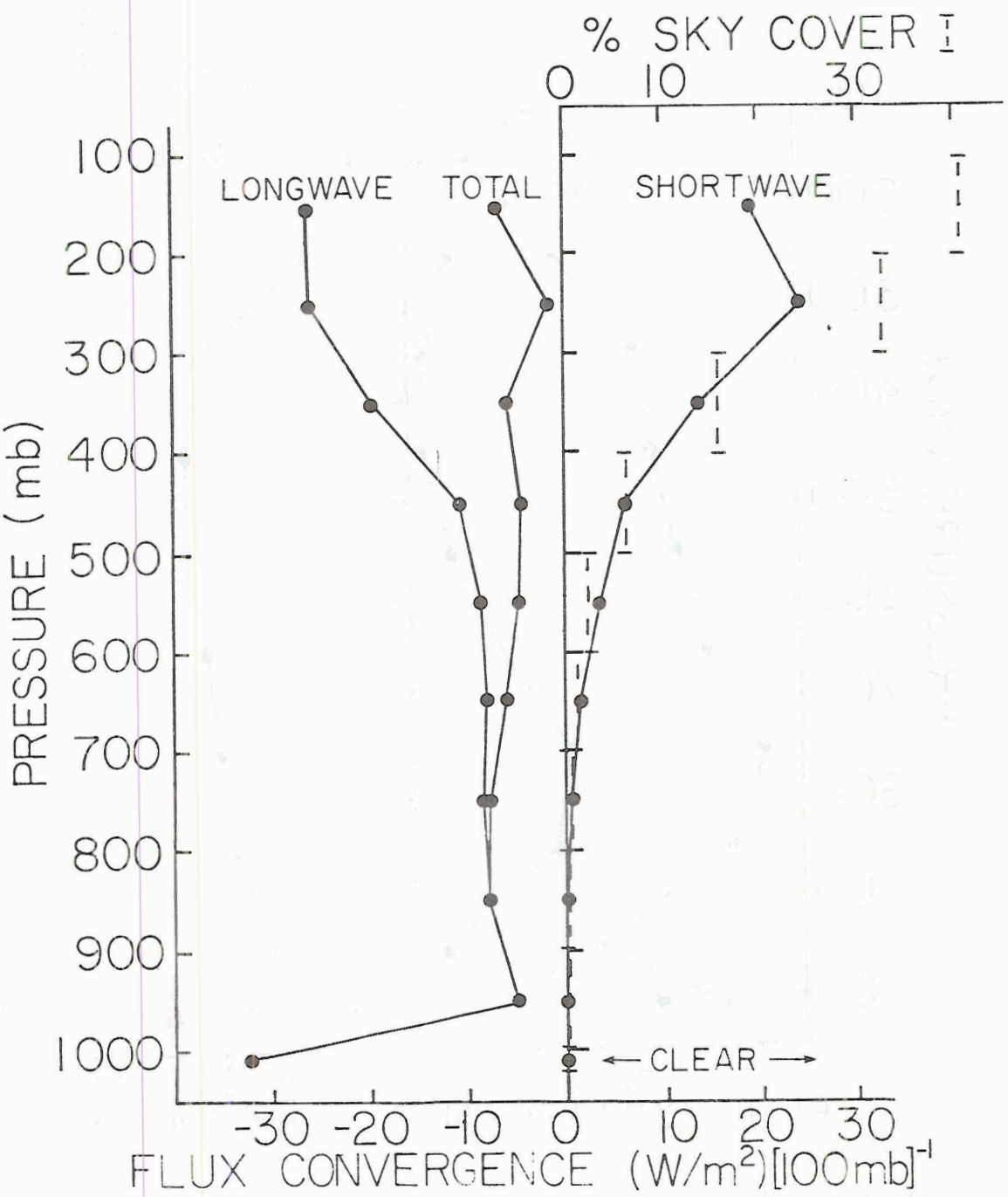


Figure 15. Total, LW and SW convergence profiles and cloud top pressure distribution for a convectively disturbed six hour period over the B-scale array during GATE Phase III (Day 245, 1200-1800 LST).

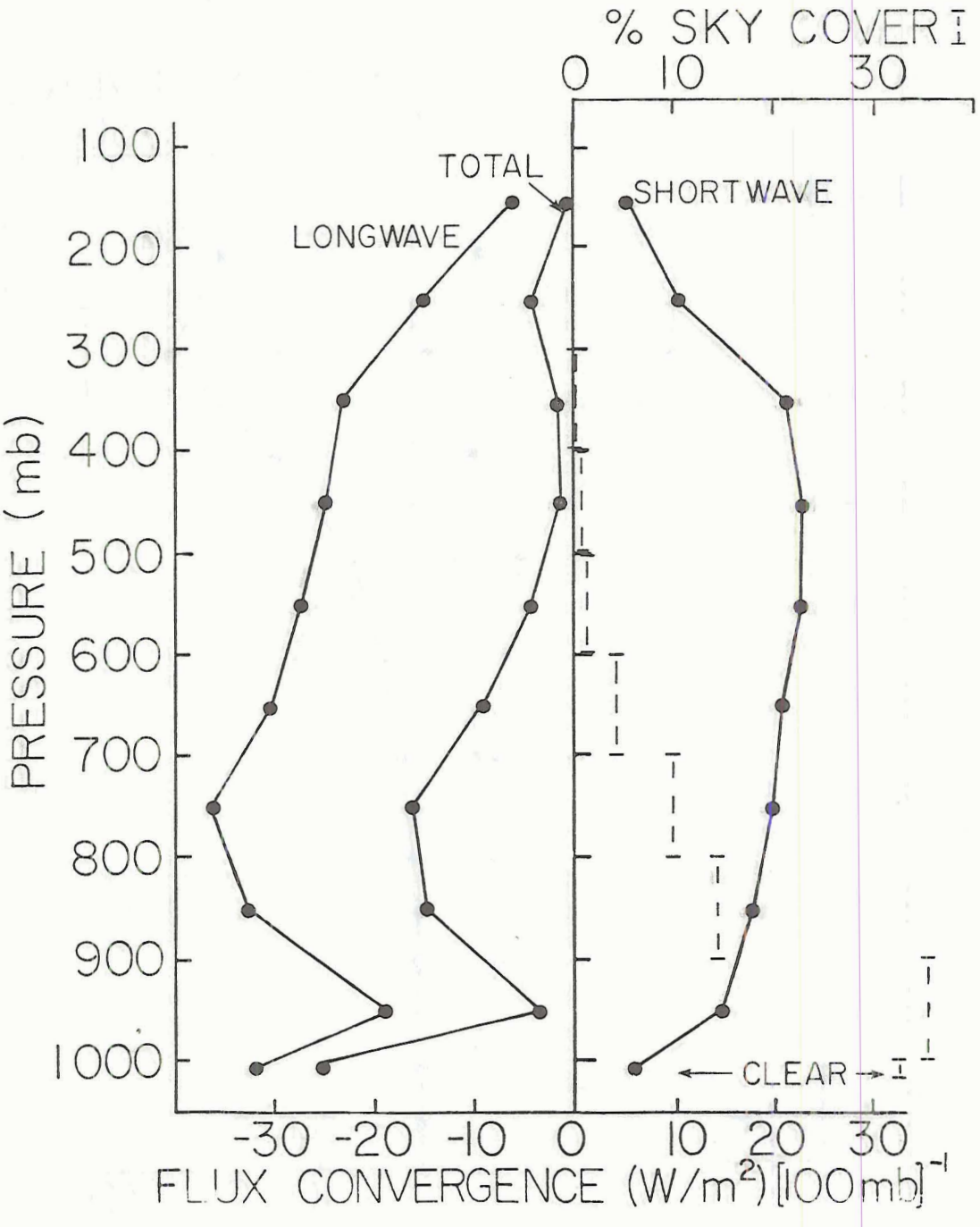


Figure 16. Total, LW and SW convergence profiles and cloud top pressure distribution for a convectively suppressed six hour period over the B-scale array during GATE Phase III (Day 258, 1200-1800 LST).

divergence profile. This effect is illustrated in the data presented in Tables 4, 5 and 6. These tables show the B-scale array average shortwave plus longwave divergence profiles for different periods ranging from 2 hours to 10 hours centered on local noon; these profile data are given for a hypothetical cloud-free case, the five day suppressed composite case the the five day convectively enhanced composite case in Tables 4, 5 and 6 respectively. Shaded portions of the tables have positive values (convergence) and unshaded portions contain negative values (divergence). Also shown for comparison is the longwave component alone which would represent the nighttime divergence.

The cloud-free case represented in Table 4 illustrates the expected diurnal trend caused by changing sun angle. The maximum solar heating occurs in the two hour period 1100 to 1300 LST resulting in net heating for pressures less than 700 mb and net heating for the total troposphere. As the averaging period is extended to larger intervals, several things happen; between the 1000-1400 LST and the 0900-1500 LST periods the total tropospheric divergence changes sign; the region of the troposphere which experiences net convergence becomes progressively thinner and higher; and for the twelve hour daytime interval, 0600-1800 LST, none of the layers show heating. Table 5, i.e. the suppressed case, shows the same general features as the cloud-free case. However, the inclusion of the observed cloud structure yields significantly greater heating in the lower troposphere, due to the suppression of LW cooling. The cloud structure doubles and quadruples the total tropospheric convergence in the 1100-1300 LST and 1000-1400 LST time periods, respectively. Table 6, i.e. the convectively disturbed case, shows some significant differences from the previous two tables. First, the total troposphere

Pressure (mb)	Local time (hours)	1100-1300	1000-1400	0900-1500	0800-1600	0700-1700	0600-1800	1800-0600 NIGHT
100		2.5	2.3	1.8	1.2	0.4	-0.4	-5.8
200		1.4	0.8	-0.1	-1.3	-2.7	-4.4	-15.0
300		9.8	8.7	7.0	4.6	1.7	-1.6	-22.7
400		11.0	9.8	7.9	5.4	2.3	-1.3	-23.9
500		7.3	6.1	4.3	1.9	-1.1	-4.5	-26.1
600		0.6	-0.3	-1.9	-3.9	-6.5	-9.3	-27.6
700		-9.0	-9.9	-11.2	-13.1	-15.3	-17.8	-34.1
800		-10.1	-10.9	-12.2	-13.9	-16.0	-18.4	-33.6
900		-0.7	-1.5	-2.7	-4.4	-6.4	-8.6	-23.2
1000		-1.8	-1.9	-2.0	-2.2	-2.4	-2.7	-4.4
1012								
TTD		11.0	3.2	-9.1	-25.7	-46.0	-69.0	-216.2

Table 4. Vertical profiles of the total divergence (SW plus LW) for clear sky conditions for the nighttime and for periods from 2 to 12 hours long centered on local noon. Shaded areas indicate regions of actual radiative heating; units are watts per square meter per pressure interval.

Pressure (mb)	Local Time (hours)	1100-1300	1000-1400	0900-1500	0800-1600	0700-1700	0600-1800	1800-0600 NIGHT
100		2.7	2.4	1.9	1.3	0.5	-.3	-6.2
200		2.5	1.9	0.9	-0.5	-2.1	-4.0	-16.8
300		9.9	8.7	6.9	4.4	1.3	-2.0	-25.6
400		9.2	8.0	6.1	3.4	0.2	-3.4	-28.8
500		4.2	2.9	0.9	-1.8	-5.1	-8.7	-33.9
600		2.1	1.0	-0.8	-3.2	-6.1	-9.4	-28.0
700		-3.6	-4.5	-5.9	-7.8	-10.1	-12.7	-24.5
800		-3.6	-4.3	-5.4	-6.9	-8.7	-10.6	-20.1
900		1.9	1.4	0.5	-0.6	-2.0	-3.6	-12.9
1000		-3.2	-3.3	-3.3	-3.4	-3.4	-3.5	-4.1
1012								
TTD		22.1	14.2	1.8	-15.1	-35.5	-58.2	-200.9

Table 5. Vertical profiles of the total divergence (SW plus LW) over the B-scale array for the five day suppressed composite case for the nighttime and for daytime periods ranging from 2 to 12 hours long centered on local noon. Shaded areas indicate regions of actual radiative heating; units are watts per square meter per pressure interval.

Pressure (mb)	Local time (hours)	1100-1300	1000-1400	0900-1500	0800-1600	0700-1700	0600-1800	1800-0600 NIGHT
100		4.0	3.4	2.4	1.1	-0.4	-2.2	-11.0
200		7.5	6.5	4.8	2.6	-0.1	-3.1	-21.3
300		5.1	4.1	2.5	0.3	-2.3	-5.3	-26.5
400		1.0	0.2	-1.0	-2.8	-4.9	-7.3	-26.8
500		-1.1	-1.8	-2.9	-4.4	-6.2	-8.3	-24.9
600		-2.5	-3.0	-3.9	-5.0	-6.3	-7.9	-19.2
700		-5.8	-6.2	-6.7	-7.4	-8.3	-9.2	-16.3
800		-5.9	-6.1	-6.5	-7.0	-7.5	-8.2	-12.9
900		-4.3	-4.4	-4.6	-4.8	-5.1	-5.5	-8.6
1000		-3.8	-3.9	-3.9	-3.9	-3.9	-3.9	-4.0
1012								
TTD		-5.8	-11.2	-19.8	-31.3	-45.0	-60.9	-171.6

Table 6. Vertical profiles of the total divergence (SW plus LW) over the B-scale array for the five day disturbed composite case for the nighttime and for daytime periods ranging from 2 to 12 hours long centered on local noon. Shaded areas indicate regions of actual radiative heating; units are watts per square meter per pressure interval.

always shows a net radiative loss and secondly, the region experiencing a net radiative gain, even during midday, is confined to pressures less than 500 mb.

Table 7 shows hour by hour B-scale average total (SW plus LW) radiative divergence profiles for the five day suppressed case. The shaded entries again represent actual radiative heating. These tabulations graphically depict the diurnal variability in the radiative divergence profiles. In the 1100-1300 LST time period nearly 80% of the troposphere is actually being radiatively heated with a total tropospheric gain of 22.1 Wm^{-2} $[912\ mb]^{-1}$. Before 0900 and after 1500 LST only the 100 to 200 mb layer is being radiatively heated and the TTD is -65.5 Wm^{-2} $[912\ mb]^{-1}$. These TTD values may be compared with the nighttime average loss of ~~-261~~ -200.9 Wm^{-2} $[912\ mb]^{-1}$. The corresponding data for the disturbed composite case are given in Table 8. In contrast to the suppressed case, near local noon the disturbed case shows only $\sim$ 45% of the troposphere being radiatively heated and the TTD is -5.8 Wm^{-2} $[912\ mb]^{-1}$. In the period 0800-0900 LST and 1500-1600 LST the TTD is remarkably close to the suppressed case, i.e. -65.6 vs. -65.5 Wm^{-2} $[912\ mb]^{-1}$. However, the nighttime loss is -171.6 Wm^{-2}, approximately 15% less than the suppressed case.

One question which immediately arises is, if disturbed and undisturbed regions are located adjacent to one another, how quickly do the dynamics of the atmosphere respond to the energy imbalances produced by the horizontal differences in radiative divergence? Keeping in mind that the values shown in Tables 7 and 8 represent large area averages over the B array, let us take the difference between corresponding entries in the two tables. Table 9 gives the results of making this differencing computation.

Pressure (mb)	Local time (hours)	1100-1200 and 1200-1300	1000-1100 and 1300-1400	0900-1000 and 1400-1500	0800-0900 and 1500-1600	0700-0800 and 1600-1700	0600-0700 and 1700-1800	1800-0600 NIGHT
100		2.7	2.1	1.0	-0.7	-2.6	-4.8	-6.2
200		2.5	1.3	-1.1	-4.5	-8.7	-13.4	-16.8
300		9.9	7.6	3.2	-3.1	-10.8	-19.3	-25.6
400		9.2	6.8	2.1	-4.5	-12.6	-21.6	-28.8
500		4.2	1.7	-3.1	-9.9	-18.2	-27.4	-33.9
600		2.1	-0.1	-4.4	-10.4	-17.7	-25.9	-28.0
700		-3.6	-5.4	-8.7	-13.5	-19.3	-25.7	-24.5
800		-3.6	-5.0	-7.6	-11.3	-15.8	-20.9	-20.1
900		1.9	0.8	-1.2	-4.1	-7.6	-11.5	-12.9
1000		-3.2	-3.3	-3.4	-3.5	-3.7	-3.9	-4.1
1012								
TTD		22.1	6.5	-23.2	-65.5	-117.0	-174.4	-200.9

Table 7. Vertical profiles of the nighttime and the hour by hour daytime B-scale array total divergence (SW plus LW) for the five day suppressed composite case. Shaded areas indicate regions of actual radiative heating; units are watts per square meter per pressure interval.

Pressure (mb)	Local time (hours)	1100-1200 and 1200-1300	1000-1100 and 1300-1400	0900-1000 and 1400-1500	0800-0900 and 1500-1600	0700-0800 and 1600-1700	0600-0700 and 1700-1800	1800-0600 NIGHT
100		4.0	2.8	0.5	-2.7	-6.7	-11.1	-11.1
200		7.5	5.5	1.5	-4.1	-11.0	-18.6	-21.3
300		5.1	3.1	-0.8	-6.2	-12.8	-20.2	-26.5
400		1.0	-0.6	-3.6	-8.0	-13.3	-19.3	-26.8
500		-1.1	-2.5	-5.1	-8.9	-13.5	-18.7	-24.9
600		-2.5	-3.5	-5.5	-8.2	-11.6	-15.4	-19.2
700		-5.8	-6.5	-7.8	-9.6	-11.8	-14.3	-16.3
800		-5.9	-6.4	-7.2	-8.4	-9.8	-11.5	-12.9
900		-4.3	-4.5	-5.0	-5.6	-6.4	-7.3	-8.6
1000		-3.8	-3.9	-3.9	-3.9	-3.9	-4.0	-4.0
1012								
TTD		-5.8	-16.5	-36.9	-65.6	-100.8	-140.4	-171.6

Table 8. Vertical profiles of the nighttime and the hour by hour daytime B-scale array total divergence (SW plus LW) for the five day disturbed composite case. Shaded areas indicate regions of actual radiative heating; units are watts per square meter per pressure interval.

Pressure (mb)	Local time (hours)	1100-1200 and 1200-1300	1000-1100 and 1300-1400	0900-1000 and 1400-1500	0800-0900 and 1500-1600	0700-0800 and 1600-1700	0600-0700 and 1700-1800	1800-0600 NIGHT
100		1.3	0.7	-0.5	-2.0	-4.1	-6.3	-4.9
200		5.0	4.2	2.6	0.4	-2.3	-5.2	-4.5
300		-4.8	-4.5	-4.0	-3.1	-2.0	-0.9	-0.9
400		-8.2	-7.4	-5.7	-3.5	-0.7	2.3	2.0
500		-5.3	-4.2	-2.0	1.0	4.7	8.7	9.0
600		-4.6	-3.4	-1.1	2.2	6.1	10.5	8.8
700		-2.2	-1.1	0.9	3.9	7.5	11.4	8.2
800		-2.3	-1.4	0.4	2.9	6.0	9.4	7.2
900		-6.2	-5.3	-3.8	-1.5	1.2	4.2	4.3
1000		-0.6	-0.6	-0.5	-0.4	-0.2	-0.1	0.1
1012								
TTD		-22.9	-23.0	-13.7	-0.1	16.2	34.0	20.5

Table 9. Vertical profiles of the difference in B-scale total divergence, nighttime and hour by hour daytime, from the disturbed composite to the suppressed composite case (Table 8 minus Table 7). Shaded areas indicate regions where the disturbed case is gaining more (or losing less) energy than the suppressed area. Units are watts per square meter per pressure interval.

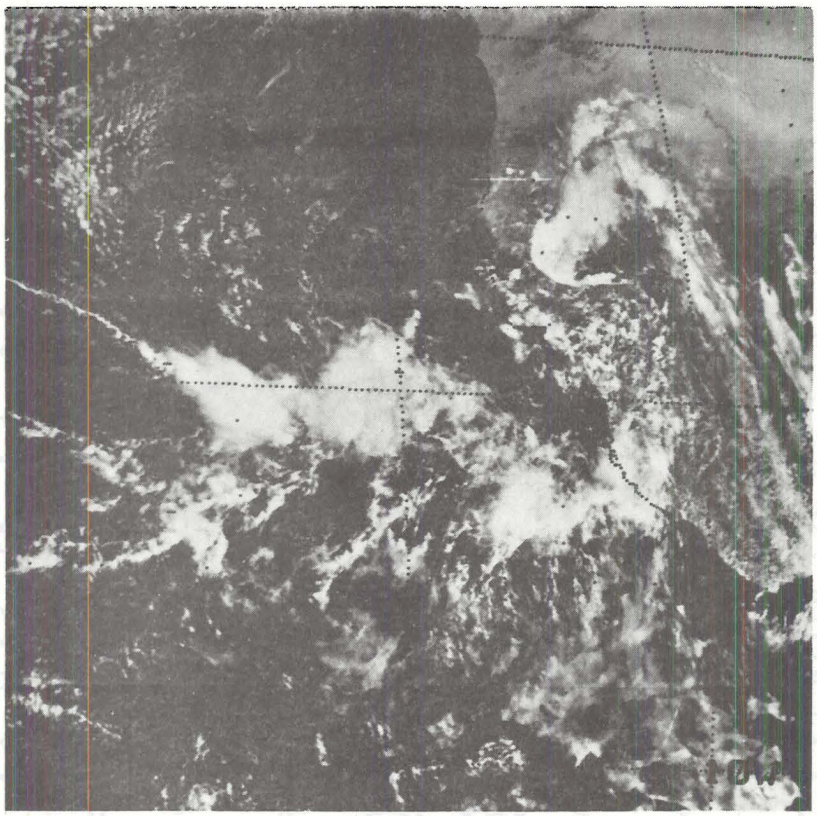
The positive entries in Table 9 (shaded areas) represent the condition where the disturbed region is gaining more (or losing less) power per unit area per pressure interval by radiative processes than the suppressed region and vice versa for the negative entries. These data show a significant diurnal variation in the difference between the disturbed and suppressed cases. Indeed, the gradient changes sign for all layers except 300 to 400 mb where the suppressed region consistently gains energy relative to the disturbed region through the 24 hour day. Solar absorption by high clouds accounts for the region of positive values for pressures less than 300 mb between the hours of 0800 and 1600 LST. These same clouds act as a veil and shade the lower troposphere from SW heating in the disturbed region thereby resulting in an effective cooling of the middle and lower troposphere. The positive values indicated for pressures greater than 400 mb are a result of stronger LW cooling of the suppressed area associated with its predominantly clear areas and lower tropospheric clouds. The negative values in these lower layers around local noon are caused by solar heating in the suppressed area compensating for the larger longwave losses. You may note that no negative values are found for the nighttime case for pressures greater than 400 mb. At higher levels, however, the nighttime sign reverses. This is caused by the large longwave losses from the high clouds in the disturbed area. You will note that these losses are overpowered by solar heating for only a relatively few hours surrounding local noon.

The preceding discussion revealed the temporal variation and the radiative differences between suppressed and disturbed composite cases. In order to explore the spatial relationships between radiative characteristics associated with disturbed and suppressed convective areas

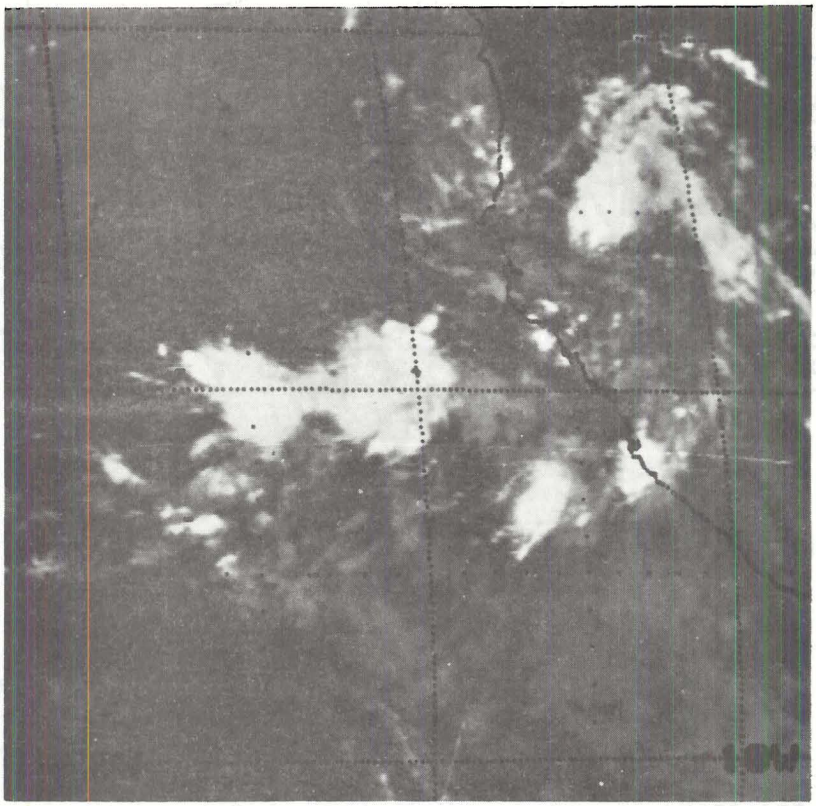
we have selected Day 248, a convectively active day in the B-scale array. Figure 17 shows an SMS-1 satellite visible photograph (top) and an IR photograph (bottom) depicting the cloud organization and height regimes, respectively, within the A/B-scale array. The most notable features are the convective ensembles, one nearly circular centered at 10°N, 21°W and the other at 9.5°N, 24°W. Also evident on the IR photograph is an extensive lower cloud deck and clear region in the southern sector of the A/B-scale array. These cloud features may be directly associated with the analyses of radiative divergence shown in Figures 18-20.

Figure 18 shows the spatial relationship between these two regimes. The ordinate is pressure, from 100 mb to 1000 mb, and the abscissa is latitude, representing a north-south line through the center of the A/B-scale array, at 23.5°W longitude. The cross section uses the cloud field from the daylight hours of Day 248, a convectively active day in the B-scale array. The top portion of the figure represents the total radiative budget between the hours of 1000 and 1400 LST. As discussed previously there are large regions of actual radiative heating. These regions are deepest (greatest pressure thickness) of the northern and southern edges of the cross section, in the suppressed area. However, the strongest heating occurs in the high clouds directly over the most disturbed region, at 9°N latitude. Note that the gradient is outward between 200 and 300 mb with the disturbed region being heated more than the surrounding clearer areas. Below 300 mb the gradient reverses and the suppressed regions are being heated more than the disturbed area.

The lower portion of the figure takes the same cloud field as in the top, but now the LW component alone is shown. This is equivalent



SMS-1 DAY 248 VISIBLE



SMS-1 DAY 248 IR

Figure 17. Visible photograph (top) and infrared photograph (bottom) from the SMS-1 satellite at 12:30Z on September 5, 1974 (Julian Day 248) depicting A/B-scale array cloud organization and height regimes.

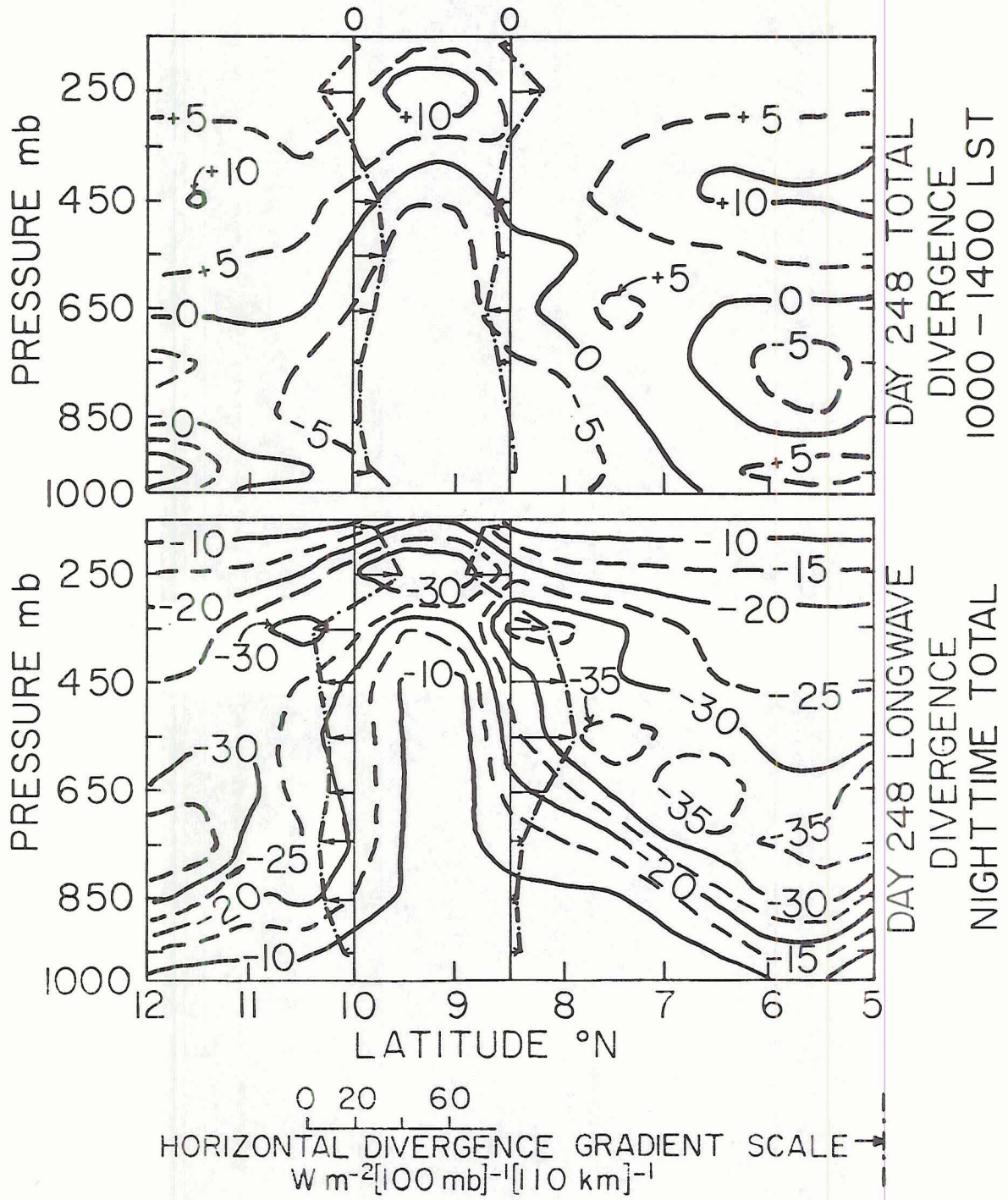


Figure 18. A pressure vs. latitude (at 23.5°W longitude) cross-sectional view of the A/B-scale array for the 0600-1800 LST period of Day 248. The top portion of the figure depicts the 1000-1400 LST total (SW plus LW) radiative divergence (Wm^{-2} $[100\ mb]^{-1}$) and the bottom portion depicts the LW component only (nighttime total). Also shown is the magnitude and direction of the horizontal radiative divergence gradient at two points (arrows point towards regions of greater divergence).

to assuming a steady state cloud field and then following its advective motion into the nighttime hours. Now, of course, there is radiative loss at all levels. But, a total reversal of the radiative gradients has occurred. The suppressed areas are cooling more than the disturbed area at all pressures greater than 300 mb and just the opposite at pressures less than 300 mb. The region directly above the disturbed area is now losing energy more rapidly than the surrounding area due to the high clouds.

The large magnitude of the radiative forcing is now clearly seen. From day to night a range of as much as 56 Wm^{-2} $[100\ mb]^{-1}$ (+ 16 to - 40) for the same region is possible. Horizontal gradients at night are typically 15 - 25 Wm^{-2} $[100\ mb]^{-1}$ over a 110 kilometer distance at the boundary of the disturbed area.

To complete a three dimensional view of the radiative divergence fields, we have plotted a "slab" view of the A/B array for the same day, 248. Latitude and longitude are the ordinate and abscissa, respectively, of each of the three parts (a, b, and c) of Figures 19 and 20. The three views represent, from top to bottom, the 100-400 mb layer, the 400-700 mb layer and the 700-1000 mb layer. Figure 19 displays the longwave divergence component (nighttime total divergence) and Figure 20 shows the daytime total divergence for the 1000-1400 LST period.

Scanning the LW divergence from top to bottom of Figure 19, several things are apparent. First, the horizontal divergence gradients are greater in the 400-700 mb layer than in the other two layers, particularly the 100-400 mb layer. Second, there is a distinct tendency, at all three levels, for the isopleths to run in the E-W direction. The

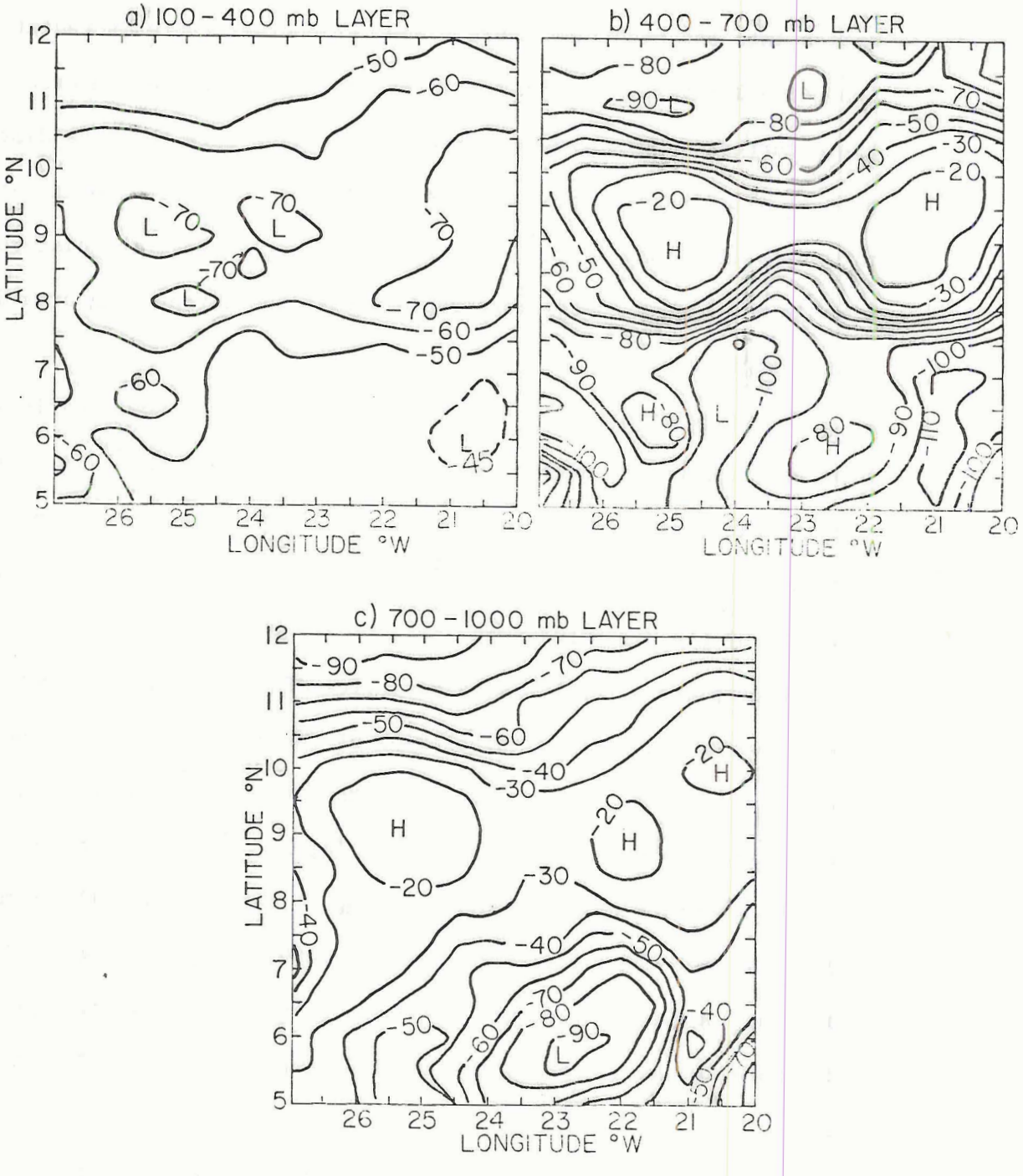


Figure 19. A latitude vs. longitude "slab" view of the LW divergence (nighttime total divergence) over the A/B-scale array on Day 248. The three portions of the figure are: a) the 100-400 mb layer; b) the 400-700 mb layer; c) the 700-1000 mb layer. Units are Wm^{-2} $[300\ mb]^{-1}$.

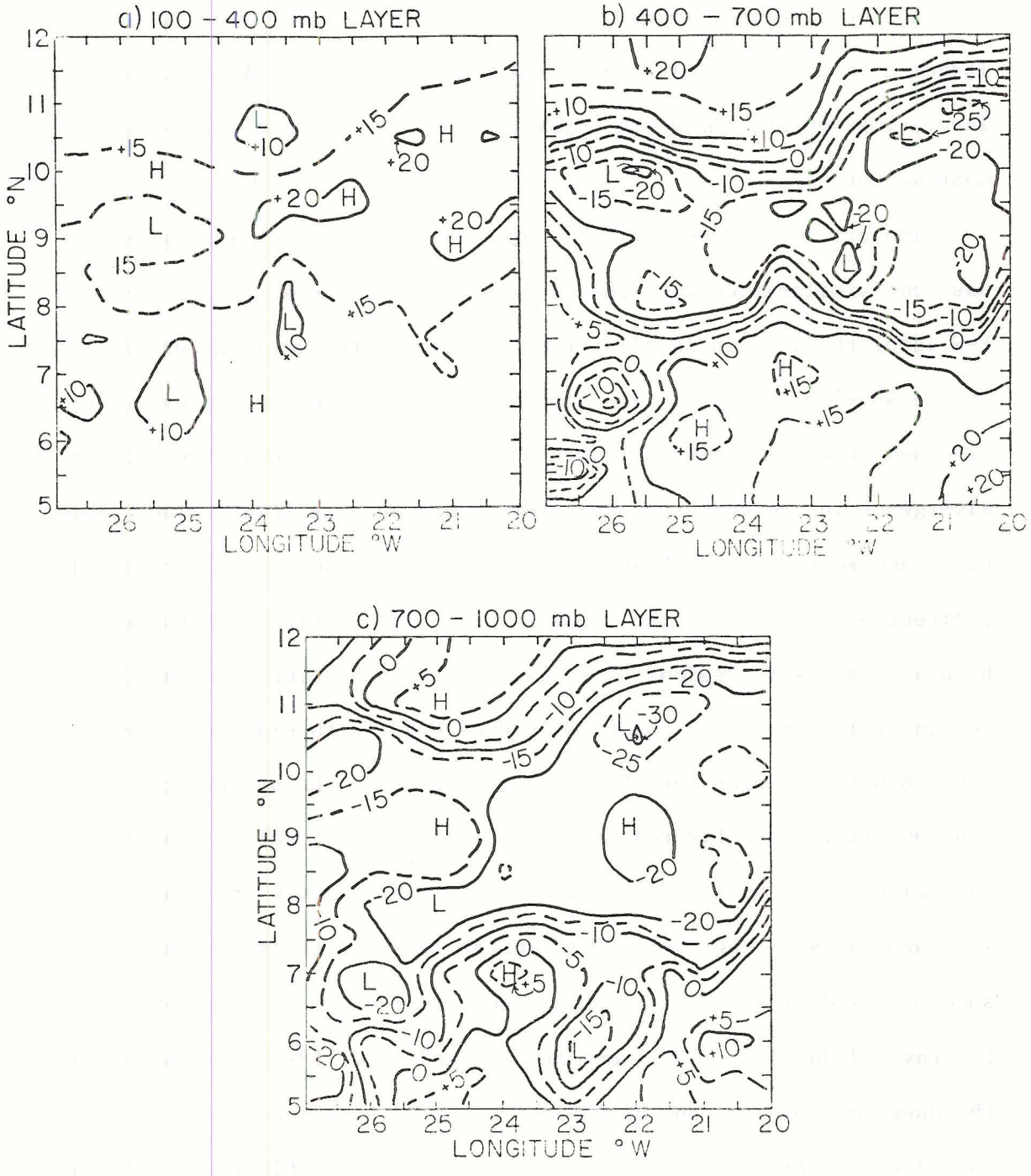


Figure 20. A latitude vs. longitude "slab" view of the 1000-1400 LST total (SW plus LW) divergence over the A/B-scale array on Day 248. The three portions of the figure are: a) the 100-400 mb layer; b) the 400-700 mb layer; c) the 700-1000 mb layer. Units are Wm^{-2} $[300\ mb]^{-1}$.

divergence fields (and cloud fields) are not axially symmetric but tend to be elongated in the E-W direction. Third, the two lowest layers show divergence minima in the center of the A/B array with larger divergence principally to the north and south. The highest layer, 100-400 mb, shows the opposite gradient, although it is somewhat weaker.

The daytime (1000-1400 LST) total divergence shown in Figure 20 has some similarities with the LW component. The same tendency toward E-W isopleths is seen in all three layers with the greatest gradients in the 400-700 mb layer. The direction of the gradient, however, is reversed from the nighttime case. The two lowest layers have greater divergence in the center of the array and generally lower values to the north and south. The 100-400 mb layer has quite weak gradients but in a direction opposite to the lower layers. In addition, all three levels have at least some regions of actual radiative heating. In fact, the top layer is completely positive (convergence) with small regions showing a positive budget for the two lower levels. The preceding discussion, tables and figures present examples of diurnal and spatial variations of radiative divergence in the GATE B-scale array atmosphere. The magnitudes of the variability appear adequate to explain at least some of the diurnal variations in cloud cover and precipitation reported by Gray and Jacobson (1977) and McGarry and Reed (1978). Nevertheless, the question posed at the beginning of this discussion, that is, how fast does the tropical atmosphere respond to the vertical and horizontal energy divergence gradients imposed by radiative processes, remains to be answered. We feel it is beyond the scope of the present investigation to give an answer, although it is crucial to a complete

understanding of the diurnal variability of tropical precipitation regimes.

2.5 Total tropospheric divergence variability

Figure 21 presents a time series of the tropospheric (100 to 1012 mb) longwave divergence and 12 hour daytime total tropospheric divergence (TTD) [shortwave + longwave] for the entire Phase III period. The periodicities shown in the longwave profile correspond to easterly wave trough passages and their attendant cloud structures. There are significant variations in the longwave divergence ranging from a minimum of $-124\ Wm^{-2}$ on Day 245 to a maximum of $-216\ Wm^{-2}$ on Day 258. On the other hand, the daytime total divergence (shortwave + longwave) is extremely stable; the full range of variation is only $20\ Wm^{-2}$ over the 20 day period even though cloud structure varied dramatically. This behavior of the daytime total tropospheric divergence may be better understood by referring to Figure 22. This figure shows the average daytime tropospheric shortwave convergence and longwave divergence values as a function of cloud top pressure. The vertical bars in Figure 22 refer to the cloud top structure observed over the B-scale array during the daytime hours for the suppressed and disturbed composite cases referred to earlier. The difference between the shortwave and longwave curves represents the daytime total tropospheric divergence. One notes that for cloud top pressures greater than 600 mb this difference is nearly constant. For cloud top pressures less than 600 mb there is significant variability in the total net radiation divergence in the troposphere. Values range from a maximum of $-92\ Wm^{-2}\ [912\ mb]^{-1}$ for a cloud top at 400 mb to a minimum of $-15\ Wm^{-2}\ [912\ mb]^{-1}$ for a cloud top at 100 mb.

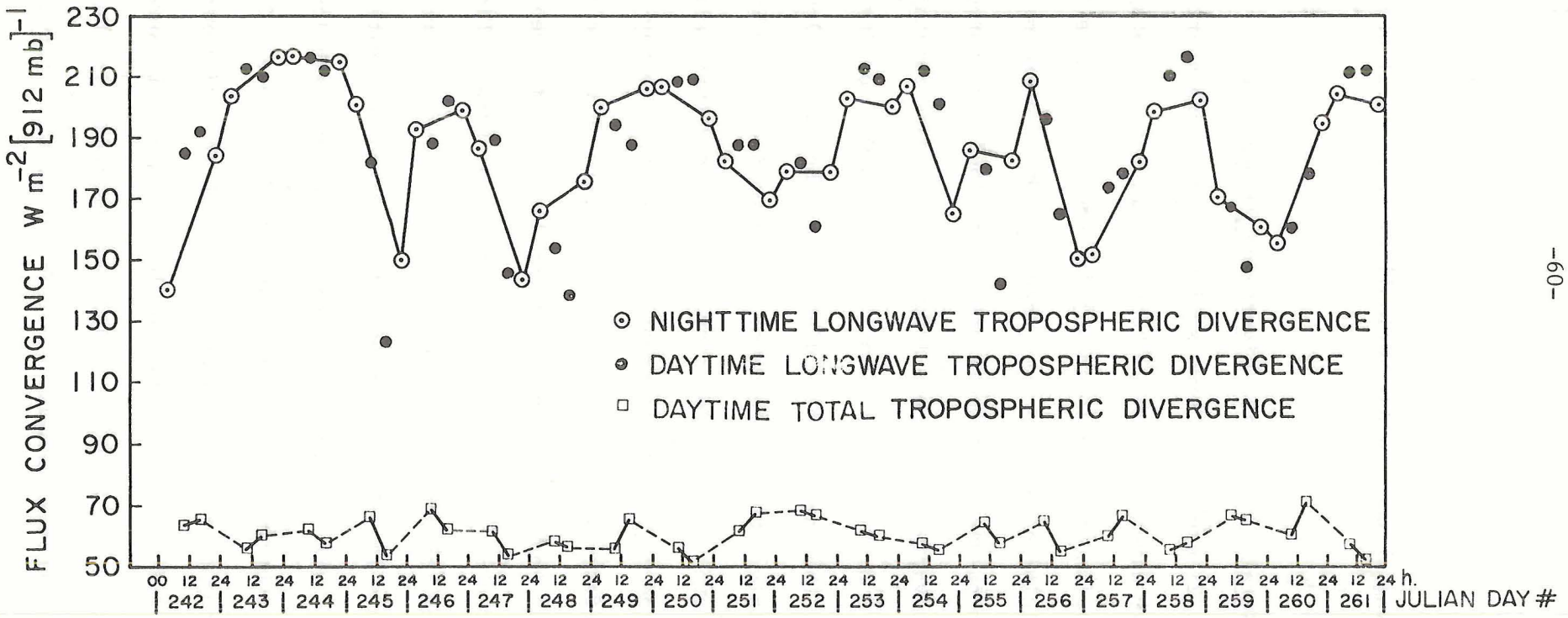


Figure 21. GATE Phase III B-scale array tropospheric (100-1012 mb) LW divergence and daytime total divergence (SW plus LW) as a function of time.

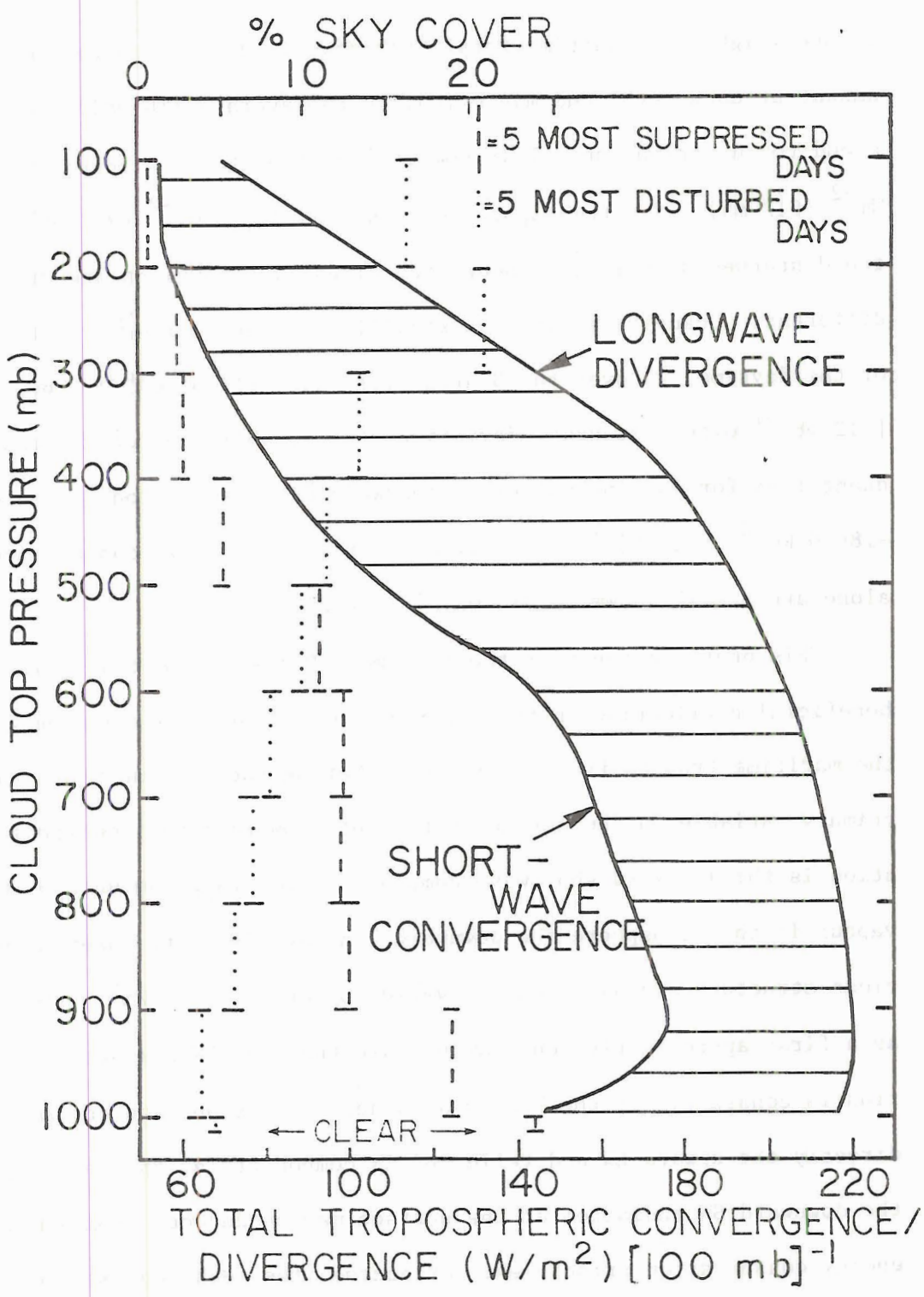


Figure 22. Tropospheric SW convergence and LW divergence (bottom abscissa) as a function of cloud top pressure. Also indicated is the daytime cloud top pressure distribution (top abscissa) over the B-scale array for the five day disturbed and the five day suppressed composite cases.

If one weights the daytime total tropospheric divergence by the cloud amount at each level one may calculate the average TTD value for each cloud top distribution. This computation results in a value of -58.3 Wm^{-2} $[912\ mb]^{-1}$ for the suppressed case and -60.9 Wm^{-2} $[912\ mb]^{-1}$ for the disturbed sample even though the cloud distributions are dramatically different. Quantitatively this stability may be expressed as the mean of the daytime TTD over the B array for Phase III of GATE: -60.3 Wm^{-2} $[912\ mb]^{-1}$ with a standard deviation of 5.2, while the corresponding quantities for daytime values of longwave divergence alone are μ = -186.0 Wm^{-2} $[912\ mb]^{-1}$, σ = 24.7 and for the shortwave convergence alone are μ = 125.7 Wm^{-2} $[912\ mb]^{-1}$, σ = 25.6.

This near constancy of the daytime TTD has a potentially very beneficial application in the inference of surface radiation budgets in the maritime tropics from satellites. During the daytime hours the primary variable in the surface total net (upward minus downward) radiation is the downward shortwave component. For large amounts of water vapour in the atmosphere the downward longwave is quite insensitive to cloud structure and as a result, varies by only $\sim \pm 10$ Wm^{-2}; therefore, as a first approximation one may presume that the LW surface net radiation is constant. If the TTD is also nearly constant and one measures directly the upward LW and reflected SW components by the satellite, the downward SW radiation at the surface may be deduced from simple energy conservation principles. Of course, the technique may be embellished to account for the secondary effects of clouds on the LW downward component at the surface.

Figure 23 shows extreme values in the TTD and each of its components for the B-scale array for different averaging periods during

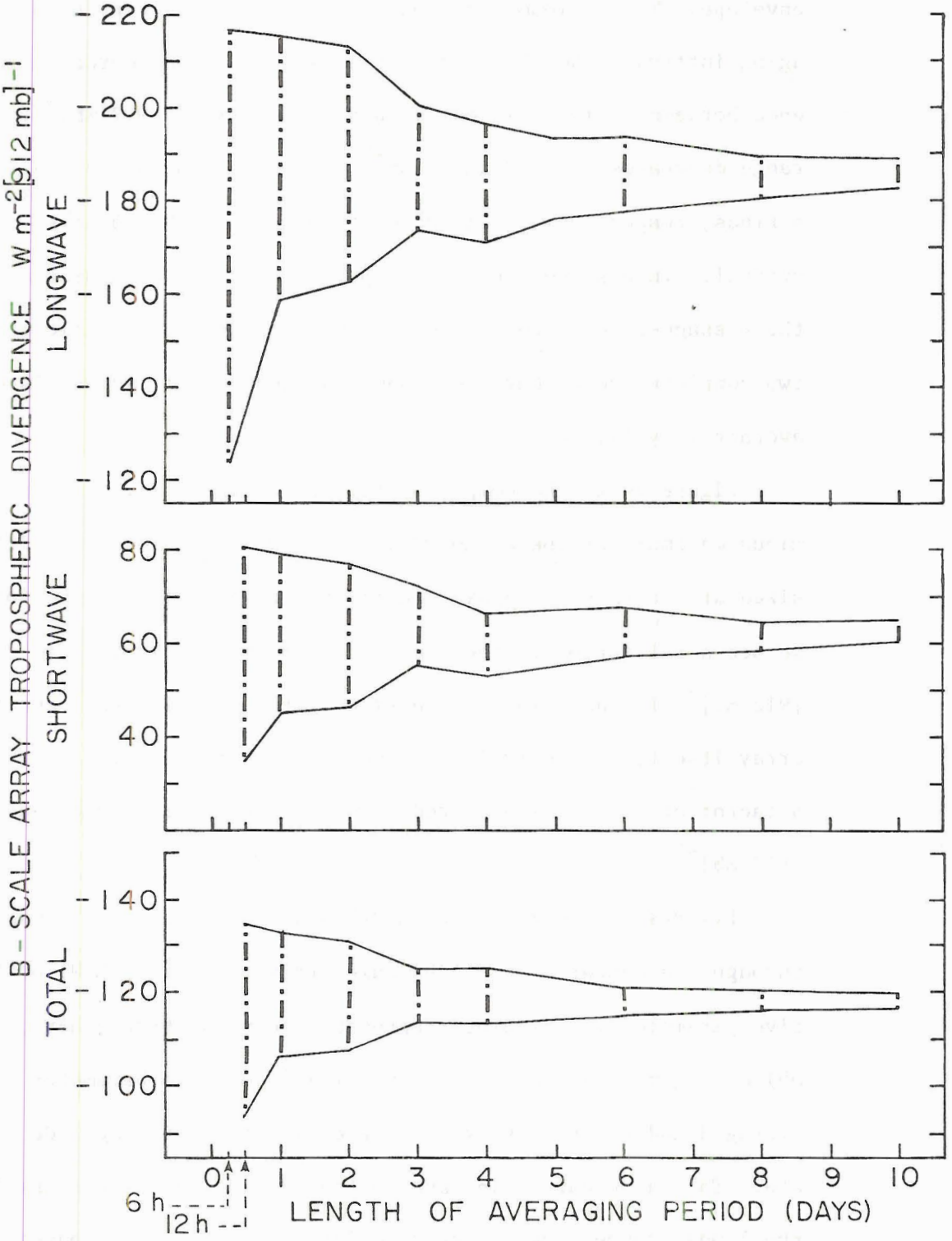


Figure 23. Extreme values of the B-scale array tropospheric divergence for the LW, SW and total components for different temporal averaging periods.

Phase III. Only the TTD will be discussed although the reader may find it useful to refer to the individual components in interpreting the TTD envelope. The maximum range of extreme values is for the 6 hour averaging interval, the shortest averaging period considered; the difference between maximum-minimum values is $\sim$ 40 Wm^{-2} $[912\ mb]^{-1}$. This range decreases to $\sim$ 12 and 5 Wm^{-2} $[912\ mb]^{-1}$ for 3 and 6 day averaging periods, respectively. The rate of decrease beyond 6 days is very gradual. In essence, this 6 day period corresponds approximately to the passage-time of two easterly waves through the B-scale array; after two complete cycles have been sampled, additional cycles disturb the average very little.

Figure 24 is the companion figure to Figure 23; the range (minimum minus maximum) of the 24 hour average TTD is presented for different sized area elements. Again confining our attention to the total curve, we see a relaxation of the range from 38 Wm^{-2} $[912\ mb]^{-1}$ to 27 Wm^{-2} $[912\ mb]^{-1}$ for an area 1/3 the size of the B-scale array and the B-scale array itself, respectively, however a further expansion of the area by a factor of $\sim$ 5 leads to a reduction of the range to only about 20 Wm^{-2} $[912\ mb]^{-1}$.

Figures 25 and 26 depict north-south and east-west cross sections through the center of the A/B scale array (8.5°N, 23.5°W) of four radiative parameters. The plots represent the total tropsopheric (100-1012 mb) divergence values in Wm^{-2} $[912\ mb]^{-1}$, of each parameter and are averaged and plotted every 1/2 degree latitude or longitude as appropriate. The three curves in each section depict the GATE Phase III mean, the 5 most convectively disturbed days and the 5 most convectively suppressed days.

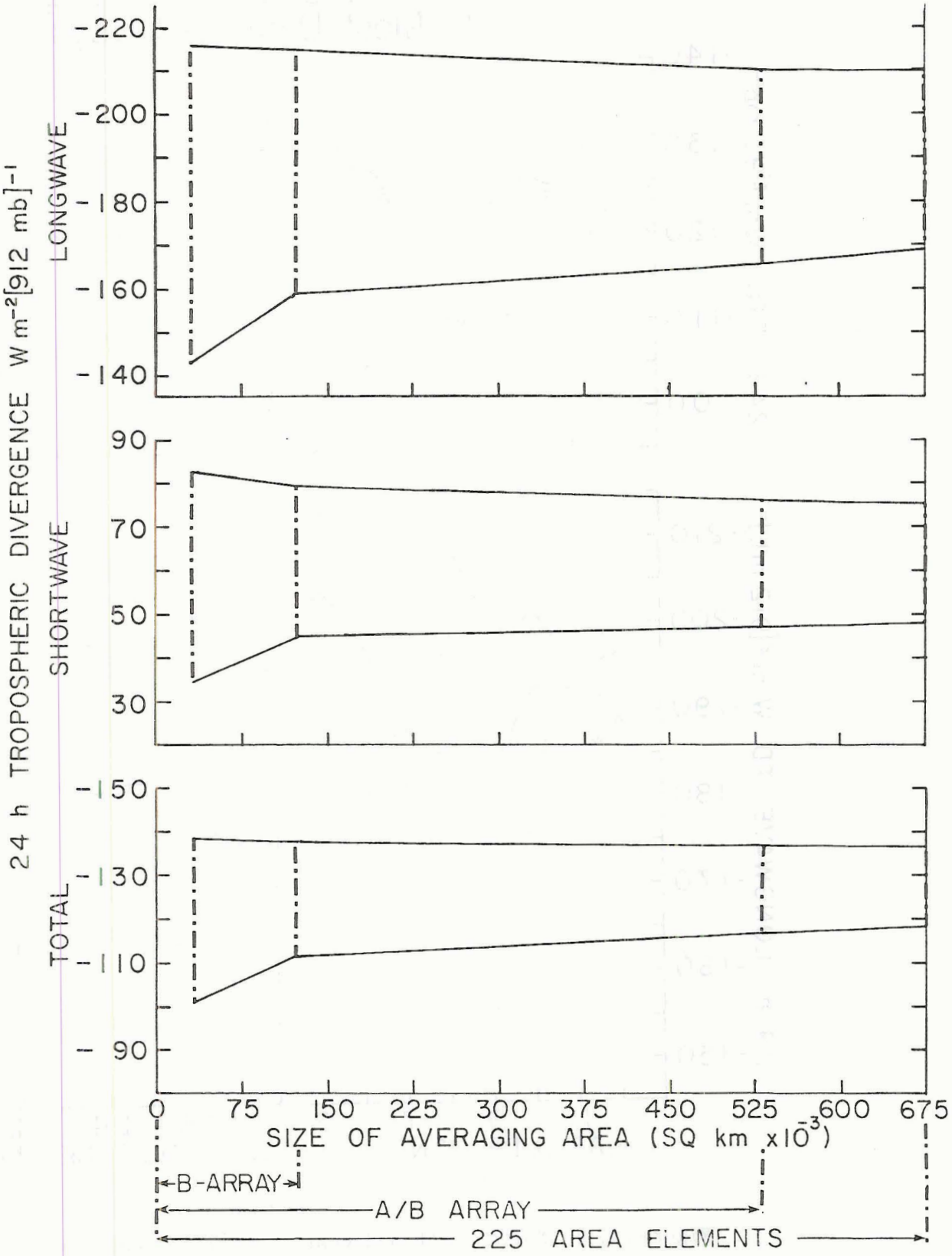


Figure 24. Extreme values of the 24 hour tropospheric divergence for the LW, SW and total components for different sized areas.

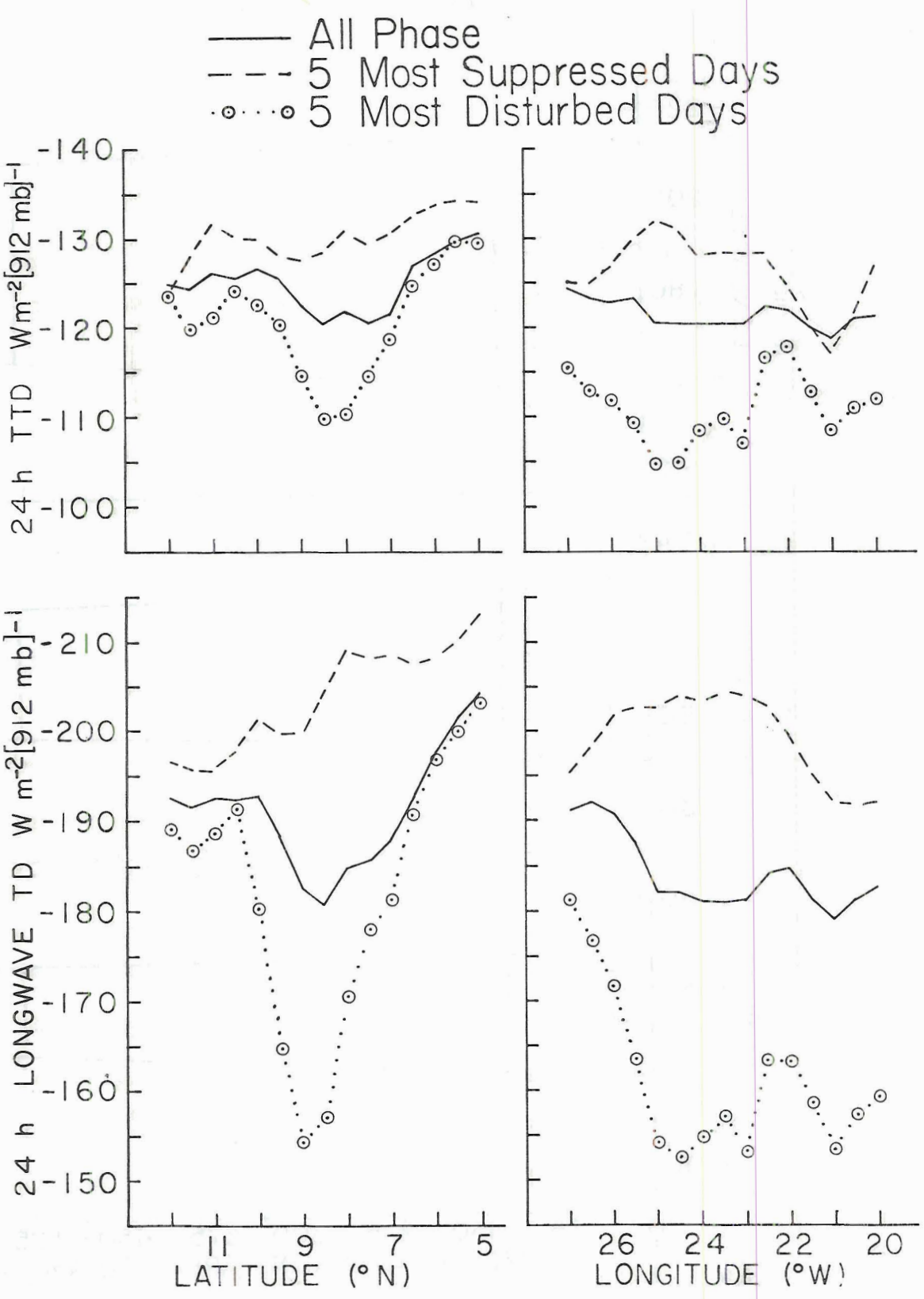


Figure 25. North-south and west-east cross sections through the center of the A/B-scale array of the tropospheric (100-1012 mb) 24 hour total divergence (TTD) and the 24 hour LW divergence.

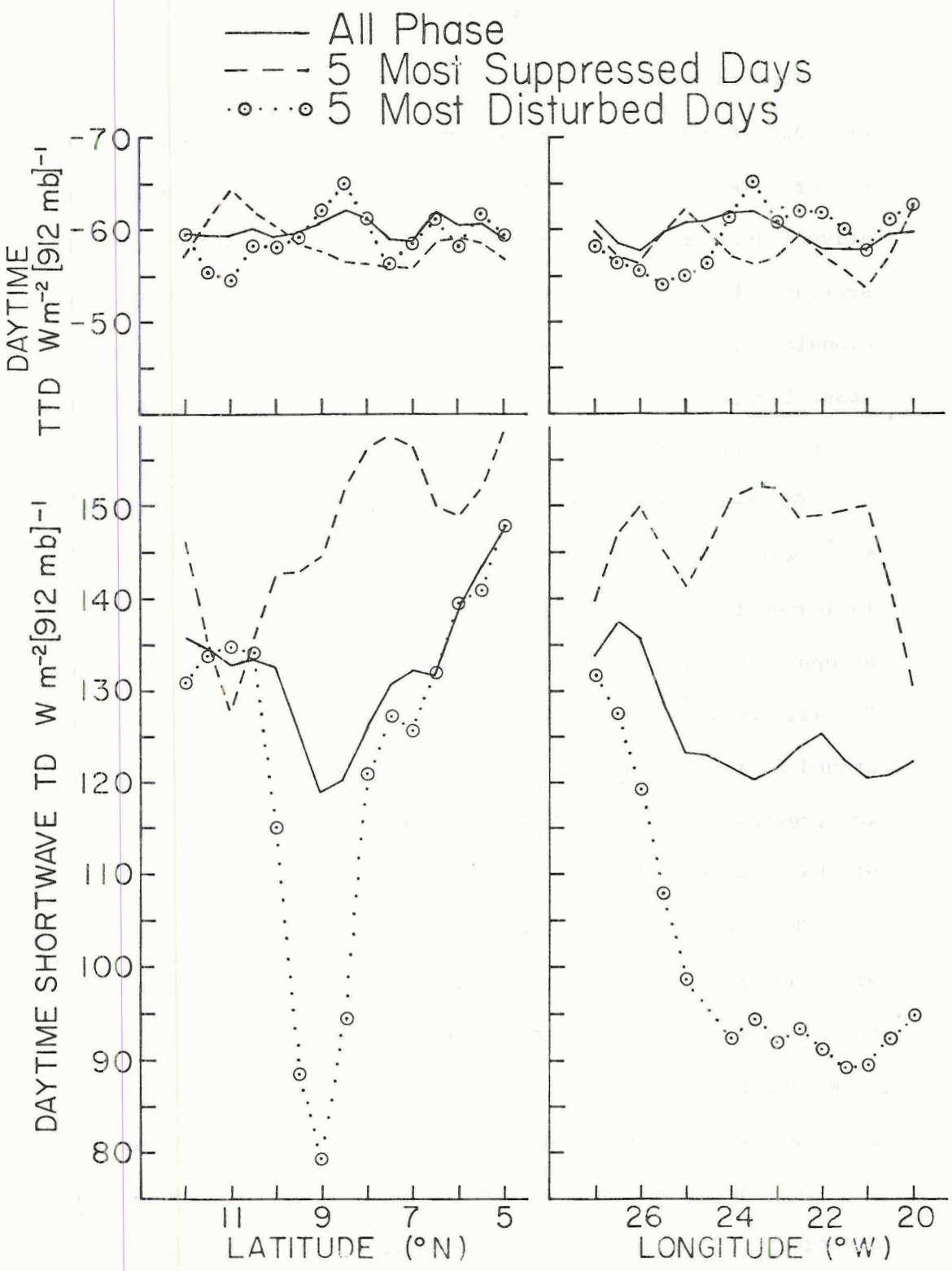


Figure 26. North-south and west-east cross sections through the center of the A/B-scale array of the tropospheric (100-1012 mb) daytime total divergence (TTD) and the daytime solar convergence.

The top portion of Figure 25 shows the 24 hour TTD. The presence of clouds suppresses the radiative loss of the troposphere, and of course, the higher the cloud tops, the greater the suppression of radiative loss. Both the north-south (N-S) and the east-west (E-W) cross sections show the expected progression from the suppressed cases (less cloudiness, more radiative loss) to the disturbed cases (more cloudiness, less radiative loss). The Phase III mean falls, in general, between the two extremes.

The N-S curve of the Phase III mean has a range of 10 Wm^{-2} [912 mb]$^{-1}$ while the E-W curve has a range of only 6 Wm^{-2} [912 mb]$^{-1}$. This indicates that the cloud fields are more elongated in the E-W direction, as opposed to being axially symmetric. The N-S Phase III mean and the N-S disturbed case both clearly indicate that disturbances are centered around 8° to 9°N latitude. The difference from disturbed to suppressed was greatest at 8°N and diminished or even disappeared toward the edges of the area at 12°N and 5°N.

The E-W curves show the periodicity of the cloud fields associated with the travelling disturbances. The E-W suppressed case has a maximum at 25°W longitude corresponding to a relatively clear area but at 21°W longitude a more disturbed area is clearly evident. The same progression but of opposite sign may be seen for the disturbed case.

The lower portion of Figure 25 depicts the 24 hour LW tropospheric divergence. The influence of the disturbed vs. suppressed cloud fields is even more pronounced here. Greater longwave losses are evident with the clearer skies of the suppressed case on both the N-S and E-W cross sections. In addition, the disturbed cases exhibit a strong N-S spatial dependency, which is nearly absent in the E-W curve. The E-W

curves all seem to tend toward a minimum on the eastern end of the area, indicating perhaps the influence of the African continent. The N-S curves all indicate that skies are clearer (or cloud tops lower) on the equator side of the A/B scale array than on the poleward side.

The 12 hour daytime TTD is shown in the top portion of Figure 26. The most outstanding feature of these curves is their very small amplitude. The cloud fields produce cancelling effects: less longwave loss but also less shortwave gain. The net result is a total range of values from north to south, east to west, disturbed or undisturbed of only about 11 Wm^{-2} $[912\ mb]^{-1}$.

The 12 hour daytime solar convergence is displayed in the lower portion of Figure 26. This figure is very similar in general characteristics to the LW depiction of Figure 25. The clearer, more suppressed days show greater solar absorption and the enhanced cloudiness of the disturbed days results in less solar absorption. The N-S disturbed case exhibits a strong minimum centered at 9°N corresponding to the high clouds there. The maximum of each N-S curve occurs on the equator side of the array, indicating clearer conditions (or lower clouds) there. And, as in the LW E-W curves, there tends to be a minimum on the eastern side of the array. Figures 25 and 26 suggest that there may be a diurnal forcing of the Hadley circulation by the N-S gradients in the radiative forcing components.

2.6 Analysis summary

The GATE Phase III tropospheric radiative divergence estimates compiled in this study differ significantly from contemporary climatological estimates of seasonal mean zonal values compiled by Dopplick

possible to have a range in TTD as large as 78 Wm^{-2} $[912\ mb]^{-1}$, during this 20 day period the cloud top distributions in the B-scale array were such that only a 20 Wm^{-2} range in this quantity was observed. This characteristic constancy of the daytime TTD values is a potentially very useful tool in the inference of maritime tropical surface energy budgets from satellite data.

B-scale average TTD values were computed over different averaging periods; the range of variation in the TTD was 40 Wm^{-2} $[912\ mb]^{-1}$, 12 Wm^{-2} $[912\ mb]^{-1}$ and 5 Wm^{-2} $[912\ mb]^{-1}$ for 6 hour, 3 day and 6 day averaging periods, respectively. Similarly the range of variation of the 24 hour TTD was calculated over space scales of 1/3 the B-scale array area, the B-scale array and A/B-scale array; the resulting values were 38 Wm^{-2} $[912\ mb]^{-1}$, 27 Wm^{-2} $[912\ mb]^{-1}$, and 20 Wm^{-2} $[912\ mb]^{-1}$, respectively.

Cross sections of the Phase III mean and the disturbed composite radiative divergence values for the A/B-scale array suggest a N-S radiative forcing associated with E-W oriented cloud bands centered around 8 to 9°N latitude. This suggests the possibility of a diurnal radiative forcing on the basic Hadley circulation.

III. PHASE III DATA TABULATIONS

Part III tabulates the longwave (LW), shortwave (SW) and total radiative divergence profiles and the cloud top pressure distribution for a variety of space and time scales. Daily 24 hour mean values are presented for nine different averaging areas ranging in size from approximately one quarter of the B array to the entire A/B array. Figure 1 on page 3 depicts the exact limits of the A/B and B arrays and also defines a numbering system for identifying individual area units in the 225 element array. The averaging areas that have not been defined graphically will be specified by listing the box numbers included within their boundaries:

Northern Sector B array (Section 3.6):
67, 68, 69, 80, 81, 82, 83, 84, 85,
86, 95, 96, 97, 98, 99, 100, 101

Central Sector B array (Section 3.7):
95, 96, 97, 98, 99, 100, 101, 110, 111, 112, 113,
114, 115, 116, 125, 126, 127, 128, 129, 130, 131

Southern Sector B array (Section 3.8):
125, 126, 127, 128, 129, 130, 131, 140, 141,
142, 143, 144, 145, 146, 157, 158, 159

Northeast Sector B array (Section 3.9):
68, 69, 83, 84, 85, 86, 98, 99,
100, 101, 113, 114, 115, 116

Southeast Sector B array (Section 3.10):
113, 114, 115, 116, 128, 129, 130,
131, 143, 144, 145, 146, 158, 159

Southwest Sector B array (Section 3.11):
110, 111, 112, 113, 125, 126, 127,
128, 140, 141, 142, 143, 157, 158

Northwest Sector B array (Section 3.12):
67, 68, 80, 81, 82, 83, 95, 96, 97,
98, 110, 111, 112, 113,

Seven different time periods are considered for the Phase III mean case (20 days), a five day convectively disturbed composite case and a five day convectively suppressed composite case. These periods are (all in local standard time [LST]) 0000-0600, 0600-1200, 1200-1800, 1800-2400, 0000-2400, 0600-1800 (daytime), and 1800-0600 (nighttime). GATE Phase III ran from August 30 to September 18, 1974. The five day disturbed composite includes Julian Days 245, 248, 256, 257, and 259; the five day suppressed composite includes Julian Days 243, 244, 250, 251, 258. There are two areal domains for the Phase III mean and the two composite cases: A/B array and B array. Standard deviations are also given which represent either spatial or temporal variability depending on the table.

Finer spatial and temporal resolution data are available on either microfilm or magnetic tape but are not included here because of their great bulk. These sources contain six hourly data for each of the 225 1/2 degree latitude by 1/2 degree longitude area elements over the entire Phase III period. In addition, six hourly spatial means are given over the nine different areas described above plus the full 225 box area. For further information, contact the Department of Atmospheric Science, Colorado State University.

3.1 MEANS OVER FULL PHASE III, A/B and B SCALES

The following 14 tables, on pages 75 to 79, give vertical profiles of the mean cloud top distribution, SW, LW and total radiative divergence over first the A/B array and then the B array for the entire GATE Phase III period. The values are given in 100 mb vertical resolution for 7 different averaging periods: (all in local standard time) 00-06, 06-12, 12-18, 18-24, 00-24, 06-18 (daytime), and 18-06 (nighttime). The standard deviations represent the variability in time, from day to day, of the area averages.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)				TOTAL	
			SHORTWAVE		LONGWAVE			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	5.3	6.3	0.0	0.0	-8.5	3.5	-8.5	3.5
200	6.7	4.9	0.0	0.0	-17.6	1.8	-17.6	1.8
300	7.6	4.7	0.0	0.0	-25.3	1.8	-25.3	1.8
400	11.7	5.9	0.0	0.0	-28.9	4.6	-28.9	4.6
500	13.8	6.6	0.0	0.0	-31.3	6.2	-31.3	6.2
600	12.9	4.3	0.0	0.0	-25.9	4.6	-25.9	4.6
700	10.8	3.2	0.0	0.0	-22.3	5.9	-22.3	5.9
800	9.0	3.6	0.0	0.0	-16.9	5.8	-16.9	5.8
900	8.4	5.0	0.0	0.0	-10.3	2.9	-10.3	2.9
1000 CLEAR 1012	13.8	13.2	0.0	0.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			0.0	0.0	-191.1	14.8	-191.1	14.8

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 0600-0600 LST (approximately 0130 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)				TOTAL	
			SHORTWAVE		LONGWAVE			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	5.3	5.9	7.5	2.1	-8.4	3.1	-.9	1.0
200	7.2	4.6	14.2	2.1	-17.8	1.7	-3.6	.7
300	6.7	3.7	21.6	1.7	-24.7	2.1	-3.2	1.1
400	9.5	7.5	21.3	2.7	-27.3	5.5	-6.0	4.2
500	10.9	4.8	20.6	3.3	-29.5	4.3	-8.8	1.8
600	12.0	3.9	17.3	3.8	-26.6	4.8	-9.3	1.4
700	11.0	3.2	12.9	3.6	-24.3	5.5	-11.3	2.3
800	10.3	3.4	9.6	3.4	-18.9	5.1	-9.3	2.1
900	9.9	3.8	6.7	2.9	-11.2	2.8	-4.5	1.4
1000 CLEAR 1012	17.3	13.6	.3	.2	-4.0	.1	-3.7	.2
TOTAL TROPOSPHERE			132.1	14.0	-192.7	13.0	-60.6	3.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 0600-1200 LST (approximately 0730 to 1330 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	6.2	7.0	7.9	2.6	-8.9	3.6	-1.0	1.1
200	10.7	8.0	15.3	3.2	-19.1	3.0	-3.9	.4
300	10.0	5.3	21.7	1.9	-26.1	2.5	-4.3	1.8
400	10.4	4.3	20.2	3.5	-26.6	3.6	-6.4	2.4
500	10.2	4.3	18.9	4.5	-27.0	5.9	-8.1	2.1
600	10.4	4.0	15.5	4.7	-24.0	5.5	-8.4	1.0
700	9.8	3.2	11.6	4.1	-22.3	6.0	-10.7	2.1
800	9.2	3.9	8.7	3.8	-17.7	5.5	-9.1	1.9
900	11.0	6.2	6.1	3.4	-10.6	2.8	-4.5	1.2
1000 CLEAR 1012	12.0	11.1	.3	.2	-4.0	.1	-3.7	.2
TOTAL TROPOSPHERE			126.3	18.4	-186.4	18.0	-60.2	2.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 1200-1800 LST (approximately 1330 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	4.6	4.8	0.0	0.0	-8.1	2.5	-8.1	2.5
200	7.8	6.0	0.0	0.0	-18.0	2.2	-18.0	2.2
300	10.4	5.9	0.0	0.0	-27.0	2.8	-27.0	2.8
400	12.6	5.8	0.0	0.0	-29.1	3.4	-29.1	3.4
500	12.4	4.9	0.0	0.0	-29.6	5.2	-29.6	5.2
600	11.8	4.0	0.0	0.0	-24.6	4.9	-24.6	4.9
700	10.4	3.1	0.0	0.0	-22.0	6.2	-22.0	6.2
800	9.1	4.1	0.0	0.0	-16.9	5.9	-16.9	5.9
900	9.2	5.9	0.0	0.0	-10.2	2.9	-10.2	2.9
1000 CLEAR 1012	11.6	15.2	0.0	0.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			0.0	0.0	-189.5	14.7	-189.5	14.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 1800-2400 LST (approximately 1930 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	5.4	6.0	3.8	2.3	-8.5	3.1	-4.7	1.3
200	8.1	6.1	7.4	2.7	-18.1	2.3	-10.8	.6
300	8.7	5.2	10.8	1.8	-25.8	2.5	-15.0	1.4
400	11.0	6.0	10.4	3.2	-28.0	4.4	-17.6	2.4
500	11.8	5.3	9.9	4.0	-29.3	5.6	-19.4	2.6
600	11.8	4.1	8.2	4.3	-25.3	5.0	-17.1	2.2
700	10.5	3.1	6.1	3.9	-22.7	5.9	-16.6	3.1
800	9.4	3.7	4.6	3.6	-17.6	5.5	-13.1	2.9
900	9.6	5.3	3.2	3.1	-10.6	2.8	-7.4	1.0
1000 CLEAR 1012	13.7	13.3	.2	.2	-4.0	.1	-3.8	.1
TOTAL TROPOSPHERE			64.6	16.4	-189.9	15.1	-125.3	5.2

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 24 hour period 0000-2400 LST (approximately 0130 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	5.7	6.4	7.7	2.3	-8.7	3.3	-1.0	1.0
200	9.0	6.7	14.8	2.7	-18.5	2.5	-3.7	.6
300	8.3	4.8	21.7	1.8	-25.4	2.4	-3.7	1.6
400	10.0	6.1	20.8	3.2	-27.0	4.6	-6.2	3.4
500	10.5	4.5	19.8	4.0	-28.2	5.2	-8.5	2.0
600	11.2	4.0	16.4	4.3	-25.3	5.3	-8.9	1.3
700	10.4	3.2	12.3	3.9	-23.3	5.8	-11.0	2.2
800	9.7	3.7	9.1	3.6	-18.3	5.3	-9.2	2.0
900	10.5	5.1	6.4	3.1	-10.9	2.8	-4.5	1.3
1000 CLEAR 1012	14.7	12.6	.3	.2	-4.0	.1	-3.7	.2
TOTAL TROPOSPHERE			129.2	16.4	-189.6	15.8	-60.4	3.1

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 12 hour period 0600-1800 LST (approximately 0730 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	5.0	5.6	0.0	0.0	-8.3	3.0	-8.3	3.0
200	7.2	5.4	0.0	0.0	-17.8	2.0	-17.8	2.0
300	9.0	5.5	0.0	0.0	-26.2	2.5	-26.2	2.5
400	12.1	5.8	0.0	0.0	-29.0	4.0	-29.0	4.0
500	13.1	5.8	0.0	0.0	-30.4	5.7	-30.4	5.7
600	12.4	4.1	0.0	0.0	-25.3	4.8	-25.3	4.8
700	10.6	3.1	0.0	0.0	-22.1	6.0	-22.1	6.0
800	9.1	3.8	0.0	0.0	-16.9	5.8	-16.9	5.8
900	8.8	5.4	0.0	0.0	-10.3	2.9	-10.3	2.9
1000 CLEAR 1012	12.7	14.1	0.0	0.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			0.0	0.0	-190.3	14.6	-190.3	14.6

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 12 hour period 1800-0600 LST (approximately 1930 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	6.1	8.2	0.0	0.0	-8.9	4.2	-8.9	4.2
200	8.3	8.4	0.0	0.0	-18.2	3.2	-18.2	3.2
300	9.2	8.0	0.0	0.0	-25.8	3.3	-25.8	3.3
400	11.9	8.2	0.0	0.0	-28.5	7.0	-28.5	7.0
500	12.6	7.1	0.0	0.0	-29.4	7.9	-29.4	7.9
600	11.7	5.2	0.0	0.0	-24.5	6.7	-24.5	6.7
700	9.7	4.6	0.0	0.0	-21.5	8.1	-21.5	8.1
800	8.9	5.9	0.0	0.0	-16.8	7.4	-16.8	7.4
900	7.9	6.3	0.0	0.0	-10.3	3.8	-10.3	3.8
1000 CLEAR 1012	13.6	16.8	0.0	0.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			0.0	0.0	-188.0	21.4	-188.0	21.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 0000-0600 LST (approximately 0130 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	5.5	7.4	7.6	3.0	-8.5	3.8	-.8	1.1
200	8.2	7.4	14.7	3.5	-18.2	3.0	-3.5	.9
300	7.5	5.8	21.5	2.3	-25.1	3.2	-3.6	1.8
400	9.6	9.1	20.9	3.7	-27.1	6.4	-6.2	5.0
500	10.9	7.1	20.2	4.4	-28.9	5.2	-8.7	2.6
600	11.0	4.5	16.7	4.8	-25.5	6.0	-8.9	1.9
700	9.8	3.5	12.3	5.2	-23.6	8.2	-11.3	3.4
800	10.3	5.5	9.3	5.6	-19.0	8.1	-9.6	2.9
900	9.8	6.9	6.5	5.0	-11.3	4.2	-4.7	2.0
1000 CLEAR 1012	17.2	18.8	.3	.3	-4.0	.1	-3.7	.3
TOTAL TROPOSPHERE			130.0	20.7	-191.1	18.7	-61.1	4.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 0600-1200 LST (approximately 0730 to 1330 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	8.6	12.1	8.6	4.2	-10.0	6.0	-1.4	1.9
200	13.1	13.0	16.3	5.2	-20.0	4.9	-3.7	.8
300	10.7	8.2	21.1	3.5	-25.6	4.3	-4.5	2.7
400	10.2	6.8	19.1	6.0	-25.4	7.0	-6.4	3.6
500	10.5	8.8	17.8	7.6	-26.2	10.4	-8.3	4.1
600	9.5	6.2	14.2	7.2	-22.2	8.5	-8.0	1.7
700	8.6	4.7	10.5	6.7	-20.7	9.7	-10.2	3.4
800	8.7	7.6	7.9	6.7	-16.8	8.9	-8.9	2.7
900	10.3	11.2	5.5	5.6	-10.1	4.1	-4.5	2.5
1000 CLEAR 1012	9.8	13.5	.2	.3	-4.0	.1	-3.7	.3
TOTAL TROPOSPHERE			121.4	29.6	-181.0	29.1	-59.7	5.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 1200-1800 LST (approximately 1330 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	6.3	9.2	0.0	0.0	-9.1	4.9	-9.1	4.9
200	9.8	8.9	0.0	0.0	-18.7	3.3	-18.7	3.3
300	12.6	9.1	0.0	0.0	-27.7	5.0	-27.7	5.0
400	14.1	8.7	0.0	0.0	-29.3	6.1	-29.3	6.1
500	12.5	7.1	0.0	0.0	-27.9	7.3	-27.9	7.3
600	11.4	5.9	0.0	0.0	-22.6	8.0	-22.6	8.0
700	8.8	5.2	0.0	0.0	-19.5	9.0	-19.5	9.0
800	7.6	7.0	0.0	0.0	-15.3	7.7	-15.3	7.7
900	7.2	8.3	0.0	0.0	-9.7	3.9	-9.7	3.9
1000 CLEAR 1012	9.7	19.8	0.0	0.0	-4.0	.2	-4.0	.2
TOTAL TROPOSPHERE			0.0	0.0	-183.7	21.7	-183.7	21.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 6 hour period 1800-2400 LST (approximately 1930 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	6.7	9.3	4.1	3.6	-9.1	4.7	-5.0	2.0
200	9.8	9.7	7.7	4.4	-18.8	3.7	-11.1	1.1
300	10.0	7.9	10.7	2.9	-26.0	4.1	-15.4	2.8
400	11.5	8.3	10.0	5.0	-27.6	6.7	-17.6	3.7
500	11.6	7.5	9.5	6.2	-28.1	7.8	-18.6	3.2
600	10.9	5.4	7.7	6.2	-23.7	7.3	-16.0	3.5
700	9.2	4.5	5.7	6.0	-21.3	8.7	-15.6	4.9
800	8.9	6.5	4.3	6.1	-17.0	8.0	-12.7	4.2
900	8.8	8.3	3.0	5.3	-10.3	4.0	-7.3	1.5
1000 CLEAR 1012	12.6	17.3	.1	.3	-4.0	.1	-3.9	.2
TOTAL TROPOSPHERE			62.8	25.6	-185.9	22.9	-123.1	7.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 24 hour period 0000-2400 LST (approximately 0130 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	7.1	10.0	8.1	3.6	-9.2	5.0	-1.1	1.6
200	10.6	10.7	15.5	4.4	-19.1	4.1	-3.6	.9
300	9.1	7.2	21.3	2.9	-25.3	3.8	-4.0	2.3
400	9.9	7.9	20.0	5.0	-26.3	6.7	-6.3	4.3
500	10.7	7.9	19.0	6.2	-27.5	8.2	-8.5	3.4
600	10.3	5.4	15.4	6.2	-23.9	7.4	-8.4	1.8
700	9.2	4.1	11.4	6.0	-22.2	9.0	-10.7	3.4
800	9.5	6.6	8.6	6.1	-17.9	8.5	-9.3	2.8
900	10.0	9.2	6.0	5.3	-10.7	4.1	-4.6	2.3
1000 CLEAR 1012	13.5	16.5	.3	.3	-4.0	.1	-3.7	.3
TOTAL TROPOSPHERE			125.7	25.6	-186.0	24.7	-60.4	5.2

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 12 hour period 0600-1800 LST (approximately 0730 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	6.2	8.6	0.0	0.0	-9.0	4.5	-9.0	4.5
200	9.0	8.6	0.0	0.0	-18.5	3.2	-18.5	3.2
300	10.9	8.6	0.0	0.0	-26.7	4.3	-26.7	4.3
400	13.0	8.4	0.0	0.0	-28.9	6.5	-28.9	6.5
500	12.6	7.0	0.0	0.0	-28.7	7.5	-28.7	7.5
600	11.5	5.5	0.0	0.0	-23.5	7.3	-23.5	7.3
700	9.2	4.9	0.0	0.0	-20.5	8.5	-20.5	8.5
800	8.3	6.4	0.0	0.0	-16.1	7.5	-16.1	7.5
900	7.5	7.3	0.0	0.0	-10.0	3.8	-10.0	3.8
1000 CLEAR 1012	11.7	18.2	0.0	0.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			0.0	0.0	-185.8	21.4	-185.8	21.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the entire Phase III period, Julian Days 242 through 261, for the 12 hour period 1800-0600 LST (approximately 1930 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

3.2 MEANS OVER THE 5 DAY DISTURBED COMPOSITE CASE, A/B and B SCALES

The following 14 tables, on pages 80 to 84, give vertical profiles of the mean cloud top distribution, SW, LW and total radiative divergence over first the A/B array and then the B array for the 5 day disturbed composite case. The values are given in 100 mb vertical resolution for 7 different averaging periods: (all in local standard time) 00-06, 06-12, 12-18, 18-24, 00-24, 06-18 (daytime), and 18-06 (nighttime). The standard deviations represent the variability in time, from day to day, of the area averages.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)				TOTAL	
			SHORTWAVE		LONGWAVE			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	6.2	4.7	0.0	0.0	-8.8	2.3	-8.8	2.3
200	8.5	4.3	0.0	0.0	-18.4	1.7	-18.4	1.7
300	7.6	2.9	0.0	0.0	-24.9	.5	-24.9	.5
400	11.1	3.2	0.0	0.0	-27.7	1.1	-27.7	1.1
500	12.5	3.5	0.0	0.0	-30.0	2.1	-30.0	2.1
600	12.2	2.2	0.0	0.0	-25.4	3.1	-25.4	3.1
700	10.7	1.3	0.0	0.0	-22.4	4.9	-22.4	4.9
800	9.4	2.8	0.0	0.0	-17.1	5.7	-17.1	5.7
900	10.3	5.7	0.0	0.0	-10.3	3.1	-10.3	3.1
1000 CLEAR 1012	11.5	10.6	0.0	0.0	-4.0	.0	-4.0	.0
TOTAL TROPOSPHERE			0.0	0.0	-189.0	13.0	-189.0	13.0

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 0000-0600 LST (approximately 0130 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)				TOTAL	
			SHORTWAVE		LONGWAVE			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	8.5	5.9	8.8	2.4	-9.9	3.1	-1.2	.7
200	10.7	3.7	15.9	1.6	-19.2	1.4	-3.3	.7
300	8.3	3.3	20.8	1.6	-24.5	1.9	-3.7	.9
400	9.7	4.5	19.4	2.2	-25.6	2.6	-6.2	2.3
500	10.5	3.4	18.5	2.3	-27.4	1.9	-9.0	1.7
600	10.0	1.5	14.8	2.9	-23.7	3.2	-8.9	.6
700	9.4	1.6	10.9	3.1	-22.2	4.9	-11.2	2.0
800	9.4	1.3	8.2	3.0	-17.7	5.1	-9.5	2.3
900	9.1	2.4	5.7	2.7	-10.6	3.4	-4.9	1.1
1000 CLEAR 1012	14.5	16.3	.3	.3	-4.0	.1	-3.7	.1
TOTAL TROPOSPHERE			123.1	12.5	-184.8	12.8	-61.7	3.1

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 0600-1200 LST (approximately 0730 to 1330 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	13.1	8.5	10.2	3.1	-12.2	4.3	-2.0	1.3
200	18.5	7.3	18.6	2.8	-22.2	2.5	-3.6	.6
300	12.9	3.7	20.1	2.2	-25.3	1.7	-5.2	1.3
400	12.6	2.7	17.0	4.0	-24.6	3.8	-7.7	1.4
500	10.2	3.5	15.1	4.7	-23.1	6.5	-8.0	1.8
600	9.0	4.6	11.3	5.0	-18.9	6.3	-7.7	1.4
700	7.3	3.5	7.8	3.7	-16.6	4.4	-8.8	.7
800	6.3	3.3	5.4	2.7	-13.1	2.7	-7.8	.2
900	6.3	4.6	3.5	2.0	-8.3	1.3	-4.8	.8
1000 CLEAR 1012	3.7	2.3	.1	.1	-4.0	.0	-3.9	.1
TOTAL TROPOSPHERE			109.0	18.0	-168.3	18.2	-59.4	1.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 1200-1800 LST (approximately 1330 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	9.6	5.0	0.0	0.0	-10.7	2.7	-10.7	2.7
200	13.6	5.9	0.0	0.0	-20.1	2.2	-20.1	2.2
300	14.5	6.2	0.0	0.0	-27.6	3.1	-27.6	3.1
400	15.6	5.2	0.0	0.0	-28.4	2.7	-28.4	2.7
500	13.6	2.0	0.0	0.0	-26.6	4.8	-26.6	4.8
600	11.0	3.5	0.0	0.0	-20.1	5.8	-20.1	5.8
700	7.9	3.6	0.0	0.0	-16.0	4.8	-16.0	4.8
800	5.3	2.7	0.0	0.0	-12.2	3.4	-12.2	3.4
900	5.0	6.0	0.0	0.0	-8.5	1.8	-8.5	1.8
1000 CLEAR 1012	3.8	5.3	0.0	0.0	-4.0	.0	-4.0	.0
TOTAL TROPOSPHERE			0.0	0.0	-174.2	13.6	-174.2	13.6

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 1800-2400 LST (approximately 1930 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	9.3	6.3	4.7	2.7	-10.4	3.2	-5.7	.6
200	12.9	6.3	8.6	2.6	-20.0	2.3	-11.3	.3
300	10.8	4.9	10.2	1.9	-25.6	2.2	-15.4	1.1
400	12.3	4.3	9.1	3.3	-26.6	3.0	-17.5	1.4
500	11.7	3.2	8.4	3.9	-26.8	4.7	-18.4	1.0
600	10.5	3.2	6.5	4.3	-22.0	5.2	-15.5	1.6
700	8.9	2.8	4.7	3.6	-19.3	5.3	-14.6	1.8
800	7.6	3.1	3.4	3.1	-15.0	4.7	-11.7	2.0
900	7.6	5.0	2.3	2.5	-9.4	2.6	-7.1	.9
1000 CLEAR 1012	8.4	10.5	.1	.2	-4.0	.1	-3.9	.0
TOTAL TROPOSPHERE			58.0	16.4	-179.1	15.8	-121.1	2.5

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 24 hour period 0000-2400 LST (approximately 0130 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	10.8	7.3	9.5	2.7	-11.1	3.7	-1.6	1.1
200	----	-----	-----	-----	-----	-----	-----	-----
	14.6	6.8	17.2	2.6	-20.7	2.5	-3.4	.6
300	----	-----	-----	-----	-----	-----	-----	-----
	10.6	4.1	20.4	1.9	-24.9	1.8	-4.5	1.3
400	----	-----	-----	-----	-----	-----	-----	-----
	11.1	3.8	18.2	3.3	-25.1	3.1	-6.9	1.9
500	----	-----	-----	-----	-----	-----	-----	-----
	10.4	3.3	16.8	3.9	-25.3	5.0	-8.5	1.7
600	----	-----	-----	-----	-----	-----	-----	-----
	9.5	3.3	13.0	4.3	-21.3	5.4	-8.3	1.2
700	----	-----	-----	-----	-----	-----	-----	-----
	8.4	2.8	9.3	3.6	-19.4	5.3	-10.0	1.9
800	----	-----	-----	-----	-----	-----	-----	-----
	7.8	2.9	6.8	3.1	-15.4	4.6	-8.7	1.8
900	----	-----	-----	-----	-----	-----	-----	-----
	7.7	3.7	4.6	2.5	-9.5	2.7	-4.8	.9
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	9.1	12.3	.2	.2	-4.0	.1	-3.8	.1
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			116.0	16.4	-176.6	17.2	-60.5	2.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 12 hour period 0600-1800 LST (approximately 0730 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	7.9	4.9	0.0	0.0	-9.8	2.6	-9.8	2.6
200	----	-----	-----	-----	-----	-----	-----	-----
	11.1	5.6	0.0	0.0	-19.3	2.1	-19.3	2.1
300	----	-----	-----	-----	-----	-----	-----	-----
	11.1	5.9	0.0	0.0	-26.2	2.6	-26.2	2.6
400	----	-----	-----	-----	-----	-----	-----	-----
	13.4	4.7	0.0	0.0	-28.1	2.0	-28.1	2.0
500	----	-----	-----	-----	-----	-----	-----	-----
	13.1	2.7	0.0	0.0	-28.3	3.9	-28.3	3.9
600	----	-----	-----	-----	-----	-----	-----	-----
	11.6	2.9	0.0	0.0	-22.7	5.2	-22.7	5.2
700	----	-----	-----	-----	-----	-----	-----	-----
	9.3	2.9	0.0	0.0	-19.2	5.7	-19.2	5.7
800	----	-----	-----	-----	-----	-----	-----	-----
	7.4	3.4	0.0	0.0	-14.7	5.1	-14.7	5.1
900	----	-----	-----	-----	-----	-----	-----	-----
	7.6	6.2	0.0	0.0	-9.4	2.6	-9.4	2.6
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	7.6	8.9	0.0	0.0	-4.0	.0	-4.0	.0
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			0.0	0.0	-181.6	14.7	-181.6	14.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 12 hour period 1800-0600 LST (approximately 1930 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	10.2	9.3	0.0	0.0	-10.8	4.6	-10.8	4.6
200	----	-----	-----	-----	-----	-----	-----	-----
	12.7	8.9	0.0	0.0	-20.0	3.5	-20.0	3.5
300	----	-----	-----	-----	-----	-----	-----	-----
	9.3	5.0	0.0	0.0	-24.3	.8	-24.3	.8
400	----	-----	-----	-----	-----	-----	-----	-----
	10.9	5.5	0.0	0.0	-25.7	3.6	-25.7	3.6
500	----	-----	-----	-----	-----	-----	-----	-----
	11.0	3.6	0.0	0.0	-26.7	5.1	-26.7	5.1
600	----	-----	-----	-----	-----	-----	-----	-----
	10.6	2.2	0.0	0.0	-22.7	6.8	-22.7	6.8
700	----	-----	-----	-----	-----	-----	-----	-----
	9.6	3.1	0.0	0.0	-20.4	8.5	-20.4	8.5
800	----	-----	-----	-----	-----	-----	-----	-----
	9.3	6.8	0.0	0.0	-15.8	7.8	-15.8	7.8
900	----	-----	-----	-----	-----	-----	-----	-----
	8.0	7.6	0.0	0.0	-9.2	3.2	-9.2	3.2
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	8.2	11.1	0.0	0.0	-4.0	.1	-4.0	.1
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			0.0	0.0	-179.5	23.8	-179.5	23.8

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 0000-0600 LST (approximately 0130 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	11.7	9.5	10.0	4.0	-11.5	5.2	-1.4	1.3
200	15.0	4.4	18.0	1.5	-20.9	2.0	-2.9	1.2
300	10.9	4.3	20.0	2.7	-24.7	3.4	-4.7	1.2
400	10.8	4.8	17.5	2.7	-24.7	3.4	-7.2	2.4
500	10.7	3.6	16.0	2.4	-25.1	1.7	-9.1	1.6
600	9.6	1.8	12.3	2.5	-21.2	3.1	-8.8	1.0
700	8.6	1.8	8.4	3.0	-18.9	5.6	-10.5	2.7
800	8.0	3.5	5.8	3.4	-14.8	6.1	-9.0	2.7
900	5.8	4.5	3.6	3.2	-9.0	3.7	-5.4	1.0
1000 CLEAR 1012	8.8	16.4	.2	.3	-4.0	.1	-3.8	.2
TOTAL TROPOSPHERE			111.8	13.5	-174.7	15.4	-63.0	3.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 0600-1200 LST (approximately 0730 to 1330 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	20.8	13.1	12.8	4.4	-15.8	6.5	-3.0	2.4
200	26.4	10.4	21.7	4.1	-25.0	4.4	-3.3	1.2
300	15.3	3.6	18.2	4.1	-24.0	4.6	-5.8	1.6
400	11.8	5.3	13.2	5.9	-20.7	8.3	-7.4	2.9
500	8.8	6.0	10.7	5.8	-18.1	8.4	-7.5	2.8
600	6.5	5.2	7.1	4.6	-13.9	5.4	-6.9	.9
700	4.9	3.8	4.5	3.5	-12.4	3.8	-7.9	.6
800	3.6	3.9	2.6	2.6	-10.0	2.2	-7.4	.6
900	1.7	1.9	1.1	1.2	-6.7	1.1	-5.6	1.3
1000 CLEAR 1012	.2	.1	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			91.9	18.3	-150.7	21.3	-58.8	5.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 1200-1800 LST (approximately 1330 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	11.9	7.7	0.0	0.0	-11.5	3.6	-11.5	3.6
200	19.6	7.3	0.0	0.0	-22.6	2.8	-22.6	2.8
300	18.3	5.8	0.0	0.0	-28.7	3.6	-28.7	3.6
400	17.6	2.7	0.0	0.0	-27.8	4.4	-27.8	4.4
500	13.0	3.7	0.0	0.0	-23.2	6.3	-23.2	6.3
600	8.6	3.0	0.0	0.0	-15.6	3.9	-15.6	3.9
700	5.0	2.5	0.0	0.0	-12.2	2.9	-12.2	2.9
800	2.6	1.8	0.0	0.0	-10.0	1.9	-10.0	1.9
900	1.3	1.9	0.0	0.0	-7.9	1.2	-7.9	1.2
1000 CLEAR 1012	2.2	4.1	0.0	0.0	-4.1	.0	-4.1	.0
TOTAL TROPOSPHERE			0.0	0.0	-163.7	14.4	-163.7	14.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 6 hour period 1800-2400 LST (approximately 1930 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	13.7	10.2	5.7	4.2	-12.4	5.1	-6.7	.2
200	18.4	9.1	9.9	3.5	-22.1	3.6	-12.2	.5
300	13.5	5.7	9.6	3.4	-25.4	3.7	-15.9	1.2
400	12.8	5.2	7.7	4.9	-24.7	5.6	-17.0	1.6
500	10.9	4.3	6.7	5.0	-23.3	6.3	-16.6	.9
600	8.8	3.4	4.8	4.5	-18.4	5.9	-13.5	1.0
700	7.0	3.4	3.2	3.7	-16.0	6.4	-12.8	2.3
800	5.9	5.0	2.1	3.3	-12.7	5.5	-10.6	2.3
900	4.2	5.1	1.2	2.7	-8.2	2.6	-7.0	.5
1000 CLEAR 1012	4.8	10.0	.0	.2	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			50.9	18.4	-167.2	20.9	-116.2	2.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 24 hour period 0000-2400 LST (approximately 0130 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	16.3	11.8	11.4	4.2	-13.6	6.0	-2.2	2.0
200	20.7	9.6	19.8	3.5	-23.0	3.9	-3.1	1.2
300	13.1	4.4	19.1	3.4	-24.4	3.8	-5.3	1.4
400	11.3	4.8	15.4	4.9	-22.7	6.4	-7.3	2.5
500	9.8	4.7	13.3	5.0	-21.6	6.8	-8.3	2.3
600	8.1	4.0	9.7	4.5	-17.5	5.7	-7.9	1.4
700	6.7	3.4	6.4	3.7	-15.7	5.7	-9.2	2.3
800	5.8	4.2	4.2	3.3	-12.4	5.0	-8.2	2.1
900	3.7	3.9	2.3	2.7	-7.8	2.8	-5.5	1.1
1000 CLEAR 1012	4.5	11.8	.1	.2	-4.0	.1	-3.9	.1
TOTAL TROPOSPHERE			101.8	18.4	-162.7	21.6	-60.9	5.2

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 12 hour period 0600-1800 LST (approximately 0730 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	11.0	8.1	0.0	0.0	-11.1	3.9	-11.1	3.9
200	16.1	8.5	0.0	0.0	-21.3	3.3	-21.3	3.3
300	13.8	7.0	0.0	0.0	-26.5	3.4	-26.5	3.4
400	14.2	5.4	0.0	0.0	-26.8	4.0	-26.8	4.0
500	12.0	3.6	0.0	0.0	-24.9	5.7	-24.9	5.7
600	9.6	2.7	0.0	0.0	-19.2	6.4	-19.2	6.4
700	7.3	3.6	0.0	0.0	-16.3	7.4	-16.3	7.4
800	6.0	5.9	0.0	0.0	-12.9	6.2	-12.9	6.2
900	4.7	6.3	0.0	0.0	-8.6	2.4	-8.6	2.4
1000 CLEAR 1012	5.2	8.5	0.0	0.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			0.0	0.0	-171.6	20.4	-171.6	20.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the disturbed days of Phase III, Julian Day numbers 245, 248, 256, 257, 259, for the 12 hour period 1800-0600 LST (approximately 1930 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

3.3 MEANS OVER THE 5 DAY SUPPRESSED COMPOSITE CASE, A/B and B SCALES

The following 14 tables, on pages 85 to 89, give vertical profiles of the mean cloud top distribution, SW, LW and total radiative divergence over first the A/B array and then the B array for the 5 day suppressed composite case. The values are given in 100 mb vertical resolution for 7 different averaging periods: (all in local standard time) 00-06, 06-12, 12-18, 18-24, 00-24, 06-18 (daytime), and 18-06 (nighttime). The standard deviations represent the variability in time, from day to day, of the area averages.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	1.3	1.2	0.0	0.0	-6.4	.6	-6.4	.6
200	3.0	2.1	0.0	0.0	-16.3	.9	-16.3	.9
300	3.8	2.2	0.0	0.0	-24.6	1.1	-24.6	1.1
400	9.0	6.2	0.0	0.0	-29.0	4.2	-29.0	4.2
500	18.3	10.4	0.0	0.0	-37.6	6.4	-37.6	6.4
600	14.7	6.9	0.0	0.0	-29.0	2.8	-29.0	2.8
700	11.0	3.9	0.0	0.0	-24.1	6.7	-24.1	6.7
800	10.0	3.8	0.0	0.0	-18.9	8.3	-18.9	8.3
900	10.7	6.0	0.0	0.0	-11.5	4.2	-11.5	4.2
1000 CLEAR 1012	18.1	20.7	0.0	0.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			0.0	0.0	-201.4	8.3	-201.4	8.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 0000-0600 LST (approximately 0130 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	1.0	1.2	5.9	.4	-6.3	.5	-.4	.1
200	2.8	1.7	12.2	1.0	-16.2	.8	-4.0	.3
300	3.0	1.3	22.1	.3	-24.1	.4	-2.0	.5
400	5.1	1.8	23.2	.8	-26.5	.9	-3.3	.9
500	11.2	4.9	23.6	1.6	-33.1	3.9	-9.5	2.5
600	14.8	5.8	21.8	2.3	-32.0	2.7	-10.3	.7
700	13.7	4.2	16.5	1.6	-28.8	3.6	-12.3	2.5
800	12.2	4.0	12.2	2.2	-21.9	4.5	-9.6	2.7
900	13.8	1.5	8.9	2.1	-12.4	2.9	-3.5	1.2
1000 CLEAR 1012	22.4	15.0	.5	.3	-4.0	.1	-3.5	.2
TOTAL TROPOSPHERE			146.9	5.1	-205.3	4.7	-58.4	2.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 0600-1200 LST (approximately 0730 to 1330 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	----	----	----	----	----	----	----
	1.2	1.8	6.0	.6	-6.4	.8	-.4	.3
200	----	----	----	----	----	----	----	----
	4.4	3.8	12.7	1.7	-16.8	1.6	-4.1	.1
300	----	----	----	----	----	----	----	----
	5.7	2.7	22.5	.6	-25.4	1.1	-2.9	.8
400	----	----	----	----	----	----	----	----
	7.0	3.7	22.8	1.1	-27.2	1.6	-4.4	1.9
500	----	----	----	----	----	----	----	----
	9.9	4.6	22.5	1.4	-30.6	2.7	-8.1	2.1
600	----	----	----	----	----	----	----	----
	11.4	5.3	19.6	2.8	-28.7	3.5	-9.1	.8
700	----	----	----	----	----	----	----	----
	11.6	3.0	15.5	2.7	-27.9	4.8	-12.4	2.6
800	----	----	----	----	----	----	----	----
	10.6	2.8	11.7	3.1	-22.2	5.5	-10.4	2.7
900	----	----	----	----	----	----	----	----
	16.6	5.4	9.1	3.2	-13.3	3.2	-4.1	1.2
1000	----	----	----	----	----	----	----	----
CLEAR	21.6	13.8	.4	.3	-4.0	.1	-3.5	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			142.8	10.1	-202.3	9.2	-59.5	2.1

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 1200-1800 LST (approximately 1330 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	1.9	2.5	0.0	0.0	-6.8	1.3	-6.8	1.3
200	----	----	----	----	----	----	----	----
	5.1	6.2	0.0	0.0	-17.1	2.4	-17.1	2.4
300	----	----	----	----	----	----	----	----
	6.1	5.3	0.0	0.0	-25.5	2.0	-25.5	2.0
400	----	----	----	----	----	----	----	----
	8.6	5.9	0.0	0.0	-27.8	2.6	-27.8	2.6
500	----	----	----	----	----	----	----	----
	12.8	8.3	0.0	0.0	-32.5	6.3	-32.5	6.3
600	----	----	----	----	----	----	----	----
	12.4	7.0	0.0	0.0	-27.8	4.0	-27.8	4.0
700	----	----	----	----	----	----	----	----
	10.5	3.7	0.0	0.0	-25.2	7.5	-25.2	7.5
800	----	----	----	----	----	----	----	----
	8.6	4.0	0.0	0.0	-19.9	8.7	-19.9	8.7
900	----	----	----	----	----	----	----	----
	11.3	5.5	0.0	0.0	-12.3	4.6	-12.3	4.6
1000	----	----	----	----	----	----	----	----
CLEAR	22.6	27.2	0.0	0.0	-4.0	.1	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			0.0	0.0	-199.0	14.5	-199.0	14.5

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 1800-2400 LST (approximately 1930 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	1.4	1.7	3.0	.5	-6.5	.8	-3.5	.5
200	----	----	----	----	----	----	----	----
	3.8	3.7	6.2	1.3	-16.6	1.5	-10.4	.7
300	----	----	----	----	----	----	----	----
	4.6	3.3	11.1	.5	-24.9	1.3	-13.7	.9
400	----	----	----	----	----	----	----	----
	7.4	4.6	11.5	.9	-27.6	2.6	-16.1	1.2
500	----	----	----	----	----	----	----	----
	13.1	7.6	11.5	1.5	-33.4	5.4	-21.9	2.9
600	----	----	----	----	----	----	----	----
	13.3	6.0	10.3	2.7	-29.4	3.4	-19.0	.8
700	----	----	----	----	----	----	----	----
	11.7	3.7	8.0	2.1	-26.5	5.7	-18.5	3.8
800	----	----	----	----	----	----	----	----
	10.4	3.6	6.0	2.6	-20.7	6.6	-14.7	4.2
900	----	----	----	----	----	----	----	----
	13.1	5.1	4.5	2.5	-12.4	3.5	-7.9	1.5
1000	----	----	----	----	----	----	----	----
CLEAR	21.2	18.4	.2	.2	-4.0	.1	-3.8	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			72.4	7.8	-202.0	9.3	-129.6	4.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 24 hour period 0000-2400 LST (approximately 0130 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	1.1	1.5	5.9	.5	-6.3	.6	-.4	.2
200	----	----	----	----	----	----	----	----
	3.6	2.9	12.4	1.3	-16.5	1.2	-4.1	.2
300	----	----	----	----	----	----	----	----
	4.3	2.5	22.3	.5	-24.8	1.0	-2.5	.8
400	----	----	----	----	----	----	----	----
	6.0	2.9	23.0	.9	-26.9	1.3	-3.8	1.5
500	----	----	----	----	----	----	----	----
	10.5	4.6	23.1	1.5	-31.8	3.4	-8.8	2.3
600	----	----	----	----	----	----	----	----
	13.1	5.5	20.7	2.7	-30.4	3.4	-9.7	.9
700	----	----	----	----	----	----	----	----
	12.7	3.6	16.0	2.1	-28.3	4.1	-12.3	2.4
800	----	----	----	----	----	----	----	----
	11.4	3.4	12.0	2.6	-22.0	4.7	-10.0	2.5
900	----	----	----	----	----	----	----	----
	15.2	4.0	9.0	2.5	-12.8	2.9	-3.8	1.2
1000	----	----	----	----	----	----	----	----
CLEAR	22.0	13.6	.5	.2	-4.0	.1	-3.5	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			144.9	7.8	-203.8	7.1	-59.0	2.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 12 hour period 0600-1800 LST (approximately 0730 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	1.6	1.9	0.0	0.0	-6.6	1.0	-6.6	1.0
200	----	----	----	----	----	----	----	----
	4.1	4.5	0.0	0.0	-16.7	1.8	-16.7	1.8
300	----	----	----	----	----	----	----	----
	5.0	4.0	0.0	0.0	-25.0	1.6	-25.0	1.6
400	----	----	----	----	----	----	----	----
	8.8	5.7	0.0	0.0	-28.4	3.3	-28.4	3.3
500	----	----	----	----	----	----	----	----
	15.6	9.3	0.0	0.0	-35.0	6.6	-35.0	6.6
600	----	----	----	----	----	----	----	----
	13.5	6.7	0.0	0.0	-28.4	3.3	-28.4	3.3
700	----	----	----	----	----	----	----	----
	10.7	3.6	0.0	0.0	-24.7	6.7	-24.7	6.7
800	----	----	----	----	----	----	----	----
	9.3	3.7	0.0	0.0	-19.4	8.0	-19.4	8.0
900	----	----	----	----	----	----	----	----
	11.0	5.4	0.0	0.0	-11.9	4.2	-11.9	4.2
1000	----	----	----	----	----	----	----	----
CLEAR	20.3	22.9	0.0	0.0	-4.0	.1	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			0.0	0.0	-200.2	11.2	-200.2	11.2

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 12 hour period 1800-0600 LST (approximately 1930 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the A/B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.9	1.6	0.0	0.0	-6.2	.7	-6.2	.7
200	----	----	----	----	----	----	----	----
	3.5	4.6	0.0	0.0	-16.5	1.9	-16.5	1.9
300	----	----	----	----	----	----	----	----
	4.9	4.7	0.0	0.0	-25.2	2.0	-25.2	2.0
400	----	----	----	----	----	----	----	----
	8.7	6.4	0.0	0.0	-28.6	3.3	-28.6	3.3
500	----	----	----	----	----	----	----	----
	16.1	10.9	0.0	0.0	-35.7	7.4	-35.7	7.4
600	----	----	----	----	----	----	----	----
	13.2	7.9	0.0	0.0	-28.3	3.1	-28.3	3.1
700	----	----	----	----	----	----	----	----
	9.7	5.2	0.0	0.0	-24.5	8.0	-24.5	8.0
800	----	----	----	----	----	----	----	----
	9.7	5.7	0.0	0.0	-20.2	9.7	-20.2	9.7
900	----	----	----	----	----	----	----	----
	11.3	7.5	0.0	0.0	-12.6	6.1	-12.6	6.1
1000	----	----	----	----	----	----	----	----
CLEAR	22.2	27.6	0.0	0.0	-4.1	.2	-4.1	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			0.0	0.0	-201.7	12.7	-201.7	12.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 0000-0600 LST (approximately 0130 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.9	1.9	5.8	.6	-6.2	.8	-.4	.2
200	2.5	4.5	12.0	2.1	-16.0	1.9	-4.1	.1
300	2.4	3.7	22.0	.5	-23.9	1.4	-1.9	1.1
400	3.5	3.8	23.2	1.2	-25.7	1.4	-2.4	1.9
500	10.4	7.4	24.0	1.9	-32.6	4.9	-8.6	3.6
600	13.8	7.8	22.1	3.4	-32.0	4.4	-9.9	1.2
700	12.5	4.6	16.8	3.6	-29.6	6.5	-12.7	3.3
800	12.9	5.0	12.9	4.7	-23.5	7.8	-10.6	3.6
900	15.3	5.0	9.6	4.3	-13.5	4.8	-3.9	1.7
1000 CLEAR 1012	25.7	23.0	.5	.4	-4.0	.2	-3.5	.3
TOTAL TROPOSPHERE			148.9	12.8	-206.9	11.4	-58.0	3.1

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 0600-1200 LST (approximately 0730 to 1330 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.3	.6	5.7	.4	-6.0	.3	-.3	.1
200	2.2	3.0	11.9	1.6	-15.9	1.3	-4.0	.3
300	3.2	3.5	22.3	.9	-24.4	1.8	-2.2	.9
400	6.5	7.9	23.3	.7	-27.7	4.5	-4.4	4.4
500	11.1	12.3	23.9	1.9	-32.8	7.2	-8.9	5.5
600	10.7	7.4	20.3	4.5	-29.2	6.5	-8.9	1.9
700	11.7	5.2	16.6	5.7	-29.2	9.3	-12.6	4.2
800	12.2	5.6	13.4	5.5	-24.0	8.7	-10.6	3.9
900	21.8	11.5	10.6	5.1	-14.0	4.5	-3.4	2.2
1000 CLEAR 1012	20.4	16.3	.5	.3	-3.9	.1	-3.5	.4
TOTAL TROPOSPHERE			148.5	15.7	-207.1	11.0	-58.6	5.8

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 1200-1800 LST (approximately 1330 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.9	1.1	0.0	0.0	-6.2	.5	-6.2	.5
200	4.9	8.1	0.0	0.0	-17.1	3.4	-17.1	3.4
300	6.5	9.3	0.0	0.0	-25.9	4.4	-25.9	4.4
400	9.6	11.0	0.0	0.0	-29.0	5.2	-29.0	5.2
500	12.8	12.1	0.0	0.0	-32.2	9.2	-32.2	9.2
600	12.7	10.9	0.0	0.0	-27.8	8.8	-27.8	8.8
700	9.1	6.8	0.0	0.0	-24.5	11.2	-24.5	11.2
800	7.4	6.6	0.0	0.0	-20.0	11.6	-20.0	11.6
900	11.8	12.3	0.0	0.0	-13.2	6.7	-13.2	6.7
1000 CLEAR 1012	24.5	37.1	0.0	0.0	-4.0	.3	-4.0	.3
TOTAL TROPOSPHERE			0.0	0.0	-200.0	19.0	-200.0	19.0

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 6 hour period 1800-2400 LST (approximately 1930 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.8	1.3	2.9	.5	-6.1	.6	-3.3	.3
200	3.3	5.1	6.0	1.8	-16.4	2.1	-10.4	1.2
300	4.3	5.6	11.1	.7	-24.9	2.6	-13.8	2.0
400	7.0	7.5	11.6	.9	-27.8	3.8	-16.1	3.2
500	12.6	10.2	12.0	1.8	-33.3	6.9	-21.3	3.5
600	12.6	8.0	10.6	3.9	-29.3	5.8	-18.7	3.0
700	10.7	5.3	8.4	4.5	-27.0	8.6	-18.6	5.8
800	10.5	5.7	6.6	4.8	-21.9	9.0	-15.3	5.8
900	15.0	9.8	5.0	4.5	-13.3	5.1	-8.3	2.5
1000 CLEAR 1012	23.2	24.9	.2	.3	-4.0	.2	-3.8	.2
TOTAL TROPOSPHERE			74.4	13.5	-203.9	13.2	-129.6	6.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 24 hour period 0000-2400 LST (approximately 0130 to 0130 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.6	1.4	5.7	.5	-6.1	.6	-.3	.2
200	2.3	3.6	12.0	1.8	-16.0	1.6	-4.0	.2
300	2.8	3.4	22.1	.7	-24.2	1.5	-2.0	.9
400	5.0	6.1	23.3	.9	-26.7	3.3	-3.4	3.4
500	10.7	9.6	23.9	1.8	-32.7	5.8	-8.7	4.4
600	12.3	7.3	21.2	3.9	-30.6	5.4	-9.4	1.6
700	12.1	4.6	16.7	4.5	-29.4	7.6	-12.7	3.6
800	12.6	5.0	13.1	4.8	-23.8	7.8	-10.6	3.5
900	18.6	9.0	10.1	4.5	-13.7	4.4	-3.6	1.9
1000 CLEAR 1012	23.1	19.0	.5	.3	-4.0	.1	-3.5	.3
TOTAL TROPOSPHERE			148.7	13.5	-207.0	10.5	-58.3	4.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 12 hour period 0600-1800 LST (approximately 0730 to 1930 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.9	1.3	0.0	0.0	-6.2	.6	-6.2	.6
200	4.2	6.2	0.0	0.0	-16.8	2.6	-16.8	2.6
300	5.7	7.0	0.0	0.0	-25.6	3.2	-25.6	3.2
400	9.1	8.5	0.0	0.0	-28.8	4.1	-28.8	4.1
500	14.4	11.0	0.0	0.0	-33.9	8.1	-33.9	8.1
600	13.0	9.0	0.0	0.0	-28.0	6.2	-28.0	6.2
700	9.4	5.7	0.0	0.0	-24.5	9.2	-24.5	9.2
800	8.5	5.9	0.0	0.0	-20.1	10.1	-20.1	10.1
900	11.5	9.6	0.0	0.0	-12.9	6.0	-12.9	6.0
1000 CLEAR 1012	23.3	30.9	0.0	0.0	-4.1	.2	-4.1	.2
TOTAL TROPOSPHERE			0.0	0.0	-200.9	15.3	-200.9	15.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE B scale array. Mean values are computed over the suppressed days of Phase III, Julian Day numbers 243, 244, 250, 251, 258, for the 12 hour period 1800-0600 LST (approximately 1930 to 0730 GMT). Standard deviations represent the variability in time, from day to day, of the B scale area average.

3.4 DAILY 24 HOUR MEANS OVER THE GATE A/B ARRAY

The following 20 tables, on pages 90 to 96, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the GATE A/B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	6.2	9.6	3.1	.5	-9.0	5.2	-5.9	4.8
200	9.0	8.4	6.8	2.3	-18.6	3.4	-11.8	2.7
300	13.9	9.9	11.9	1.6	-28.3	5.3	-16.4	4.4
400	16.9	9.4	11.6	2.2	-31.5	6.9	-19.8	6.2
500	14.2	6.8	10.8	3.8	-28.7	7.6	-17.9	5.3
600	11.6	6.6	8.8	4.6	-22.0	9.3	-13.2	5.9
700	8.8	6.5	5.9	4.1	-17.9	9.0	-12.0	5.8
800	8.4	8.5	4.2	3.8	-14.1	6.9	-9.8	3.8
900	5.9	7.5	2.6	3.0	-8.7	1.9	-6.1	1.8
1000 CLEAR 1012	5.1	8.4	.1	.2	-4.0	.1	-3.9	.2
TOTAL TROPOSPHERE			65.8	14.4	-182.7	21.3	-116.8	9.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for August 3, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.2	.5	2.8	.2	-5.9	.2	-3.1	.1
200	1.4	3.0	5.8	1.1	-15.6	1.2	-9.8	.6
300	2.4	3.5	11.0	.5	-24.1	1.7	-13.1	1.4
400	6.7	6.2	11.7	.8	-28.1	3.9	-16.4	3.7
500	10.0	5.2	12.0	1.6	-32.4	3.6	-20.4	3.0
600	11.1	4.0	11.0	1.8	-30.3	3.6	-19.3	3.0
700	12.5	5.8	9.2	1.9	-30.1	4.9	-20.9	3.8
800	11.9	6.0	7.2	2.4	-24.0	5.0	-16.8	3.4
900	13.6	6.1	5.1	2.6	-13.6	3.0	-8.5	2.0
1000 CLEAR 1012	30.1	16.6	.2	.2	-4.0	.1	-3.8	.2
TOTAL TROPOSPHERE			76.1	6.6	-208.1	6.8	-132.0	4.0

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for August 3, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to other.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	.2	.7	2.8	.2	-5.9	.3	-3.1	.2
200								
	1.5	2.6	5.8	.9	-15.6	1.1	-9.8	.7
300								
	2.8	3.7	11.2	.8	-24.2	1.9	-13.0	1.3
400								
	3.9	4.2	11.6	.6	-26.0	2.2	-14.5	2.1
500								
	5.5	4.5	11.0	1.2	-29.2	2.9	-18.2	3.0
600								
	7.2	4.2	9.6	1.6	-29.3	2.2	-19.7	1.7
700								
	10.2	5.7	8.3	1.9	-32.4	3.6	-24.1	2.6
800								
	13.1	6.1	7.2	2.3	-28.1	5.2	-21.0	3.5
900								
	18.7	6.1	5.8	2.7	-15.6	4.4	-9.8	2.5
1000								
CLEAR	36.8	23.1	.3	.2	-4.0	.1	-3.6	.2
1012								
TOTAL TROPOSPHERE			73.7	7.2	-210.4	7.1	-136.7	4.2

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	13.7	9.3	6.4	3.1	-12.7	5.1	-6.3	3.4
200								
	17.9	7.8	9.9	2.6	-21.6	3.4	-11.8	2.9
300								
	14.8	7.9	9.6	2.6	-26.5	5.3	-16.9	4.5
400								
	16.7	10.7	7.3	3.5	-26.8	8.8	-19.5	7.5
500								
	11.1	7.8	6.2	4.2	-23.3	8.8	-17.1	6.8
600								
	7.2	4.0	3.5	2.9	-16.1	5.0	-12.6	3.7
700								
	5.1	3.1	2.1	2.4	-14.3	5.4	-12.1	3.6
800								
	4.5	4.1	1.4	2.0	-12.1	4.5	-10.7	2.9
900								
	4.0	4.8	.9	1.5	-8.3	1.8	-7.4	1.3
1000								
CLEAR	5.1	9.5	.0	.1	-4.0	.1	-4.0	.2
1012								
TOTAL TROPOSPHERE			47.3	10.8	-165.7	13.7	-118.4	10.2

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	2.0	4.0	3.1	.5	-6.8	2.0	-3.7	1.8
200								
	3.3	5.2	6.3	1.3	-16.5	2.1	-10.2	1.5
300								
	5.4	5.4	11.7	.9	-25.3	2.4	-13.6	2.1
400								
	22.9	8.6	12.8	1.5	-38.3	6.5	-25.5	5.9
500								
	18.8	7.5	13.0	2.4	-35.6	6.1	-22.6	5.2
600								
	12.2	5.0	8.3	3.1	-23.4	5.3	-15.0	3.5
700								
	10.5	7.7	4.9	3.3	-19.9	7.4	-15.0	4.6
800								
	8.0	7.2	3.0	3.1	-15.2	6.2	-12.2	3.9
900								
	9.6	11.0	1.8	2.5	-9.9	2.7	-8.1	2.2
1000								
CLEAR	7.3	8.9	.0	.1	-4.0	.1	-4.0	.2
1012								
TOTAL TROPOSPHERE			65.0	9.5	-194.8	11.7	-129.8	6.6

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 3 , 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	1.3	3.2	2.9	.4	-6.4	1.5	-3.5	1.2
200	3.4	5.6	6.2	1.5	-16.5	2.2	-10.3	1.0
300	5.2	5.2	11.4	.7	-25.4	2.7	-14.0	2.2
400	9.7	7.4	11.9	1.4	-29.0	4.6	-17.2	4.1
500	17.8	8.5	12.2	2.3	-37.5	7.4	-25.3	5.9
600	19.0	6.4	11.4	3.2	-31.2	5.8	-19.8	3.9
700	14.1	4.7	7.8	3.1	-23.7	7.5	-15.9	5.5
800	12.1	6.1	5.2	2.9	-16.6	6.1	-11.4	4.0
900	10.9	8.0	3.2	2.3	-9.2	1.8	-6.0	1.6
1000								
CLEAR	6.4	6.8	.1	.1	-3.9	.1	-3.8	.2
1012								
TOTAL TROPOSPHERE			72.3	10.0	-199.6	11.6	-127.3	5.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	3.7	7.2	3.4	1.6	-7.6	3.8	-4.2	3.0
200	9.2	10.8	7.4	3.3	-18.8	4.6	-11.4	2.8
300	8.6	6.4	11.0	1.9	-26.1	3.6	-15.1	2.9
400	10.7	6.6	10.8	2.8	-28.1	5.7	-17.3	4.6
500	15.1	8.0	10.7	3.8	-31.9	7.9	-21.2	5.8
600	14.6	6.5	8.8	3.9	-26.5	7.6	-17.8	5.4
700	12.0	5.9	6.6	3.8	-21.9	7.6	-15.3	5.3
800	7.9	4.6	4.4	3.1	-15.3	5.6	-10.9	3.7
900	9.4	8.2	3.2	3.0	-10.0	3.0	-6.8	1.8
1000								
CLEAR	8.9	10.8	.1	.2	-4.0	.1	-3.9	.2
1012								
TOTAL TROPOSPHERE			66.2	14.1	-190.1	18.3	-123.9	10.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	2.6	4.2	3.4	.8	-7.0	1.9	-3.6	1.4
200	12.5	11.7	8.7	3.4	-20.2	4.8	-11.5	2.2
300	16.6	10.1	11.8	1.4	-30.6	5.1	-18.8	4.9
400	16.1	7.0	9.9	3.3	-30.4	6.2	-20.5	4.9
500	15.2	6.2	8.9	4.4	-29.1	9.2	-20.3	6.1
600	14.5	7.4	7.2	4.6	-22.9	8.6	-15.7	4.9
700	9.2	5.6	4.3	3.5	-16.9	6.0	-12.6	3.8
800	6.6	5.8	2.3	2.5	-12.3	4.3	-10.0	3.1
900	4.0	4.8	1.2	1.7	-8.6	1.2	-7.4	1.3
1000								
CLEAR	2.8	4.8	.0	.1	-4.0	.1	-4.0	.1
1012								
TOTAL TROPOSPHERE			57.6	14.5	-182.0	18.1	-124.3	7.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	11.3	14.2	5.1	3.5	-11.5	7.4	-6.3	5.5
200	12.5	11.2	9.0	3.9	-19.6	4.3	-10.6	2.4
300	10.0	6.1	9.7	2.7	-24.7	3.8	-15.0	3.2
400	10.8	5.5	8.3	4.1	-25.6	7.3	-17.2	5.2
500	8.2	3.6	7.5	4.4	-24.0	7.5	-16.5	4.7
600	8.7	4.2	6.3	4.3	-21.8	7.6	-15.6	4.2
700	11.2	6.2	5.5	4.3	-22.0	8.4	-16.5	5.1
800	8.2	5.2	3.9	3.6	-16.3	6.0	-12.3	3.9
900	8.1	7.1	2.5	2.7	-9.4	3.2	-7.0	2.0
1000 CLEAR 1012	10.9	11.0	.1	.1	-4.0	.1	-3.9	.1
TOTAL TROPOSPHERE			57.8	18.3	-178.8	27.8	-121.0	14.0

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 4 , 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100	11.5	13.9	5.9	5.0	-11.5	7.3	-5.6	3.6
200	14.2	11.5	9.4	4.7	-20.5	4.9	-11.0	3.1
300	11.0	6.6	8.9	3.9	-24.9	5.0	-15.9	3.2
400	11.4	5.2	7.8	4.8	-25.4	6.1	-17.6	3.9
500	11.4	5.5	7.3	5.1	-25.9	8.3	-18.6	5.2
600	11.1	6.0	6.3	5.0	-22.0	8.5	-15.7	5.3
700	10.1	6.2	4.6	4.3	-19.0	7.9	-14.3	4.9
800	7.6	5.6	3.2	3.4	-13.8	5.4	-10.6	3.1
900	6.9	8.5	2.1	2.8	-8.5	2.6	-6.3	1.6
1000 CLEAR 1012	4.7	7.6	.1	.1	-4.0	.1	-3.9	.2
TOTAL TROPOSPHERE			55.5	19.4	-175.3	25.9	-119.7	12.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 5 , 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	2.7	5.4	3.3	.9	-7.1	2.7	-3.8	2.0
200	5.2	6.1	7.1	2.4	-17.2	2.4	-10.1	1.2
300	6.8	5.8	11.3	1.1	-25.7	2.6	-14.4	2.2
400	10.5	7.0	11.1	2.2	-29.0	4.8	-17.9	4.2
500	14.3	6.7	10.8	3.2	-33.2	6.7	-22.4	4.8
600	15.9	5.2	9.1	3.6	-29.1	5.9	-20.0	3.8
700	14.5	4.7	6.5	3.4	-24.7	6.7	-18.2	4.2
800	13.7	6.0	4.6	3.2	-17.3	5.9	-12.7	3.5
900	8.5	6.1	2.5	2.5	-8.8	1.9	-6.3	1.5
1000 CLEAR 1012	7.9	10.9	.1	.1	-3.9	.1	-3.8	.2
TOTAL TROPOSPHERE			66.5	12.7	-196.0	14.5	-129.5	6.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	1.0	2.7	3.1	.7	-3.3	1.2	-3.2	.7
200	----	----	----	----	----	----	----	----
	5.0	8.0	6.8	2.7	-17.0	3.2	-10.3	1.1
300	----	----	----	----	----	----	----	----
	8.1	9.0	11.4	1.5	-26.9	4.3	-15.5	4.0
400	----	----	----	----	----	----	----	----
	10.3	7.0	11.1	2.5	-28.9	4.3	-17.8	4.0
500	----	----	----	----	----	----	----	----
	10.5	4.9	10.7	3.4	-30.4	5.7	-19.7	3.5
600	----	----	----	----	----	----	----	----
	11.9	4.6	9.1	3.7	-27.5	6.2	-18.4	3.2
700	----	----	----	----	----	----	----	----
	9.9	4.6	6.8	3.4	-25.3	7.1	-18.5	4.1
800	----	----	----	----	----	----	----	----
	10.1	5.6	5.2	3.2	-20.5	6.5	-15.3	3.7
900	----	----	----	----	----	----	----	----
	9.9	6.9	3.8	2.9	-12.4	3.5	-8.6	1.7
1000	----	----	----	----	----	----	----	----
CLEAR	23.3	17.4	.2	.2	-4.0	.1	-3.8	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			68.2	13.5	-199.2	16.0	-131.0	5.6

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 10, 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	----	----	----	----	----	----	----
	6.4	9.9	4.1	3.7	-9.2	5.5	-5.0	2.7
200	----	----	----	----	----	----	----	----
	6.2	7.1	6.3	1.8	-17.1	2.9	-10.8	2.0
300	----	----	----	----	----	----	----	----
	6.3	6.1	10.3	2.1	-24.3	3.0	-13.9	2.3
400	----	----	----	----	----	----	----	----
	7.0	5.7	10.5	2.4	-25.5	3.4	-15.1	2.9
500	----	----	----	----	----	----	----	----
	6.4	4.4	10.0	2.5	-26.2	3.9	-16.2	2.5
600	----	----	----	----	----	----	----	----
	10.2	5.8	8.9	2.6	-26.9	5.9	-17.9	3.9
700	----	----	----	----	----	----	----	----
	11.4	5.9	7.7	2.7	-27.0	8.1	-19.3	6.1
800	----	----	----	----	----	----	----	----
	9.9	4.3	6.1	2.9	-21.2	8.6	-15.1	6.4
900	----	----	----	----	----	----	----	----
	12.0	6.8	4.9	3.0	-12.9	5.4	-8.0	3.4
1000	----	----	----	----	----	----	----	----
CLEAR	24.1	24.7	.3	.3	-4.1	.2	-3.8	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			69.2	12.1	-194.3	21.5	-125.1	11.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 11, 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	8.8	12.5	5.6	4.9	-10.4	6.7	-4.8	3.2
200	----	----	----	----	----	----	----	----
	10.4	9.3	8.0	3.1	-18.5	3.4	-10.6	2.5
300	----	----	----	----	----	----	----	----
	9.8	6.3	9.7	3.3	-25.4	3.9	-15.7	3.1
400	----	----	----	----	----	----	----	----
	9.2	5.2	8.7	4.1	-25.2	5.2	-16.5	3.2
500	----	----	----	----	----	----	----	----
	7.2	3.4	7.9	4.4	-24.4	6.0	-16.5	3.3
600	----	----	----	----	----	----	----	----
	9.4	3.8	6.5	4.1	-23.7	6.9	-17.2	4.6
700	----	----	----	----	----	----	----	----
	9.9	4.5	5.0	3.6	-23.2	7.7	-18.2	5.6
800	----	----	----	----	----	----	----	----
	9.7	5.6	4.0	3.3	-18.6	6.4	-14.7	4.6
900	----	----	----	----	----	----	----	----
	9.3	6.4	3.0	3.0	-11.2	4.6	-8.2	2.8
1000	----	----	----	----	----	----	----	----
CLEAR	16.5	16.0	.2	.2	-4.0	.2	-3.9	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			58.5	17.3	-184.7	24.9	-126.2	14.4

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 12, 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	5.4	8.2	3.4	1.6	-8.3	4.0	-4.8	2.9
200	9.5	8.0	7.6	3.1	-18.8	3.5	-11.3	1.9
300	7.6	4.3	10.6	1.6	-24.9	2.8	-14.3	2.3
400	8.6	4.8	10.3	2.5	-26.0	4.1	-15.6	3.4
500	9.6	7.2	9.9	3.2	-27.7	7.0	-17.9	5.7
600	9.4	5.2	8.2	3.3	-24.7	5.0	-16.4	3.0
700	8.6	3.8	6.5	3.3	-23.8	6.1	-17.3	4.1
800	10.2	4.8	5.3	3.1	-20.3	6.3	-15.0	4.4
900	10.4	6.1	3.9	2.9	-12.3	4.4	-8.4	2.6
1000 CLEAR 1012	20.6	17.5	.2	.2	-4.1	.2	-3.8	.1
TOTAL TROPOSPHERE			66.0	13.4	-190.9	17.2	-124.9	10.0

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	6.6	9.4	3.6	1.5	-9.0	4.8	-5.4	4.0
200	10.0	10.3	7.7	2.7	-19.0	4.1	-11.3	2.2
300	9.3	6.9	11.1	1.4	-25.7	3.3	-14.5	3.0
400	12.3	7.0	10.6	2.6	-28.1	5.5	-17.4	4.4
500	13.8	5.9	10.2	3.6	-30.0	8.4	-19.8	5.9
600	12.8	5.9	8.1	3.8	-24.4	8.2	-16.3	5.6
700	9.8	5.3	5.5	3.5	-20.2	7.5	-14.7	5.0
800	7.9	5.4	3.7	3.0	-15.5	6.0	-11.7	4.0
900	10.9	12.5	2.7	2.9	-9.7	3.3	-7.0	2.0
1000 CLEAR 1012	6.5	8.6	.1	.1	-4.0	.1	-3.9	.2
TOTAL TROPOSPHERE			63.3	14.1	-185.4	22.7	-122.1	13.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (- (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	1.5	3.9	2.9	.4	-6.5	1.7	-3.6	1.5
200	3.7	6.8	5.9	1.6	-16.5	2.9	-10.7	1.8
300	4.1	5.1	11.0	.8	-24.6	2.6	-13.6	2.1
400	6.0	5.7	11.6	1.2	-26.9	3.4	-15.3	3.1
500	16.8	9.9	11.8	1.8	-36.2	7.7	-24.4	7.3
600	14.7	6.8	10.9	2.5	-29.6	5.8	-18.7	4.4
700	9.7	4.6	8.0	2.3	-24.4	6.8	-16.3	5.4
800	6.8	4.1	6.1	2.5	-19.6	7.0	-13.5	5.4
900	13.0	8.8	5.2	2.7	-13.4	4.9	-8.2	3.4
1000 CLEAR 1012	23.6	19.0	.3	.3	-4.1	.2	-3.7	.2
TOTAL TROPOSPHERE			73.8	8.1	-201.8	13.8	-128.0	8.7

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	9.5	10.8	4.4	2.4	-10.6	5.9	-6.2	4.5
200	12.7	9.8	8.5	3.0	-19.8	4.1	-11.3	2.6
300	11.4	7.1	10.8	2.1	-25.9	3.7	-15.1	3.0
400	12.2	6.3	9.4	2.9	-26.7	4.4	-17.3	3.9
500	12.6	5.4	8.4	3.6	-27.1	7.1	-18.7	5.5
600	12.2	5.7	6.4	3.9	-22.9	8.7	-16.5	6.3
700	10.7	7.7	4.6	3.8	-19.2	9.3	-14.5	6.4
800	7.7	6.9	3.4	3.5	-13.6	6.2	-10.2	3.4
900	6.1	6.7	2.0	2.6	-8.4	2.3	-6.4	1.7
1000 CLEAR 1012	5.0	8.0	.1	.1	-4.0	.1	-3.9	.2
TOTAL TROPOSPHERE			58.0	15.0	-178.1	22.9	-120.2	13.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	11.1	13.2	4.6	3.1	-12.0	8.0	-7.4	5.9
200	11.7	9.1	8.6	3.2	-19.0	3.7	-10.4	2.4
300	14.2	9.7	11.0	2.4	-27.3	4.6	-16.3	3.8
400	13.0	9.7	9.1	3.8	-26.9	6.6	-17.8	5.1
500	9.6	6.1	7.3	4.8	-23.6	8.6	-16.3	4.9
600	10.6	8.1	5.8	5.2	-21.4	10.6	-15.6	6.0
700	10.7	11.0	4.3	4.8	-19.4	12.2	-15.1	8.2
800	7.1	7.1	3.0	3.9	-13.6	7.3	-10.6	4.5
900	5.5	7.4	1.9	2.9	-8.6	3.3	-6.7	2.1
1000 CLEAR 1012	6.7	11.6	.1	.2	-4.0	.1	-3.9	.2
TOTAL TROPOSPHERE			55.7	18.6	-175.9	27.0	-120.2	11.3

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	1.3	3.5	2.9	.6	-6.5	1.7	-3.5	1.4
200	2.9	3.9	5.9	1.1	-16.2	1.6	-10.3	1.1
300	4.8	4.2	10.9	.6	-24.9	2.1	-14.0	1.9
400	6.0	4.8	11.4	.9	-26.9	2.8	-15.5	2.8
500	7.9	5.4	11.2	1.2	-29.9	3.3	-18.8	3.2
600	11.5	6.1	10.1	1.4	-29.9	3.4	-19.9	3.1
700	11.1	4.2	8.7	1.7	-29.4	5.8	-20.8	5.2
800	16.5	8.3	7.9	2.3	-24.7	7.1	-16.7	5.8
900	16.3	7.1	5.9	2.2	-12.4	3.9	-6.5	3.1
1000 CLEAR 1012	21.7	21.5	.3	.2	-3.9	.2	-3.6	.2
TOTAL TROPOSPHERE			75.2	6.8	-204.8	11.0	-129.6	8.9

Average radiative convergence profiles and cloud top pressure distribution for the GATE A/B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

3.5 DAILY 24 HOUR MEANS OVER THE GATE B ARRAY

The following 20 tables, on pages 97 to 103, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	5.8	8.1	3.1	.2	-8.8	4.5	-5.7	4.4
200	10.1	6.9	6.3	.7	-19.1	2.9	-12.8	2.6
300	21.1	11.0	12.6	1.6	-32.4	6.5	-19.8	5.5
400	22.6	8.3	12.8	1.0	-34.6	7.2	-21.8	7.0
500	18.9	7.5	12.2	3.9	-29.7	8.8	-17.5	6.1
600	10.9	6.6	8.4	5.3	-17.2	7.9	-8.8	3.6
700	5.5	5.2	3.8	3.9	-11.6	4.9	-7.7	2.0
800	3.1	4.0	1.9	2.6	-9.6	2.6	-7.7	1.2
900	.9	2.1	.8	1.6	-8.3	1.2	-7.5	1.4
1000 CLEAR 1012	1.0	3.3	.0	.1	-4.1	.1	-4.1	.1
TOTAL TROPOSPHERE			61.9	11.9	-175.3	14.1	-113.3	8.9

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.2	.4	2.8	.2	-5.9	.2	-3.1	.1
200	.9	2.1	5.9	1.1	-15.4	.9	-9.5	.3
300	1.7	2.4	10.9	.4	-23.6	1.1	-12.7	.9
400	4.0	3.0	11.5	.6	-26.4	1.8	-14.9	1.9
500	7.8	3.6	11.4	1.1	-31.3	2.4	-19.9	2.4
600	9.4	2.8	10.6	1.7	-30.3	2.3	-19.7	1.6
700	11.1	4.0	9.5	1.7	-31.9	3.1	-22.4	2.6
800	11.5	3.4	7.9	2.2	-26.3	3.3	-18.4	2.2
900	15.7	5.3	6.2	2.7	-15.7	2.7	-9.4	1.3
1000 CLEAR 1012	37.7	12.7	.3	.2	-4.0	.1	-3.8	.1
TOTAL TROPOSPHERE			77.0	7.0	-210.7	5.0	-133.8	3.6

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
200	.0	.0	2.7	.0	-5.8	.0	-3.1	.0
300	----	----	----	----	----	----	----	----
400	.2	.4	5.4	.2	-15.0	.2	-9.5	.1
500	----	----	----	----	----	----	----	----
600	.8	1.0	10.9	.3	-23.2	.6	-12.3	.3
700	----	----	----	----	----	----	----	----
800	1.3	1.4	11.6	.3	-24.7	.9	-13.1	.8
900	----	----	----	----	----	----	----	----
1000	2.4	1.8	11.4	.4	-27.6	1.3	-16.2	1.2
CLEAR	----	----	----	----	----	----	----	----
1012	4.5	2.9	10.2	.6	-29.4	1.3	-19.2	1.1
	----	----	----	----	----	----	----	----
	7.6	3.7	9.3	.7	-34.6	1.2	-25.3	.8
	----	----	----	----	----	----	----	----
	11.7	4.3	8.3	1.0	-31.8	2.6	-23.5	1.9
	----	----	----	----	----	----	----	----
	23.2	5.1	7.0	1.7	-18.9	2.5	-11.9	1.6
	----	----	----	----	----	----	----	----
	48.2	13.3	.4	.2	-4.0	.1	-3.6	.1
	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			77.2	1.9	-215.0	2.0	-137.8	1.3

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
200	15.7	5.7	6.9	2.2	-13.5	3.2	-6.6	3.1
300	----	----	----	----	----	----	----	----
400	20.2	6.0	10.5	2.0	-22.5	2.7	-12.0	2.3
500	----	----	----	----	----	----	----	----
600	14.5	8.0	8.9	2.0	-25.5	5.4	-16.6	5.2
700	----	----	----	----	----	----	----	----
800	10.5	5.0	6.2	2.0	-22.1	4.2	-15.9	4.5
900	----	----	----	----	----	----	----	----
1000	7.9	4.2	5.0	2.1	-20.4	4.8	-15.4	4.3
CLEAR	----	----	----	----	----	----	----	----
1012	7.4	3.6	3.7	1.9	-18.0	3.6	-14.3	3.1
	----	----	----	----	----	----	----	----
	6.5	2.7	2.5	1.7	-16.6	3.7	-14.1	2.7
	----	----	----	----	----	----	----	----
	7.1	4.3	1.7	1.5	-13.6	3.5	-11.9	2.5
	----	----	----	----	----	----	----	----
	6.9	5.7	1.1	1.3	-7.9	1.0	-6.8	1.1
	----	----	----	----	----	----	----	----
	3.3	3.5	.0	.0	-3.9	.1	-3.9	.1
	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			46.6	6.9	-164.1	7.9	-117.5	9.0

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	----	----	----	----	----	----	----
200	1.5	3.5	3.0	.1	-6.7	2.0	-3.7	2.0
300	----	----	----	----	----	----	----	----
400	1.4	1.9	6.1	.5	-15.7	.8	-9.6	.5
500	----	----	----	----	----	----	----	----
600	4.9	4.2	12.0	.6	-25.4	2.5	-13.3	2.0
700	----	----	----	----	----	----	----	----
800	24.2	8.4	13.3	.7	-40.0	5.9	-26.7	5.3
900	----	----	----	----	----	----	----	----
1000	23.4	4.1	14.4	2.0	-39.3	3.6	-25.0	3.7
CLEAR	----	----	----	----	----	----	----	----
1012	16.4	3.2	9.4	3.3	-25.3	4.6	-15.8	3.0
	----	----	----	----	----	----	----	----
	12.0	4.5	4.3	2.6	-18.1	4.3	-13.8	2.4
	----	----	----	----	----	----	----	----
	6.8	4.3	1.6	1.7	-12.0	2.9	-10.5	2.6
	----	----	----	----	----	----	----	----
	5.5	4.7	.6	.8	-8.8	1.4	-8.2	1.8
	----	----	----	----	----	----	----	----
	3.9	4.9	.0	.0	-4.0	.1	-4.0	.1
	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			64.7	7.0	-195.3	6.1	-130.6	6.8

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	19.5	17.7	5.5	3.0	-16.1	9.6	-10.6	8.2
200	16.2	10.1	9.5	3.2	-20.4	3.8	-10.9	2.6
300	10.3	3.3	9.5	2.2	-22.6	4.3	-13.1	3.6
400	7.7	2.0	7.8	3.3	-20.7	6.2	-12.9	4.0
500	6.2	2.7	6.9	3.7	-20.2	7.3	-13.3	4.4
600	6.6	3.5	5.7	3.8	-19.1	7.5	-13.3	4.2
700	8.9	5.3	5.1	4.0	-19.8	8.2	-14.8	4.8
800	7.1	4.4	3.3	3.0	-15.1	6.1	-11.8	3.8
900	6.5	5.7	1.9	2.2	-8.5	3.7	-6.5	2.1
1000 CLEAR 1012	10.8	11.5	.1	.1	-3.9	.1	-3.8	.1
TOTAL TROPOSPHERE			55.2	16.1	-166.4	29.9	-111.2	17.0

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	17.7	15.5	7.9	6.3	-14.5	8.4	-6.6	3.3
200	21.6	8.3	11.2	4.7	-23.3	4.1	-12.0	3.0
300	14.1	4.6	7.4	4.7	-24.3	5.4	-16.9	2.5
400	12.8	4.6	5.4	5.0	-23.1	6.1	-17.7	3.4
500	11.1	4.6	5.0	5.2	-22.1	6.6	-17.2	4.1
600	8.8	4.2	3.9	4.7	-16.7	5.6	-12.7	4.1
700	7.0	4.8	2.5	3.5	-13.9	4.6	-11.4	3.3
800	4.1	3.5	1.2	1.9	-10.1	2.3	-8.9	1.8
900	1.6	1.6	.5	.9	-6.9	1.4	-6.4	1.2
1000 CLEAR 1012	1.3	2.0	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			45.0	16.7	-158.8	19.0	-113.8	10.9

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	3.3	6.5	3.5	1.2	-7.4	3.1	-3.8	2.3
200	6.1	7.5	7.9	3.4	-17.6	3.1	-9.6	1.2
300	6.3	6.3	10.8	1.5	-25.2	2.9	-14.4	2.2
400	6.6	4.9	9.9	2.9	-26.2	2.7	-16.3	2.8
500	10.1	4.0	9.3	3.8	-30.0	3.5	-20.7	2.2
600	13.9	4.3	8.3	4.1	-29.8	5.8	-21.6	2.9
700	14.1	5.1	6.5	3.7	-27.3	8.1	-20.8	4.6
800	16.8	7.6	5.5	3.6	-20.5	7.5	-14.9	4.3
900	10.2	6.6	3.4	2.9	-9.2	2.3	-5.8	1.4
1000 CLEAR 1012	12.4	14.0	.1	.2	-3.9	.1	-3.7	.2
TOTAL TROPOSPHERE			65.4	16.1	-197.0	18.4	-131.6	4.8

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.3	.9	2.8	.1	-6.0	.4	-3.2	.4
200	----	----	----	----	----	----	----	----
	1.2	1.8	5.6	.2	-15.6	.7	-10.0	.6
300	----	----	----	----	----	----	----	----
	3.0	3.0	11.2	.3	-24.6	1.7	-13.4	1.5
400	----	----	----	----	----	----	----	----
	6.8	5.6	12.2	.3	-28.2	3.2	-16.0	3.0
500	----	----	----	----	----	----	----	----
	17.9	6.8	13.1	1.3	-38.8	4.6	-25.7	3.7
600	----	----	----	----	----	----	----	----
	19.8	5.2	12.7	1.7	-33.6	3.3	-20.9	3.4
700	----	----	----	----	----	----	----	----
	15.3	3.5	9.2	1.8	-26.2	6.0	-17.0	4.8
800	----	----	----	----	----	----	----	----
	14.6	4.6	6.5	2.1	-18.7	5.5	-12.2	3.8
900	----	----	----	----	----	----	----	----
	13.6	7.3	4.0	2.0	-9.6	1.7	-5.6	1.1
1000	----	----	----	----	----	----	----	----
CLEAR	7.6	6.9	.1	.1	-3.9	.1	-3.8	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			77.4	4.1	-205.1	6.3	-127.8	5.1

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	3.0	3.9	3.3	.6	-7.1	1.6	-3.8	1.3
200	----	----	----	----	----	----	----	----
	12.0	9.5	7.6	2.7	-20.1	4.0	-12.5	3.5
300	----	----	----	----	----	----	----	----
	13.3	5.3	11.6	1.1	-28.8	2.5	-17.3	2.3
400	----	----	----	----	----	----	----	----
	18.6	5.6	11.2	2.3	-32.7	5.7	-21.5	5.7
500	----	----	----	----	----	----	----	----
	21.1	6.7	12.1	4.6	-33.8	6.5	-21.8	5.1
600	----	----	----	----	----	----	----	----
	14.1	5.1	7.8	4.4	-21.3	6.7	-13.5	4.9
700	----	----	----	----	----	----	----	----
	7.7	4.7	4.3	3.8	-14.5	5.6	-10.1	3.2
800	----	----	----	----	----	----	----	----
	4.3	3.6	2.4	2.7	-10.7	3.2	-8.3	1.4
900	----	----	----	----	----	----	----	----
	3.7	4.7	1.6	2.2	-8.8	1.2	-7.2	1.3
1000	----	----	----	----	----	----	----	----
CLEAR	2.1	3.6	.1	.1	-4.1	.1	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			61.8	13.2	-181.8	14.6	-120.0	11.0

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	----	----	----	----	----	----	----
	2.2	2.7	3.6	.9	-6.9	1.2	-3.3	.4
200	----	----	----	----	----	----	----	----
	13.2	6.3	9.2	2.4	-20.3	2.4	-11.2	1.5
300	----	----	----	----	----	----	----	----
	25.3	9.9	12.2	1.6	-35.8	5.3	-23.6	5.3
400	----	----	----	----	----	----	----	----
	22.8	6.7	9.7	2.6	-34.1	6.2	-24.4	5.0
500	----	----	----	----	----	----	----	----
	15.2	5.3	7.8	3.6	-25.9	7.8	-18.0	6.0
600	----	----	----	----	----	----	----	----
	11.6	6.3	5.2	3.7	-17.5	6.5	-12.3	4.2
700	----	----	----	----	----	----	----	----
	6.4	4.8	2.8	2.7	-12.5	3.5	-9.7	2.0
800	----	----	----	----	----	----	----	----
	2.4	2.0	1.1	1.2	-9.3	1.0	-8.2	1.3
900	----	----	----	----	----	----	----	----
	.8	1.2	.3	.5	-8.5	.6	-8.2	.8
1000	----	----	----	----	----	----	----	----
CLEAR	.2	.4	.0	.0	-4.1	.0	-4.1	.0
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			51.9	10.2	-174.9	10.6	-123.0	6.6

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.2	.5	2.8	.1	-5.9	.2	-3.1	.2
200	1.9	2.9	5.6	.7	-15.8	1.1	-10.1	.6
300	4.5	4.0	11.0	.8	-25.2	2.1	-14.2	1.5
400	9.8	6.1	11.5	.5	-29.7	3.8	-18.2	3.7
500	8.7	4.0	11.4	1.2	-30.6	2.8	-19.2	2.5
600	10.1	3.5	9.9	1.4	-28.2	2.5	-18.3	1.9
700	8.4	2.8	8.3	1.6	-27.8	4.5	-19.4	3.3
800	10.4	4.4	7.5	1.8	-24.0	4.8	-16.6	3.3
900	13.5	5.3	6.4	2.1	-14.7	3.1	-8.3	1.7
1000 CLEAR 1012	32.6	15.6	.4	.2	-4.1	.1	-3.6	.2
TOTAL TROPOSPHERE			74.9	5.8	-206.0	7.0	-131.1	3.7

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 10, 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	4.9	6.3	2.9	.3	-8.4	3.4	-5.5	3.2
200	6.2	5.8	5.9	1.1	-17.2	2.3	-11.3	1.7
300	6.0	4.0	10.9	.5	-24.4	2.4	-13.5	2.2
400	7.3	4.1	11.4	.8	-26.1	3.1	-14.7	2.8
500	6.7	2.6	11.0	1.1	-27.0	3.1	-15.9	2.5
600	11.2	3.7	9.9	1.3	-27.7	4.4	-17.8	3.5
700	11.5	3.8	8.8	1.5	-27.3	5.2	-18.5	4.1
800	12.3	3.5	7.7	1.8	-21.7	5.0	-14.0	3.7
900	14.0	4.4	6.4	2.1	-12.6	2.8	-6.2	1.6
1000 CLEAR 1012	19.9	11.9	.3	.2	-4.0	.1	-3.7	.1
TOTAL TROPOSPHERE			75.2	6.2	-196.4	14.0	-121.2	9.4

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 11, 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	12.7	11.6	7.4	4.7	-12.1	5.9	-4.7	2.8
200	15.6	9.1	9.6	2.9	-20.6	3.5	-11.1	3.2
300	13.6	4.2	8.3	3.7	-26.1	4.0	-17.8	2.6
400	10.3	3.2	6.5	4.0	-23.7	4.7	-17.2	2.9
500	7.1	2.0	5.6	3.8	-21.5	4.7	-15.9	3.3
600	8.0	2.4	4.6	3.4	-19.9	5.0	-15.3	3.8
700	7.9	2.9	3.5	2.8	-19.3	5.5	-15.8	4.7
800	8.2	4.3	2.7	2.3	-15.8	5.2	-13.1	4.2
900	6.6	5.2	1.9	1.9	-9.6	3.5	-7.7	2.4
1000 CLEAR 1012	9.9	11.2	.1	.1	-4.0	.1	-3.9	.1
TOTAL TROPOSPHERE			50.1	14.5	-172.6	21.1	-122.5	14.1

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 12, 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	11.0	12.9	4.4	2.8	-10.9	6.3	-6.5	3.9
200	13.1	8.6	8.5	3.2	-20.1	3.4	-11.5	1.6
300	9.2	3.9	10.1	2.3	-24.2	4.0	-14.1	2.7
400	8.8	2.8	9.1	3.2	-24.0	4.9	-14.9	2.9
500	8.4	4.4	8.5	3.9	-24.4	6.8	-15.9	3.6
600	7.8	4.0	6.8	3.9	-21.6	5.5	-14.8	2.4
700	7.9	4.1	5.4	3.9	-21.6	5.6	-16.2	2.4
800	9.8	5.3	4.5	3.7	-18.4	4.8	-13.9	2.6
900	7.7	3.5	2.9	2.5	-10.7	3.4	-7.8	2.6
1000 CLEAR	16.3	12.9	.2	.1	-4.0	.1	-3.9	.1
1012								
TOTAL TROPOSPHERE			60.4	16.3	-179.9	21.6	-119.5	9.8

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	10.8	11.1	3.9	1.5	-11.0	5.9	-7.1	5.2
200	16.1	10.1	8.7	2.7	-21.4	3.9	-12.7	2.5
300	13.2	6.7	11.3	1.6	-26.3	3.8	-15.0	3.6
400	15.0	5.8	10.0	2.8	-27.7	5.5	-17.8	4.4
500	13.9	4.4	8.8	3.5	-26.2	8.4	-17.5	6.4
600	11.4	5.9	6.3	3.8	-19.6	8.4	-13.2	5.9
700	7.9	6.6	4.0	3.5	-15.5	6.6	-11.5	4.4
800	5.4	4.9	2.3	2.5	-11.6	3.7	-9.3	2.7
900	3.3	3.8	1.0	1.4	-7.9	1.7	-6.9	1.6
1000 CLEAR	3.0	5.6	.0	.0	-4.0	.1	-4.0	.1
1012								
TOTAL TROPOSPHERE			56.3	13.1	-171.2	22.3	-114.9	15.1

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100	.3	.6	2.7	.0	-6.0	.2	-3.2	.2
200	2.0	2.9	5.4	.1	-15.8	1.3	-10.4	1.3
300	2.5	3.0	10.8	.2	-24.0	1.4	-13.2	1.4
400	4.6	3.5	11.7	.3	-26.7	1.9	-15.0	1.9
500	13.7	9.0	12.0	.7	-35.1	6.6	-23.1	6.4
600	15.2	6.3	11.7	1.7	-32.1	4.6	-20.4	3.8
700	11.9	4.4	9.4	.8	-27.7	5.0	-18.2	5.0
800	10.5	3.8	7.8	1.1	-22.1	5.1	-14.3	4.8
900	19.0	7.0	6.5	1.6	-13.6	3.9	-7.1	3.2
1000 CLEAR	20.3	15.2	.4	.2	-4.0	.2	-3.6	.1
1012								
TOTAL TROPOSPHERE			78.4	1.9	-207.0	6.8	-128.6	6.8

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	13.1	7.0	5.4	2.2	-12.0	3.6	-6.6	3.2
200								
	21.1	7.2	10.6	2.9	-23.4	3.3	-12.8	3.0
300								
	16.3	5.9	10.2	2.4	-26.9	3.8	-16.7	3.1
400								
	16.8	4.1	7.7	2.8	-26.7	3.9	-19.0	4.0
500								
	13.1	4.3	6.1	3.2	-23.3	5.3	-17.2	4.9
600								
	8.9	3.6	3.5	2.8	-16.0	4.3	-12.5	4.3
700								
	5.7	3.9	1.7	1.8	-12.4	3.5	-10.6	3.5
800								
	3.0	2.5	.9	1.4	-9.7	1.7	-8.8	1.7
900								
	1.5	2.3	.3	.7	-7.4	.9	-7.2	1.2
1000								
CLEAR	.4	.8	.0	.0	-4.0	.0	-4.0	.1
1012								
TOTAL TROPOSPHERE			46.3	8.5	-161.8	8.9	-115.4	10.9

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	9.6	11.7	3.9	1.3	-10.8	6.6	-6.9	5.5
200								
	15.2	9.4	9.7	3.3	-20.8	3.6	-11.1	2.2
300								
	15.4	8.5	11.7	1.8	-27.7	5.1	-16.0	3.9
400								
	14.9	7.9	8.7	3.4	-28.1	6.2	-19.4	4.7
500								
	13.1	5.9	6.7	4.7	-25.3	10.0	-18.7	5.7
600								
	12.6	9.2	5.4	5.2	-21.1	10.6	-15.7	6.1
700								
	9.2	8.5	3.5	4.2	-15.9	7.0	-12.4	4.2
800								
	5.2	4.8	1.7	2.5	-10.8	2.9	-9.1	2.6
900								
	2.4	3.0	.7	1.3	-7.6	1.1	-6.9	1.6
1000								
CLEAR	2.3	2.9	.0	.0	-4.0	.1	-4.0	.1
1012								
TOTAL TROPOSPHERE			52.1	15.9	-172.2	21.8	-120.1	9.5

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	1.3	3.7	2.8	.2	-6.4	1.8	-3.7	1.7
200								
	2.4	3.2	5.5	.4	-15.9	1.2	-10.4	1.1
300								
	4.0	3.0	10.8	.4	-24.5	1.6	-13.7	1.5
400								
	4.0	2.5	11.6	.4	-25.8	1.6	-14.2	1.3
500								
	6.1	3.8	11.4	.5	-29.1	1.9	-17.7	1.9
600								
	9.4	3.8	10.4	.8	-30.0	2.8	-19.6	2.6
700								
	12.1	4.1	9.6	1.1	-32.3	4.5	-22.6	4.6
800								
	23.2	8.8	9.9	1.9	-27.8	5.1	-17.9	4.9
900								
	18.9	5.3	6.9	1.9	-11.5	2.9	-4.6	2.5
1000								
CLEAR	18.7	18.5	.3	.2	-3.8	.1	-3.5	.1
1012								
TOTAL TROPOSPHERE			79.2	4.0	-207.2	9.4	-128.0	9.1

Average radiative convergence profiles and cloud top pressure distribution for the entire GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

3.6 DAILY 24 HOUR MEANS OVER THE NORTHERN SECTOR OF THE GATE B ARRAY

The following 20 tables, on pages 104 to 110, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the northern sector of the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	7.0	8.4	2.9	.2	-9.3	4.7	-6.4	4.5
200	11.4	6.6	5.9	.5	-19.6	2.9	-13.7	2.8
300	13.4	4.4	11.6	.5	-27.7	2.3	-16.1	2.5
400	16.9	7.4	12.8	.8	-30.7	6.3	-17.8	6.4
500	19.5	5.7	14.4	1.8	-32.4	6.0	-18.0	5.2
600	14.4	6.2	11.2	4.1	-21.9	7.6	-10.6	4.2
700	7.7	5.0	5.5	3.4	-14.0	5.6	-8.5	2.5
800	5.5	4.6	3.3	2.9	-10.7	3.4	-7.5	.8
900	1.9	3.0	1.5	2.2	-7.9	1.5	-6.3	1.0
1000 CLEAR 1012	2.4	4.9	.1	.1	-4.1	.0	-4.0	.1
TOTAL TROPOSPHERE			69.3	8.4	-178.2	15.4	-108.9	8.1

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0
200	.0	.1	5.3	.1	-15.0	.1	-9.7	.1
300	.6	.9	10.7	.2	-23.2	.5	-12.5	.4
400	3.4	2.8	11.6	.3	-26.1	1.8	-14.5	1.7
500	7.1	3.6	11.6	.5	-31.4	2.5	-19.9	2.2
600	8.4	3.0	10.9	1.3	-30.5	2.1	-19.6	1.7
700	10.5	3.8	10.3	.9	-32.6	2.5	-22.4	2.5
800	11.9	3.9	9.2	1.1	-27.7	2.8	-18.5	2.5
900	13.4	4.6	6.8	1.7	-16.2	2.4	-9.3	1.3
1000 CLEAR 1012	44.6	13.3	.4	.2	-4.1	.1	-3.7	.1
TOTAL TROPOSPHERE			79.5	1.8	-212.7	2.2	-133.1	2.9

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.0	.0	2.8	.1	-5.8	.0	-3.0	.0
200	.5	.5	5.6	.2	-15.1	.2	-9.5	.1
300	1.3	1.0	11.1	.4	-23.4	.6	-12.4	.2
400	1.8	1.2	11.7	.3	-25.1	.8	-13.4	.7
500	2.3	1.7	11.3	.4	-27.4	1.1	-16.1	1.1
600	4.7	2.9	10.0	.6	-29.3	1.2	-19.2	1.2
700	8.3	3.3	9.2	.6	-34.6	1.2	-25.4	.8
800	12.7	5.2	7.9	.8	-31.5	2.3	-23.6	1.6
900	24.2	4.5	6.1	1.7	-18.1	2.8	-12.0	1.7
1000 CLEAR 1012	44.1	15.2	.4	.2	-4.0	.1	-3.6	.1
TOTAL TROPOSPHERE			75.9	1.7	-214.4	1.9	-138.4	.8

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	14.4	5.0	7.5	2.6	-12.8	3.0	-5.3	1.6
200	19.1	5.3	10.6	1.5	-22.2	2.3	-11.7	2.4
300	11.8	3.8	8.7	2.0	-24.6	3.2	-15.9	3.1
400	10.8	4.4	5.8	1.8	-22.8	4.2	-17.0	3.5
500	11.0	4.3	4.6	2.0	-24.2	4.1	-19.6	3.0
600	10.1	3.7	3.3	1.7	-20.0	2.7	-16.7	2.7
700	8.0	2.6	1.9	1.0	-16.6	2.6	-14.6	2.2
800	7.5	4.5	1.2	.9	-12.7	3.2	-11.5	2.7
900	4.4	3.5	.5	.6	-7.4	.7	-6.9	.5
1000 CLEAR 1012	2.9	3.5	.0	.0	-3.9	.1	-3.9	.1
TOTAL TROPOSPHERE			44.1	4.7	-167.3	6.3	-123.2	6.8

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.0	.1	3.0	.1	-5.9	.1	-2.8	.1
200	1.5	2.4	6.3	.7	-15.8	.9	-9.5	.3
300	6.2	5.4	12.2	.7	-26.4	2.7	-14.2	2.1
400	22.0	5.4	13.2	.7	-38.7	4.0	-25.5	3.8
500	24.4	3.5	14.2	2.1	-40.5	3.2	-26.3	3.6
600	16.8	3.4	9.3	3.5	-25.8	3.8	-16.5	3.0
700	9.1	3.3	3.5	1.9	-17.2	3.4	-13.8	1.9
800	4.7	2.5	.8	.6	-12.8	2.6	-12.0	2.2
900	7.2	5.3	.2	.2	-10.0	1.3	-9.7	1.2
1000 CLEAR 1012	8.0	5.3	.0	.0	-4.1	.1	-4.1	.1
TOTAL TROPOSPHERE			62.7	6.7	-197.1	5.0	-134.4	2.1

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	1.6	2.4	3.4	1.0	-6.6	1.1	-3.2	.2
200	9.2	8.3	7.7	3.1	-18.5	3.3	-10.8	1.1
300	8.7	2.7	10.6	1.4	-26.8	2.0	-16.2	1.2
400	7.9	2.3	10.1	2.4	-26.4	3.6	-16.3	2.1
500	7.5	3.1	9.7	2.6	-26.9	3.5	-17.2	2.8
600	8.8	3.4	8.8	2.7	-26.0	3.2	-17.2	1.9
700	12.7	3.8	8.3	3.3	-27.7	3.0	-19.3	1.5
800	10.6	2.5	5.6	2.7	-21.0	2.6	-15.4	2.4
900	11.9	3.8	3.5	2.3	-12.1	2.1	-8.6	1.3
1000 CLEAR 1012	21.2	9.1	.1	.1	-4.0	.1	-3.8	.1
TOTAL TROPOSPHERE			68.0	12.5	-196.0	10.1	-128.0	4.5

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	24.0	14.9	11.0	6.8	-17.8	8.7	-6.8	2.5
200	24.2	8.3	13.3	4.9	-24.1	4.8	-10.7	2.6
300	12.8	3.7	4.5	4.0	-21.7	4.3	-17.2	2.4
400	10.0	3.0	1.9	2.6	-19.3	3.9	-17.4	3.0
500	9.0	2.8	1.3	2.1	-19.1	4.6	-17.8	3.8
600	7.4	3.5	1.0	1.8	-15.2	4.7	-14.2	3.5
700	5.7	3.3	.7	1.3	-13.0	3.5	-12.4	2.6
800	3.7	2.5	.4	.9	-10.0	1.9	-9.6	1.5
900	1.7	1.2	.1	.3	-6.4	1.3	-6.2	1.2
1000 CLEAR 1012	1.5	1.7	.0	.0	-3.9	.1	-3.9	.1
TOTAL TROPOSPHERE			34.2	7.9	-150.5	14.7	-116.3	9.2

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.0	.1	2.8	.0	-5.8	.0	-3.1	.0
200	.8	1.1	5.5	.2	-15.4	.4	-10.0	.4
300	1.2	1.2	10.8	.2	-23.5	.6	-12.7	.6
400	2.7	2.1	11.8	.4	-25.8	1.2	-14.0	1.1
500	6.7	2.6	12.0	.6	-31.1	1.7	-19.1	1.6
600	11.1	3.2	11.1	1.2	-32.9	2.0	-21.8	1.3
700	13.4	4.3	9.5	.7	-33.7	2.4	-24.2	1.8
800	22.0	3.9	8.7	1.2	-27.9	2.5	-19.2	2.1
900	16.3	3.2	6.1	1.7	-11.4	1.8	-5.3	1.5
1000 CLEAR 1012	25.7	12.1	.3	.2	-3.8	.1	-3.5	.1
TOTAL TROPOSPHERE			78.6	2.2	-211.5	2.5	-132.9	2.1

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100	----	------	------	------	------	------	------	------
	.3	.8	2.8	.1	-6.0	.4	-3.1	.3
200	----	------	------	------	------	------	------	------
	2.0	2.3	5.7	.2	-15.9	.9	-10.2	.8
300	----	------	------	------	------	------	------	------
	3.5	2.3	11.3	.3	-24.9	1.3	-13.6	1.2
400	----	------	------	------	------	------	------	------
	6.9	5.4	12.3	.3	-28.1	3.0	-15.7	2.8
500	----	------	------	------	------	------	------	------
	19.9	7.9	13.4	1.6	-40.1	5.5	-26.7	4.1
600	----	------	------	------	------	------	------	------
	19.3	5.3	12.0	1.3	-32.5	3.7	-20.5	3.3
700	----	------	------	------	------	------	------	------
	14.5	2.3	8.4	1.5	-25.1	5.7	-16.7	4.4
800	----	------	------	------	------	------	------	------
	15.5	5.0	6.1	1.8	-18.3	5.7	-12.1	4.3
900	----	------	------	------	------	------	------	------
	12.2	6.6	3.6	1.6	-9.0	1.4	-5.3	1.1
1000	----	------	------	------	------	------	------	------
CLEAR	5.9	7.1	.1	.1	-3.9	.1	-3.8	.2
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			75.7	3.1	-203.7	6.1	-128.0	5.3

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	------	------	------	------	------	------	------
	5.9	4.1	3.8	.6	-8.3	1.8	-4.5	1.7
200	----	------	------	------	------	------	------	------
	19.7	8.5	10.0	2.8	-23.3	3.5	-13.4	4.7
300	----	------	------	------	------	------	------	------
	17.3	3.7	11.6	1.5	-29.6	2.4	-18.0	2.3
400	----	------	------	------	------	------	------	------
	17.9	5.5	9.3	2.4	-29.2	5.5	-19.9	6.7
500	----	------	------	------	------	------	------	------
	17.0	4.1	8.4	4.0	-28.1	4.8	-19.7	6.7
600	----	------	------	------	------	------	------	------
	12.7	5.0	4.6	4.0	-18.5	5.5	-13.9	5.4
700	----	------	------	------	------	------	------	------
	5.6	3.9	1.5	1.9	-11.9	4.1	-10.5	3.8
800	----	------	------	------	------	------	------	------
	2.4	2.8	.4	.7	-9.1	1.7	-8.7	1.6
900	----	------	------	------	------	------	------	------
	1.1	2.0	.1	.2	-8.1	.7	-8.0	.6
1000	----	------	------	------	------	------	------	------
CLEAR	.6	1.9	.0	.0	-4.1	.0	-4.1	.0
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			49.6	9.1	-170.2	11.9	-120.6	15.9

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	------	------	------	------	------	------	------
	3.3	3.3	3.8	1.3	-7.4	1.5	-3.5	.4
200	----	------	------	------	------	------	------	------
	13.6	5.2	8.8	2.3	-20.5	2.0	-11.8	1.2
300	----	------	------	------	------	------	------	------
	27.0	10.2	11.4	1.9	-36.4	5.6	-25.0	5.3
400	----	------	------	------	------	------	------	------
	19.9	5.4	9.9	2.5	-31.5	5.8	-21.7	3.8
500	----	------	------	------	------	------	------	------
	13.4	4.5	9.0	3.6	-24.3	6.8	-15.3	4.4
600	----	------	------	------	------	------	------	------
	11.8	5.8	6.8	3.7	-18.2	5.8	-11.4	3.1
700	----	------	------	------	------	------	------	------
	7.6	5.3	4.2	2.9	-13.5	3.7	-9.3	1.8
800	----	------	------	------	------	------	------	------
	2.6	1.6	1.7	1.3	-9.4	.9	-7.7	1.5
900	----	------	------	------	------	------	------	------
	.8	.9	.5	.6	-8.3	.6	-7.8	.9
1000	----	------	------	------	------	------	------	------
CLEAR	.1	.2	.0	.0	-4.1	.0	-4.1	.0
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			56.1	10.1	-173.6	9.8	-117.5	3.9

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----	-----	-----
	.0	.0	2.8	.1	-5.8	.0	-3.1	.1
200	-----	-----	-----	-----	-----	-----	-----	-----
	.3	.4	5.4	.2	-15.2	.2	-9.8	.1
300	-----	-----	-----	-----	-----	-----	-----	-----
	3.3	2.3	10.8	.3	-24.6	1.2	-13.8	1.1
400	-----	-----	-----	-----	-----	-----	-----	-----
	9.7	7.6	11.8	.4	-30.3	4.8	-18.5	4.6
500	-----	-----	-----	-----	-----	-----	-----	-----
	8.6	4.8	12.1	.9	-31.3	3.4	-19.2	2.6
600	-----	-----	-----	-----	-----	-----	-----	-----
	10.4	4.3	10.7	.8	-29.3	2.3	-18.5	1.9
700	-----	-----	-----	-----	-----	-----	-----	-----
	9.8	3.4	9.0	1.2	-29.2	4.7	-20.2	4.0
800	-----	-----	-----	-----	-----	-----	-----	-----
	12.4	5.5	7.9	1.8	-24.7	5.4	-16.8	4.0
900	-----	-----	-----	-----	-----	-----	-----	-----
	16.0	5.9	6.5	2.1	-14.1	3.0	-7.6	1.7
1000	-----	-----	-----	-----	-----	-----	-----	-----
CLEAR	29.4	14.4	.4	.2	-4.0	.1	-3.6	.2
1012	-----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			77.4	3.3	-208.5	4.9	-131.0	3.2

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 10 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----	-----	-----
	.7	2.0	2.8	.2	-6.1	.8	-3.3	.6
200	-----	-----	-----	-----	-----	-----	-----	-----
	3.1	4.9	5.7	.6	-16.3	2.1	-10.6	1.5
300	-----	-----	-----	-----	-----	-----	-----	-----
	5.5	4.9	10.9	.4	-25.4	2.4	-14.5	2.2
400	-----	-----	-----	-----	-----	-----	-----	-----
	7.5	5.0	11.7	.4	-27.9	2.7	-16.3	2.6
500	-----	-----	-----	-----	-----	-----	-----	-----
	7.8	2.5	11.4	.6	-29.5	2.0	-18.1	1.7
600	-----	-----	-----	-----	-----	-----	-----	-----
	14.2	3.1	10.5	1.0	-31.0	3.7	-20.5	3.0
700	-----	-----	-----	-----	-----	-----	-----	-----
	15.3	2.3	9.5	1.4	-29.6	4.9	-20.1	3.9
800	-----	-----	-----	-----	-----	-----	-----	-----
	13.7	3.8	8.1	1.8	-21.7	4.9	-13.6	3.4
900	-----	-----	-----	-----	-----	-----	-----	-----
	14.2	4.6	6.5	1.9	-12.4	2.3	-5.9	1.5
1000	-----	-----	-----	-----	-----	-----	-----	-----
CLEAR	18.0	11.2	.3	.1	-4.0	.1	-3.7	.1
1012	-----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			77.4	4.9	-204.0	10.3	-126.7	5.8

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 11 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----	-----	-----
	8.2	10.5	6.1	4.5	-9.7	5.1	-3.6	.8
200	-----	-----	-----	-----	-----	-----	-----	-----
	9.7	5.1	9.7	3.7	-18.6	2.1	-8.9	2.3
300	-----	-----	-----	-----	-----	-----	-----	-----
	10.2	2.7	8.6	4.0	-25.8	3.3	-17.2	1.9
400	-----	-----	-----	-----	-----	-----	-----	-----
	8.9	3.0	7.2	4.5	-25.3	4.4	-18.1	1.5
500	-----	-----	-----	-----	-----	-----	-----	-----
	6.9	2.1	6.3	4.3	-24.3	4.0	-18.0	1.7
600	-----	-----	-----	-----	-----	-----	-----	-----
	8.9	1.8	5.2	3.7	-23.6	3.2	-18.3	2.1
700	-----	-----	-----	-----	-----	-----	-----	-----
	9.5	1.5	4.2	3.3	-23.5	2.9	-19.3	2.4
800	-----	-----	-----	-----	-----	-----	-----	-----
	9.6	1.7	3.4	2.7	-19.4	3.3	-16.0	2.6
900	-----	-----	-----	-----	-----	-----	-----	-----
	10.0	2.8	2.7	2.2	-12.0	3.3	-9.4	2.3
1000	-----	-----	-----	-----	-----	-----	-----	-----
CLEAR	18.2	11.1	.2	.2	-4.1	.2	-3.9	.1
1012	-----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			53.6	16.8	-186.2	15.9	-132.7	6.9

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 12 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by /2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	13.7	13.4	5.3	3.4	-11.9	6.4	-6.6	3.5
200	18.9	6.9	11.0	2.9	-22.5	3.0	-11.5	1.9
300	12.3	3.4	9.4	3.0	-24.7	4.7	-15.3	2.8
400	9.3	3.1	7.0	3.2	-22.1	5.0	-15.1	3.1
500	5.7	3.4	5.6	3.2	-19.7	5.0	-14.1	3.0
600	5.2	3.6	3.8	2.4	-18.0	3.6	-14.2	2.1
700	5.1	3.2	2.7	1.9	-19.0	3.2	-16.3	1.7
800	6.6	2.7	2.0	1.5	-17.1	3.7	-15.1	2.4
900	6.7	2.9	1.5	1.4	-11.1	3.9	-9.5	2.6
1000								
CLEAR	16.4	15.1	.1	.1	-4.1	.2	-4.0	.1
1012								
TOTAL TROPOSPHERE			48.5	10.4	-170.2	17.6	-121.7	9.1

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	9.0	9.1	4.2	1.8	-9.9	4.5	-5.7	3.5
200	18.8	8.9	9.8	2.7	-22.7	3.6	-12.9	2.6
300	16.3	5.9	11.1	2.1	-28.1	3.8	-17.1	3.3
400	16.3	4.8	8.8	2.9	-28.3	5.4	-19.5	3.4
500	13.5	3.9	7.3	3.2	-24.7	6.6	-17.3	4.6
600	10.3	5.0	5.3	3.5	-18.1	6.9	-12.8	5.5
700	6.3	4.5	3.3	2.8	-14.2	5.0	-10.9	4.2
800	5.0	4.7	1.8	1.8	-11.2	2.7	-9.4	2.4
900	2.6	2.7	.8	1.0	-7.9	1.1	-7.1	1.4
1000								
CLEAR	1.9	4.1	.0	.0	-4.0	.1	-4.0	.1
1012								
TOTAL TROPOSPHERE			52.4	11.7	-169.1	18.0	-116.7	13.4

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.4	.5	2.7	.0	-6.0	.2	-3.3	.2
200	2.3	2.5	5.4	.1	-16.1	1.1	-10.7	1.1
300	2.5	1.7	10.8	.2	-24.1	.7	-13.3	.7
400	6.5	2.5	11.8	.3	-28.2	1.4	-16.4	1.4
500	22.3	5.6	12.0	.6	-41.2	4.0	-29.3	3.9
600	17.3	5.7	12.0	1.7	-31.1	4.8	-19.1	4.2
700	11.3	3.6	9.6	.5	-23.5	2.9	-13.8	2.9
800	10.1	2.8	7.8	.9	-18.3	3.0	-10.5	2.5
900	14.5	4.9	6.1	1.7	-11.3	2.0	-5.2	.9
1000								
CLEAR	12.8	9.5	.3	.2	-3.9	.1	-3.6	.2
1012								
TOTAL TROPOSPHERE			78.6	1.2	-203.8	4.6	-125.2	4.5

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	17.1	6.1	6.5	2.8	-14.2	3.2	-7.7	3.9
200	18.0	5.5	9.3	1.9	-21.6	2.5	-12.3	2.1
300	13.0	4.6	9.1	2.1	-24.7	3.0	-15.6	3.2
400	17.7	3.3	7.8	2.5	-27.1	4.0	-19.3	4.4
500	15.2	4.8	7.3	2.8	-25.6	5.5	-18.3	5.5
600	9.5	3.3	5.5	2.3	-16.0	4.0	-10.5	3.2
700	4.9	3.1	3.0	1.9	-11.2	2.9	-8.2	1.5
800	3.2	2.9	1.8	1.7	-9.2	1.8	-7.4	.6
900	1.0	1.6	.6	.9	-6.9	.6	-6.3	1.1
1000 CLEAR 1012	.3	.6	.0	.0	-4.0	.0	-4.0	.1
TOTAL TROPOSPHERE			50.9	8.8	-160.6	9.9	-109.7	9.7

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	17.9	12.4	4.8	1.4	-15.5	7.3	-10.7	6.4
200	20.6	3.5	11.6	2.2	-22.3	1.6	-10.7	2.7
300	21.3	8.1	11.9	2.5	-28.4	7.1	-16.5	5.2
400	19.4	8.6	6.7	2.8	-28.1	8.5	-21.4	6.1
500	9.2	4.2	3.0	2.3	-17.0	4.8	-14.0	2.9
600	5.0	1.8	1.2	1.1	-11.6	1.9	-10.4	1.9
700	2.6	1.4	.3	.4	-10.2	1.9	-9.9	2.0
800	1.5	1.1	.1	.2	-9.3	.8	-9.2	.9
900	.5	.6	.0	.0	-7.3	1.4	-7.3	1.4
1000 CLEAR 1012	2.0	2.6	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			39.6	4.4	-153.7	10.7	-114.1	7.4

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	2.7	5.4	2.8	.3	-7.1	2.7	-4.3	2.5
200	3.5	4.6	5.5	.4	-16.3	1.7	-10.8	1.5
300	3.9	4.0	10.7	.3	-24.0	2.0	-13.3	1.8
400	3.7	3.4	11.4	.5	-25.0	1.8	-13.7	1.5
500	6.3	5.2	11.1	.6	-28.7	1.8	-17.6	2.0
600	7.7	4.1	9.9	.6	-28.5	3.5	-18.6	3.4
700	8.7	2.6	9.2	.7	-30.6	6.1	-21.4	6.1
800	14.9	5.0	9.0	1.2	-26.8	6.9	-17.8	6.6
900	16.4	4.3	8.0	1.5	-13.5	3.2	-5.5	2.7
1000 CLEAR 1012	32.2	20.7	.4	.2	-3.9	.1	-3.5	.2
TOTAL TROPOSPHERE			78.0	2.9	-204.5	14.0	-126.4	12.7

Average radiative convergence profiles and cloud top pressure distribution for the Northern sector of the GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

3.7 DAILY 24 HOUR MEANS OVER THE CENTRAL SECTOR OF THE GATE B ARRAY

The following 20 tables, on pages 111 to 117, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the central sector of the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	8.6	10.0	3.1	.2	-10.5	5.6	-7.4	5.5
200	9.0	7.1	6.4	.8	-18.3	2.9	-11.9	2.4
300	19.2	7.2	12.3	1.0	-31.0	4.4	-18.7	4.0
400	22.4	7.3	12.7	.7	-34.1	6.7	-21.4	6.7
500	21.1	8.5	13.6	2.6	-31.5	9.2	-17.9	7.1
600	10.7	6.7	8.7	4.9	-16.4	7.8	-7.8	3.5
700	4.8	5.0	3.6	3.9	-10.6	4.8	-7.0	1.6
800	2.4	3.8	1.7	2.8	-8.9	2.8	-7.3	1.2
900	.9	2.5	.7	1.7	-8.0	1.1	-7.3	1.3
1000 CLEAR 1012	.8	2.7	.0	.1	-4.1	.1	-4.1	.1
TOTAL TROPOSPHERE			62.7	10.5	-173.4	16.5	-110.7	8.8

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.2	.3	2.8	.2	-5.9	.1	-3.1	.1
200	1.0	2.0	5.9	1.1	-15.4	.9	-9.5	.3
300	1.6	2.5	11.0	.4	-23.6	1.1	-12.6	.7
400	4.2	3.5	11.5	.5	-26.5	2.2	-15.0	2.3
500	8.4	3.9	11.4	1.1	-31.7	2.4	-20.2	2.3
600	9.4	2.8	10.6	1.7	-30.1	2.3	-19.5	1.7
700	11.7	3.0	9.3	1.7	-31.9	3.2	-22.6	2.7
800	11.8	2.8	7.5	2.4	-26.0	3.5	-18.5	2.2
900	16.6	4.7	6.0	3.0	-15.5	2.6	-9.5	1.2
1000 CLEAR 1012	35.2	10.4	.2	.2	-4.0	.1	-3.8	.1
TOTAL TROPOSPHERE			76.4	7.4	-210.6	5.1	-134.1	3.6

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----	-----	-----
200	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0
300	-----	-----	-----	-----	-----	-----	-----	-----
400	.1	.2	5.4	.2	-14.9	.1	-9.5	.1
500	-----	-----	-----	-----	-----	-----	-----	-----
600	.3	.5	10.7	.2	-22.9	.3	-12.2	.1
700	-----	-----	-----	-----	-----	-----	-----	-----
800	.7	.5	11.6	.2	-24.3	.4	-12.7	.3
900	-----	-----	-----	-----	-----	-----	-----	-----
1000	1.7	1.5	11.4	.5	-27.2	1.2	-15.8	1.1
CLEAR	-----	-----	-----	-----	-----	-----	-----	-----
1012	3.2	1.9	10.2	.7	-28.9	1.1	-18.7	.6
	-----	-----	-----	-----	-----	-----	-----	-----
	6.4	3.7	9.5	.8	-35.1	1.0	-25.6	.5
	-----	-----	-----	-----	-----	-----	-----	-----
	10.9	4.1	8.5	.9	-32.9	1.9	-24.4	1.2
	-----	-----	-----	-----	-----	-----	-----	-----
	23.8	5.5	7.2	1.6	-19.8	2.1	-12.6	1.4
	-----	-----	-----	-----	-----	-----	-----	-----
	52.9	11.7	.5	.1	-4.1	.1	-3.6	.1
	-----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			77.8	1.6	-215.9	1.1	-138.2	1.2

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----	-----	-----
200	16.4	4.6	6.7	1.8	-13.8	2.6	-7.1	3.2
300	-----	-----	-----	-----	-----	-----	-----	-----
400	19.1	5.9	10.4	2.0	-22.1	2.7	-11.7	2.6
500	-----	-----	-----	-----	-----	-----	-----	-----
600	11.8	5.9	8.7	1.6	-23.8	4.2	-15.1	4.8
700	-----	-----	-----	-----	-----	-----	-----	-----
800	8.8	5.3	6.3	1.8	-21.3	4.5	-15.0	5.3
900	-----	-----	-----	-----	-----	-----	-----	-----
1000	6.6	3.0	5.4	2.0	-20.3	3.4	-14.9	3.3
CLEAR	-----	-----	-----	-----	-----	-----	-----	-----
1012	6.6	2.9	4.2	1.8	-18.9	3.3	-14.7	2.8
	-----	-----	-----	-----	-----	-----	-----	-----
	6.7	2.9	3.3	1.7	-18.6	3.2	-15.3	2.4
	-----	-----	-----	-----	-----	-----	-----	-----
	9.3	4.1	2.4	1.5	-15.8	2.9	-13.3	2.3
	-----	-----	-----	-----	-----	-----	-----	-----
	10.4	5.3	1.6	1.4	-8.3	1.0	-6.7	1.2
	-----	-----	-----	-----	-----	-----	-----	-----
	4.3	3.9	.0	.0	-3.9	.1	-3.8	.1
	-----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			49.1	7.3	-166.8	7.0	-117.7	9.7

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----	-----	-----
200	.6	1.8	3.0	.1	-6.2	1.0	-3.1	1.0
300	-----	-----	-----	-----	-----	-----	-----	-----
400	.8	1.1	6.1	.3	-15.6	.4	-9.5	.2
500	-----	-----	-----	-----	-----	-----	-----	-----
600	4.8	4.1	12.1	.6	-25.6	2.3	-13.5	1.7
700	-----	-----	-----	-----	-----	-----	-----	-----
800	27.4	9.6	13.6	.7	-42.5	6.3	-28.9	5.6
900	-----	-----	-----	-----	-----	-----	-----	-----
1000	24.0	3.6	14.5	2.0	-39.7	3.2	-25.1	3.3
CLEAR	-----	-----	-----	-----	-----	-----	-----	-----
1012	16.3	3.5	8.8	3.7	-24.6	5.1	-15.8	2.4
	-----	-----	-----	-----	-----	-----	-----	-----
	12.1	3.8	3.6	2.3	-17.6	4.3	-14.0	2.7
	-----	-----	-----	-----	-----	-----	-----	-----
	6.9	3.6	1.0	.8	-11.5	2.7	-10.4	2.2
	-----	-----	-----	-----	-----	-----	-----	-----
	4.9	4.2	.4	.5	-8.6	.8	-8.2	.9
	-----	-----	-----	-----	-----	-----	-----	-----
	2.2	2.8	.0	.0	-4.1	.1	-4.1	.1
	-----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			63.1	6.7	-195.9	5.1	-132.8	4.4

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	18.7	14.5	5.7	3.4	-15.6	8.1	-9.9	6.9
200	15.5	6.6	9.0	2.3	-20.1	3.0	-11.1	2.4
300	10.0	2.7	9.4	2.6	-22.7	4.0	-13.4	3.7
400	7.3	1.9	8.0	3.1	-20.8	4.1	-12.8	3.2
500	6.3	2.1	7.3	3.1	-20.8	5.0	-13.5	3.3
600	7.0	2.2	6.0	3.0	-19.9	5.1	-13.8	2.9
700	10.4	4.0	5.4	3.5	-21.0	6.2	-15.6	3.6
800	8.8	3.7	3.3	2.4	-15.4	4.6	-12.1	3.2
900	6.3	4.0	1.7	1.6	-8.1	2.9	-6.4	1.9
1000 CLEAR 1012	9.8	9.3	.1	.1	-3.9	.1	-3.8	.1
TOTAL TROPOSPHERE			55.9	13.6	-168.4	21.6	-112.5	13.2

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	22.2	16.7	9.6	6.8	-16.8	9.4	-7.2	3.7
200	24.3	7.5	12.5	4.3	-24.3	4.1	-11.8	2.8
300	15.1	5.5	6.2	4.6	-23.4	6.3	-17.2	3.1
400	11.9	4.7	3.5	3.8	-20.9	6.1	-17.4	4.1
500	9.9	4.8	2.8	3.6	-19.5	6.5	-16.7	4.6
600	7.1	3.9	1.7	2.5	-14.1	4.6	-12.4	3.8
700	4.9	3.6	.7	1.1	-12.0	3.3	-11.3	3.0
800	2.8	2.8	.2	.3	-9.3	1.9	-9.1	1.8
900	.9	1.2	.0	.1	-6.5	1.5	-6.5	1.5
1000 CLEAR 1012	.8	1.3	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			37.1	9.3	-150.7	17.4	-113.6	12.0

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	2.2	3.3	3.6	1.3	-6.9	1.6	-3.3	.5
200	4.3	4.3	7.2	2.1	-16.8	1.6	-9.6	.6
300	5.5	5.1	10.9	1.2	-25.1	2.4	-14.3	1.9
400	6.8	5.0	10.5	2.0	-27.1	2.6	-16.5	3.1
500	10.8	3.9	10.2	2.9	-31.4	1.6	-21.2	2.1
600	15.9	2.6	9.3	3.5	-31.7	4.0	-22.4	2.2
700	16.1	4.1	7.1	3.1	-28.2	6.7	-21.1	3.9
800	18.8	6.5	5.7	2.9	-20.4	5.9	-14.8	3.3
900	10.3	5.1	3.0	2.2	-8.7	1.4	-5.7	1.2
1000 CLEAR 1012	9.2	8.0	.1	.1	-3.9	.1	-3.8	.2
TOTAL TROPOSPHERE			67.6	12.5	-200.1	11.9	-132.5	2.8

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.5	1.1	2.8	.1	-6.1	.5	-3.2	.5
200	----	----	----	----	----	----	----	----
	1.0	1.1	5.7	.3	-15.5	.4	-9.9	.5
300	----	----	----	----	----	----	----	----
	2.9	2.3	11.3	.4	-24.5	1.3	-13.2	1.2
400	----	----	----	----	----	----	----	----
	7.8	5.4	12.3	.3	-28.9	2.9	-16.5	2.7
500	----	----	----	----	----	----	----	----
	18.9	7.8	13.3	1.4	-39.5	5.4	-26.3	4.2
600	----	----	----	----	----	----	----	----
	21.0	4.6	12.8	2.1	-33.9	3.4	-21.1	4.0
700	----	----	----	----	----	----	----	----
	15.1	2.8	8.7	1.8	-25.1	6.0	-16.4	5.1
800	----	----	----	----	----	----	----	----
	14.3	5.0	5.8	2.2	-17.7	5.7	-11.9	4.1
900	----	----	----	----	----	----	----	----
	11.8	7.3	3.3	2.1	-9.1	1.7	-5.8	1.2
1000	----	----	----	----	----	----	----	----
CLEAR	6.8	6.8	.1	.1	-3.9	.1	-3.8	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			76.1	4.6	-204.3	6.4	-128.3	6.0

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	2.8	3.8	3.1	.3	-7.0	1.6	-3.9	1.5
200	----	----	----	----	----	----	----	----
	12.0	9.4	7.2	2.3	-20.1	3.9	-12.9	3.4
300	----	----	----	----	----	----	----	----
	13.6	4.6	11.9	.6	-29.1	2.5	-17.2	2.3
400	----	----	----	----	----	----	----	----
	20.5	5.3	11.9	1.9	-34.3	5.6	-22.4	6.1
500	----	----	----	----	----	----	----	----
	24.7	6.7	13.7	4.4	-36.1	6.2	-22.4	4.5
600	----	----	----	----	----	----	----	----
	13.8	5.4	7.5	4.0	-19.6	7.0	-12.1	4.7
700	----	----	----	----	----	----	----	----
	6.7	5.2	3.6	3.4	-12.3	5.2	-8.7	2.3
800	----	----	----	----	----	----	----	----
	3.2	3.5	1.6	2.0	-9.4	1.9	-7.7	.7
900	----	----	----	----	----	----	----	----
	1.9	2.6	.9	1.3	-8.5	.6	-7.6	1.1
1000	----	----	----	----	----	----	----	----
CLEAR	.8	1.7	.0	.0	-4.1	.1	-4.1	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			61.5	10.3	-180.5	13.5	-119.0	10.1

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	1.8	1.8	3.6	.5	-6.8	.7	-3.2	.3
200	----	----	----	----	----	----	----	----
	14.9	5.7	9.8	2.4	-20.9	2.1	-11.1	1.7
300	----	----	----	----	----	----	----	----
	29.8	9.2	12.8	1.0	-38.5	5.2	-25.7	5.1
400	----	----	----	----	----	----	----	----
	23.9	5.4	8.9	2.3	-33.8	4.5	-24.9	3.9
500	----	----	----	----	----	----	----	----
	14.2	5.3	6.5	3.4	-23.8	7.4	-17.2	5.9
600	----	----	----	----	----	----	----	----
	9.2	5.5	3.6	3.2	-14.8	5.6	-11.1	3.5
700	----	----	----	----	----	----	----	----
	4.3	3.5	1.8	2.2	-11.0	2.6	-9.2	1.6
800	----	----	----	----	----	----	----	----
	1.4	1.5	.7	1.1	-9.1	.6	-8.4	1.0
900	----	----	----	----	----	----	----	----
	.5	.8	.3	.5	-8.8	.4	-8.6	.7
1000	----	----	----	----	----	----	----	----
CLEAR	.0	.1	.0	.0	-4.1	.0	-4.1	.0
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			48.0	9.1	-171.5	8.7	-123.5	5.0

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0
200	.9	1.2	5.4	.1	-15.3	.4	-10.0	.4
300	3.2	1.5	10.7	.1	-24.6	.8	-13.9	.8
400	10.0	5.9	11.6	.2	-30.1	4.0	-18.5	3.9
500	7.9	3.1	11.6	.8	-30.4	2.8	-18.9	2.2
600	9.2	2.9	10.1	.7	-28.1	1.4	-18.0	1.1
700	6.8	1.5	8.6	.6	-28.2	2.5	-19.6	2.2
800	7.9	1.7	7.8	.6	-25.0	3.0	-17.2	2.6
900	12.9	3.6	7.3	.9	-16.4	2.1	-9.1	1.7
1000	41.1	11.5	.6	.1	-4.1	.1	-3.6	.1
CLEAR 1012								
TOTAL TROPOSPHERE			76.2	1.4	-208.1	2.3	-131.9	2.4

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 10 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	5.0	6.5	2.9	.4	-8.3	3.4	-5.4	3.1
200	7.2	5.6	5.8	1.0	-17.7	2.2	-11.8	1.8
300	6.6	4.2	11.0	.6	-24.6	2.5	-13.6	2.4
400	7.5	4.5	11.4	.8	-26.0	3.7	-14.6	3.4
500	6.2	3.0	10.9	1.2	-26.2	3.1	-15.3	2.4
600	9.8	3.4	9.6	1.3	-26.5	3.7	-16.9	2.7
700	10.7	3.0	8.6	1.6	-27.0	5.1	-18.4	4.0
800	12.3	3.3	7.8	1.9	-22.1	5.5	-14.3	4.0
900	13.6	4.0	6.6	2.3	-12.9	3.0	-6.3	1.2
1000	21.0	12.2	.4	.2	-4.1	.1	-3.7	.1
CLEAR 1012								
TOTAL TROPOSPHERE			74.9	6.6	-195.2	14.2	-120.3	9.0

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 11 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	14.3	9.9	8.7	5.2	-12.9	5.1	-4.1	1.3
200	17.3	7.0	10.0	2.8	-21.2	3.2	-11.2	3.4
300	15.3	3.4	7.2	4.2	-26.5	3.8	-19.4	1.5
400	11.1	3.6	5.4	3.9	-23.4	3.6	-18.0	2.2
500	7.4	2.3	4.7	3.6	-20.7	3.4	-16.0	2.9
600	8.4	2.3	3.8	3.0	-19.0	3.4	-15.2	3.3
700	8.5	2.9	3.0	2.6	-17.9	4.1	-14.9	4.2
800	8.0	4.5	2.3	1.9	-14.0	3.5	-11.7	3.0
900	5.2	4.1	1.4	1.5	-8.1	2.1	-6.7	1.2
1000	4.5	5.2	.1	.1	-4.0	.1	-3.9	.1
CLEAR 1012								
TOTAL TROPOSPHERE			46.6	13.2	-167.6	13.3	-121.0	10.2

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 12 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	16.8	15.1	5.2	3.4	-13.7	7.4	-8.5	4.5
200	16.5	9.2	9.6	3.7	-21.3	3.8	-11.7	1.7
300	9.3	4.4	9.5	2.7	-22.6	4.7	-13.1	2.9
400	8.5	3.1	8.2	3.7	-21.7	5.2	-13.6	2.9
500	8.8	5.2	7.7	4.7	-22.9	7.8	-15.2	3.6
600	8.5	4.2	5.8	4.5	-20.1	6.2	-14.3	2.3
700	8.1	3.9	4.0	3.9	-19.1	5.8	-15.0	2.6
800	9.4	4.3	3.0	3.5	-15.5	4.5	-12.4	2.2
900	6.2	3.4	1.7	2.1	-8.4	2.6	-6.8	2.1
1000 CLEAR 1012	7.9	8.9	.1	.1	-4.0	.1	-3.9	.1
TOTAL TROPOSPHERE			54.8	17.3	-169.3	23.2	-114.6	10.5

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	16.9	11.7	4.2	1.2	-14.1	6.5	-9.9	5.8
200	20.8	8.9	9.4	2.5	-23.0	3.7	-13.6	2.5
300	14.0	4.6	11.3	1.3	-24.8	3.3	-13.5	3.2
400	15.0	4.1	9.4	2.7	-25.3	5.6	-15.9	4.4
500	12.1	3.9	8.2	3.3	-22.2	7.1	-14.0	5.6
600	8.7	3.7	5.2	2.9	-15.8	5.5	-10.6	4.9
700	4.7	3.2	2.5	2.0	-12.4	4.3	-10.0	4.0
800	2.7	2.8	1.0	1.1	-10.2	3.2	-9.2	3.0
900	2.0	2.9	.4	.6	-7.6	1.9	-7.2	1.7
1000 CLEAR 1012	3.2	5.7	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			51.5	9.3	-159.5	19.5	-108.0	16.9

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.5	.7	2.7	.0	-6.0	.3	-3.3	.3
200	2.4	3.3	5.4	.1	-16.0	1.4	-10.6	1.4
300	3.1	3.7	10.8	.1	-24.4	1.7	-13.6	1.7
400	4.8	3.6	11.8	.2	-26.7	1.6	-14.9	1.6
500	12.7	6.9	12.3	.5	-34.2	5.7	-21.9	5.4
600	17.4	5.2	11.9	1.3	-33.6	4.2	-21.7	3.4
700	13.8	4.1	9.5	.9	-27.9	4.3	-18.4	4.0
800	12.7	3.7	7.9	1.1	-21.3	3.8	-13.4	3.5
900	19.5	7.1	6.3	1.3	-11.9	1.9	-5.6	1.6
1000 CLEAR 1012	13.1	6.1	.3	.1	-3.9	.1	-3.6	.1
TOTAL TROPOSPHERE			79.1	2.1	-206.0	6.3	-126.9	5.5

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	14.6	5.7	5.6	2.2	-12.7	2.9	-7.1	2.9
200	23.8	7.3	10.1	2.5	-24.4	3.3	-14.2	2.5
300	19.6	5.6	10.7	2.1	-28.1	3.9	-17.5	3.5
400	17.1	4.2	7.9	2.9	-25.8	4.1	-17.9	4.4
500	12.0	4.2	5.9	3.5	-20.6	4.9	-14.8	4.8
600	7.3	3.5	3.0	2.7	-13.5	3.4	-10.5	3.1
700	3.7	2.8	1.1	1.4	-10.5	2.1	-9.3	2.0
800	1.7	1.5	.5	.8	-8.9	.9	-8.4	.8
900	.2	.3	.1	.3	-7.3	.7	-7.2	.9
1000								
CLEAR	.0	.0	.0	.0	-4.0	.0	-4.0	.0
1012								
TOTAL TROPOSPHERE			44.9	7.9	-155.9	5.6	-111.1	8.5

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	10.0	10.8	4.2	1.4	-10.7	5.7	-6.5	4.5
200	18.7	6.9	10.8	3.0	-22.5	2.9	-11.7	2.0
300	17.1	5.9	11.2	1.8	-27.9	5.2	-16.8	4.1
400	15.6	5.9	8.1	3.2	-27.6	5.7	-19.5	3.5
500	12.6	5.8	6.0	4.1	-23.9	7.4	-17.9	4.1
600	10.9	5.9	4.1	3.7	-18.7	5.9	-14.6	3.9
700	6.7	3.9	2.2	2.7	-14.1	3.8	-11.8	3.4
800	4.1	2.6	1.0	1.6	-10.6	2.2	-9.6	2.4
900	1.9	2.0	.3	.5	-7.7	1.0	-7.4	1.0
1000								
CLEAR	2.4	3.5	.0	.0	-4.0	.1	-4.0	.1
1012								
TOTAL TROPOSPHERE			48.0	11.9	-167.7	14.7	-119.8	8.3

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	1.1	3.1	2.8	.1	-6.3	1.5	-3.6	1.4
200	1.8	2.7	5.5	.4	-15.7	1.0	-10.3	.8
300	2.8	2.1	10.8	.4	-24.0	1.1	-13.2	1.0
400	3.2	1.9	11.6	.3	-25.5	1.2	-13.9	1.0
500	5.9	3.9	11.4	.4	-29.5	2.0	-18.0	2.1
600	9.8	3.5	10.4	.4	-30.9	2.2	-20.5	2.1
700	12.6	3.5	9.7	1.1	-33.1	4.5	-23.3	4.5
800	25.0	7.9	10.2	2.1	-28.7	4.6	-18.5	4.6
900	20.7	5.0	7.3	1.9	-11.6	2.4	-4.3	2.5
1000								
CLEAR	17.1	14.2	.3	.1	-3.8	.1	-3.5	.1
1012								
TOTAL TROPOSPHERE			80.0	4.2	-209.0	8.2	-129.0	8.5

Average radiative convergence profiles and cloud top pressure distribution for the Central sector of the GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

3.8 DAILY 24 HOUR MEANS OVER THE SOUTHERN SECTOR OF THE GATE B ARRAY

The following 20 tables, on pages 118 to 124, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the southern sector of the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	2.2	2.5	3.2	.2	-6.8	1.0	-3.6	1.0
200	9.7	7.6	6.6	.7	-19.2	2.9	-12.6	2.3
300	30.3	10.5	13.8	1.7	-38.3	5.7	-24.5	4.9
400	28.3	6.0	12.8	1.3	-38.8	6.2	-26.0	5.6
500	17.1	8.0	9.6	4.4	-26.2	9.6	-16.7	6.5
600	8.0	5.5	5.5	5.0	-13.2	5.4	-7.7	1.7
700	3.4	3.8	2.3	3.3	-9.7	2.5	-7.4	1.4
800	1.0	1.1	.6	1.2	-8.8	.7	-8.2	1.5
900	.1	.3	.1	.2	-8.9	.5	-8.8	.6
1000 CLEAR 1012	.0	.0	.0	.0	-4.2	.0	-4.2	.0
TOTAL TROPOSPHERE			54.4	10.6	-174.1	9.8	-119.6	5.5

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	.4	.6	2.9	.2	-6.0	.2	-3.1	.1
200	1.8	2.9	6.3	1.5	-15.7	1.3	-9.4	.4
300	2.8	3.0	11.0	.4	-24.1	1.3	-13.1	1.1
400	4.6	2.7	11.2	.8	-26.5	1.3	-15.3	1.7
500	7.8	3.4	11.1	1.4	-30.7	2.2	-19.6	2.6
600	10.0	2.8	10.3	1.9	-30.0	2.5	-19.6	1.8
700	11.6	4.8	8.9	2.1	-31.4	3.6	-22.4	2.7
800	11.5	3.6	6.9	2.7	-25.4	3.5	-18.4	2.0
900	17.7	5.5	5.7	3.4	-15.2	3.1	-9.5	1.4
1000 CLEAR 1012	31.9	10.2	.2	.2	-4.0	.1	-3.8	.1
TOTAL TROPOSPHERE			74.7	9.4	-208.9	6.3	-134.2	4.4

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100	----	------	------	------	------	------	------	------
	.0	.0	2.7	.0	-5.8	.0	-3.1	.0
200	----	------	------	------	------	------	------	------
	.1	.2	5.4	.1	-14.9	.1	-9.5	.1
300	----	------	------	------	------	------	------	------
	.6	1.0	10.7	.2	-23.0	.5	-12.3	.4
400	----	------	------	------	------	------	------	------
	1.3	1.5	11.6	.2	-24.7	1.1	-13.1	.9
500	----	------	------	------	------	------	------	------
	3.1	2.0	11.4	.5	-28.2	1.4	-16.7	1.4
600	----	------	------	------	------	------	------	------
	5.0	3.2	10.3	.6	-29.6	1.4	-19.3	1.0
700	----	------	------	------	------	------	------	------
	7.7	3.9	9.2	.5	-34.3	1.2	-25.1	.9
800	----	------	------	------	------	------	------	------
	11.1	2.9	8.5	.9	-31.4	2.9	-22.9	2.2
900	----	------	------	------	------	------	------	------
	21.7	5.1	7.6	1.6	-19.1	2.2	-11.5	1.4
1000	----	------	------	------	------	------	------	------
CLEAR	49.5	10.5	.5	.1	-4.1	.1	-3.6	.1
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			77.9	1.5	-215.1	2.0	-137.2	1.5

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100	----	------	------	------	------	------	------	------
	16.7	6.9	6.4	1.6	-13.9	3.8	-7.6	3.8
200	----	------	------	------	------	------	------	------
	23.0	5.7	11.0	2.3	-23.6	2.7	-12.6	2.2
300	----	------	------	------	------	------	------	------
	18.8	10.2	9.0	2.2	-27.3	7.2	-18.2	6.8
400	----	------	------	------	------	------	------	------
	10.8	5.3	6.2	2.2	-21.3	3.6	-15.1	4.4
500	----	------	------	------	------	------	------	------
	5.7	2.7	4.8	2.4	-16.8	3.2	-11.9	1.9
600	----	------	------	------	------	------	------	------
	5.3	1.8	3.5	1.9	-15.4	3.3	-11.8	2.0
700	----	------	------	------	------	------	------	------
	4.7	2.0	2.5	1.8	-15.1	4.2	-12.7	2.8
800	----	------	------	------	------	------	------	------
	5.1	3.7	1.9	1.8	-13.1	3.5	-11.2	2.1
900	----	------	------	------	------	------	------	------
	6.5	6.2	1.4	1.7	-8.2	1.1	-6.8	1.4
1000	----	------	------	------	------	------	------	------
CLEAR	3.4	4.0	.0	.0	-3.9	.1	-3.9	.2
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			46.7	7.8	-158.5	7.1	-111.8	7.6

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	------	------	------	------	------	------	------
	3.7	4.7	3.0	.1	-7.8	2.7	-4.9	2.7
200	----	------	------	------	------	------	------	------
	1.8	1.5	5.9	.3	-15.7	.7	-9.7	.7
300	----	------	------	------	------	------	------	------
	3.7	2.5	11.8	.5	-24.1	1.9	-12.4	1.5
400	----	------	------	------	------	------	------	------
	23.3	8.3	13.2	.6	-39.1	5.8	-25.9	5.3
500	----	------	------	------	------	------	------	------
	23.0	4.6	14.6	2.1	-38.7	3.6	-24.1	3.6
600	----	------	------	------	------	------	------	------
	17.0	2.8	10.2	2.5	-25.8	4.8	-15.6	3.0
700	----	------	------	------	------	------	------	------
	15.0	3.8	5.6	2.8	-19.1	4.7	-13.5	2.6
800	----	------	------	------	------	------	------	------
	8.3	5.0	2.6	2.2	-11.2	3.0	-8.6	1.9
900	----	------	------	------	------	------	------	------
	3.4	2.6	1.0	1.1	-7.7	.6	-6.6	1.2
1000	----	------	------	------	------	------	------	------
CLEAR	.9	1.1	.0	.0	-4.0	.1	-4.0	.1
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			67.8	6.2	-193.1	6.9	-125.3	7.4

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	37.8	7.4	7.4	3.1	-26.0	4.4	-18.6	5.8
200	24.3	7.2	11.5	2.4	-22.4	4.0	-10.9	3.8
300	12.7	2.8	8.5	2.3	-18.9	2.5	-10.3	2.8
400	7.6	1.5	5.1	2.2	-14.6	2.6	-9.5	2.4
500	4.7	1.7	3.6	2.2	-12.8	3.3	-9.2	2.1
600	3.9	2.1	2.4	1.9	-11.3	3.2	-8.9	1.8
700	4.0	2.9	1.7	1.7	-11.2	3.3	-9.6	1.7
800	2.8	2.9	.9	1.2	-9.0	1.9	-8.1	1.1
900	1.2	1.8	.4	.7	-5.0	.8	-4.6	.9
1000 CLEAR 1012	.9	1.7	.0	.0	-3.9	.0	-3.9	.1
TOTAL TROPOSPHERE			41.6	7.9	-135.1	10.9	-93.5	6.6

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	8.0	8.2	3.4	.8	-9.6	4.1	-6.1	3.8
200	17.3	7.2	8.9	4.0	-22.0	3.1	-13.1	2.4
300	15.2	3.9	11.1	1.6	-27.9	2.6	-16.8	2.2
400	16.2	4.2	10.0	3.5	-28.3	4.6	-18.4	3.6
500	14.3	4.1	9.7	4.3	-27.0	5.2	-17.3	3.5
600	11.0	4.0	7.8	4.8	-19.3	6.0	-11.5	4.4
700	9.5	5.5	5.0	4.1	-15.7	5.5	-10.6	4.0
800	5.2	4.4	2.5	2.3	-10.7	2.7	-8.3	2.0
900	1.8	1.9	1.0	1.2	-7.7	.8	-6.7	.9
1000 CLEAR 1012	1.4	2.6	.0	.1	-4.0	.0	-4.0	.1
TOTAL TROPOSPHERE			59.5	15.1	-172.2	15.4	-112.8	11.3

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	7.7	8.4	4.5	1.5	-9.3	4.1	-4.9	3.3
200	12.8	7.4	11.1	3.3	-20.3	3.1	-9.2	1.7
300	11.8	5.8	10.5	2.2	-26.6	3.7	-16.1	2.2
400	10.1	4.1	7.2	2.9	-25.7	3.3	-18.5	2.3
500	12.8	3.0	5.8	3.2	-27.8	4.2	-22.1	2.0
600	15.2	4.2	4.4	3.3	-25.6	6.4	-21.1	3.8
700	13.4	6.0	3.0	3.0	-20.4	7.4	-17.3	4.6
800	10.5	7.2	2.3	2.9	-13.4	4.5	-11.0	1.9
900	4.3	4.2	.9	1.5	-7.3	.7	-6.3	1.3
1000 CLEAR 1012	1.5	2.2	.0	.0	-4.0	.1	-3.9	.1
TOTAL TROPOSPHERE			49.8	13.0	-180.4	17.2	-130.6	6.8

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.1	.2	2.7	.0	-5.9	.1	-3.1	.1
200	----	----	----	----	----	----	----	----
	.4	.9	5.5	.1	-15.3	.4	-9.8	.3
300	----	----	----	----	----	----	----	----
	2.4	3.9	11.0	.2	-24.3	2.1	-13.3	2.0
400	----	----	----	----	----	----	----	----
	5.9	5.8	12.1	.3	-27.9	3.5	-15.9	3.2
500	----	----	----	----	----	----	----	----
	15.0	4.1	12.7	.9	-36.9	3.1	-24.2	2.8
600	----	----	----	----	----	----	----	----
	18.6	5.0	13.4	1.6	-34.2	2.7	-20.9	3.4
700	----	----	----	----	----	----	----	----
	16.0	4.4	10.3	1.5	-28.3	5.5	-18.0	4.4
800	----	----	----	----	----	----	----	----
	14.5	3.3	7.2	2.0	-20.3	4.8	-13.1	3.0
900	----	----	----	----	----	----	----	----
	16.6	7.2	4.7	2.1	-10.6	1.7	-5.9	1.0
1000	----	----	----	----	----	----	----	----
CLEAR	10.6	6.5	.1	.1	-3.9	.1	-3.7	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			79.7	2.6	-207.6	5.4	-127.9	3.7

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.6	1.3	2.8	.1	-6.1	.5	-3.3	.4
200	----	----	----	----	----	----	----	----
	5.1	4.9	5.7	.2	-17.2	2.0	-11.5	1.9
300	----	----	----	----	----	----	----	----
	9.2	3.5	11.3	.3	-27.7	1.9	-16.4	1.8
400	----	----	----	----	----	----	----	----
	17.7	5.5	12.4	.4	-34.7	4.3	-22.3	4.3
500	----	----	----	----	----	----	----	----
	22.4	6.2	14.5	2.5	-37.6	4.2	-23.0	3.3
600	----	----	----	----	----	----	----	----
	16.0	5.0	11.4	2.0	-25.3	6.2	-13.8	4.8
700	----	----	----	----	----	----	----	----
	10.6	3.7	7.7	2.6	-18.3	4.8	-10.6	2.6
800	----	----	----	----	----	----	----	----
	6.8	2.7	4.7	2.4	-13.0	3.4	-8.2	1.3
900	----	----	----	----	----	----	----	----
	7.3	5.1	3.4	2.3	-9.6	1.4	-6.2	1.2
1000	----	----	----	----	----	----	----	----
CLEAR	4.4	4.5	.1	.1	-4.0	.1	-3.9	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			74.1	4.8	-193.4	8.1	-119.3	5.3

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	1.2	1.7	3.4	.5	-6.5	.8	-3.0	.3
200	----	----	----	----	----	----	----	----
	11.5	7.6	9.1	2.4	-19.6	2.9	-10.5	1.2
300	----	----	----	----	----	----	----	----
	20.2	7.5	12.7	1.0	-33.2	3.5	-20.5	3.2
400	----	----	----	----	----	----	----	----
	25.7	7.3	10.0	2.6	-37.4	5.8	-27.5	5.2
500	----	----	----	----	----	----	----	----
	17.9	5.1	7.6	3.6	-29.4	8.0	-21.8	5.9
600	----	----	----	----	----	----	----	----
	12.7	7.0	4.6	3.5	-18.3	7.4	-13.7	4.8
700	----	----	----	----	----	----	----	----
	6.4	4.5	2.2	2.3	-12.4	3.4	-10.2	2.1
800	----	----	----	----	----	----	----	----
	3.0	2.4	.8	.9	-9.4	1.1	-8.6	1.1
900	----	----	----	----	----	----	----	----
	1.1	1.5	.2	.4	-8.6	.5	-8.4	.6
1000	----	----	----	----	----	----	----	----
CLEAR	.3	.5	.0	.0	-4.1	.0	-4.1	.0
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			50.7	9.9	-179.0	11.1	-128.3	4.6

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	------	------	------	------	------	------	------
	.4	.8	2.8	.2	-6.0	.3	-3.2	.3
200	----	------	------	------	------	------	------	------
	3.8	3.7	5.9	1.0	-16.4	1.4	-10.5	.8
300	----	------	------	------	------	------	------	------
	6.3	5.3	11.2	1.1	-26.1	2.8	-14.9	1.9
400	----	------	------	------	------	------	------	------
	9.9	4.4	11.3	.6	-29.1	2.0	-17.8	2.4
500	----	------	------	------	------	------	------	------
	9.5	3.3	10.8	1.3	-30.5	1.8	-19.7	2.4
600	----	------	------	------	------	------	------	------
	10.7	2.8	9.0	1.6	-27.4	2.7	-18.3	2.1
700	----	------	------	------	------	------	------	------
	7.7	1.5	7.5	1.9	-26.0	4.5	-18.5	2.9
800	----	------	------	------	------	------	------	------
	9.7	2.7	6.8	2.1	-22.7	4.6	-16.0	2.8
900	----	------	------	------	------	------	------	------
	11.7	4.5	6.0	2.4	-14.4	3.2	-8.4	1.4
1000	----	------	------	------	------	------	------	------
CLEAR	30.3	16.1	.4	.3	-4.1	.1	-3.7	.2
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			71.9	7.4	-202.7	8.7	-130.8	4.7

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 10 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	------	------	------	------	------	------	------
	8.8	6.8	2.9	.4	-10.5	3.7	-7.6	3.5
200	----	------	------	------	------	------	------	------
	8.4	5.8	6.1	1.5	-17.8	2.4	-11.6	1.5
300	----	------	------	------	------	------	------	------
	6.1	2.8	10.9	.6	-23.4	2.0	-12.5	1.9
400	----	------	------	------	------	------	------	------
	7.2	3.5	11.2	1.1	-24.7	3.2	-13.5	2.6
500	----	------	------	------	------	------	------	------
	6.2	2.4	10.7	1.3	-25.2	2.7	-14.5	1.8
600	----	------	------	------	------	------	------	------
	9.3	2.5	9.4	1.3	-25.2	3.0	-15.8	2.2
700	----	------	------	------	------	------	------	------
	8.5	1.6	8.1	1.3	-25.0	4.5	-16.8	3.9
800	----	------	------	------	------	------	------	------
	10.5	2.6	7.2	1.7	-21.3	5.1	-14.2	3.9
900	----	------	------	------	------	------	------	------
	14.1	4.8	6.3	2.4	-12.7	3.2	-6.4	1.9
1000	----	------	------	------	------	------	------	------
CLEAR	20.8	12.6	.4	.2	-4.0	.1	-3.6	.2
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			73.2	6.8	-189.7	14.1	-116.5	10.1

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 11 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	------	------	------	------	------	------	------
	16.4	12.3	8.1	4.3	-14.1	6.3	-6.1	3.8
200	----	------	------	------	------	------	------	------
	19.1	9.8	8.9	2.1	-21.6	3.8	-12.7	2.4
300	----	------	------	------	------	------	------	------
	16.3	3.3	8.6	3.3	-26.6	4.9	-18.0	3.3
400	----	------	------	------	------	------	------	------
	11.4	3.3	6.4	3.4	-22.5	5.3	-16.1	3.6
500	----	------	------	------	------	------	------	------
	7.1	2.1	5.4	3.3	-19.3	4.8	-13.9	3.2
600	----	------	------	------	------	------	------	------
	6.5	2.2	4.2	3.0	-16.8	4.9	-12.6	3.2
700	----	------	------	------	------	------	------	------
	6.1	2.8	2.9	2.1	-16.2	5.5	-13.3	4.5
800	----	------	------	------	------	------	------	------
	7.4	6.0	2.4	2.1	-13.8	5.7	-11.5	4.4
900	----	------	------	------	------	------	------	------
	4.7	6.0	1.4	1.6	-8.0	2.9	-6.6	1.9
1000	----	------	------	------	------	------	------	------
CLEAR	4.9	8.0	.1	.1	-4.0	.1	-3.9	.1
1012	----	------	------	------	------	------	------	------
TOTAL TROPOSPHERE			48.3	12.1	-163.0	22.2	-114.6	14.4

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 12 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
200	3.1	4.1	2.8	.1	-7.3	1.9	-4.5	1.9
300	5.2	3.4	5.6	.5	-17.0	1.4	-11.3	1.1
400	6.3	2.4	11.0	.3	-25.3	1.6	-14.3	1.6
500	8.1	2.3	11.7	.4	-27.3	2.0	-15.6	2.0
600	10.2	2.3	11.7	.8	-29.8	2.3	-18.1	2.3
700	10.3	2.9	10.6	1.0	-26.8	2.5	-16.2	2.2
800	11.4	2.7	9.5	1.4	-26.8	3.1	-17.3	2.3
900	14.3	4.6	8.4	2.0	-22.1	3.2	-13.7	2.4
1000	10.1	2.8	5.4	1.6	-11.9	2.2	-6.5	2.0
CLEAR	21.1	9.5	.3	.1	-4.1	.1	-3.8	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			77.0	4.1	-198.3	8.3	-121.3	7.8

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
200	7.9	8.2	3.6	1.2	-9.5	3.9	-5.9	3.1
300	10.8	10.6	7.2	2.5	-19.5	4.2	-12.3	2.4
400	9.9	7.2	11.4	1.0	-25.8	2.5	-14.3	2.4
500	14.7	7.0	11.4	2.6	-29.4	4.3	-18.0	3.4
600	15.5	4.5	10.6	3.5	-30.3	9.1	-19.7	6.8
700	13.9	6.8	8.1	4.2	-23.2	9.7	-15.1	6.2
800	11.4	8.0	5.6	4.2	-18.4	7.9	-12.8	4.4
900	7.0	5.3	3.4	3.0	-12.7	4.5	-9.3	2.9
1000	4.7	4.7	1.6	1.7	-8.4	1.8	-6.8	1.5
CLEAR	4.1	6.9	.0	.0	-4.0	.0	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			62.9	14.4	-181.1	22.9	-118.2	11.9

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
200	.1	.3	2.7	.0	-5.9	.1	-3.1	.1
300	.9	2.2	5.4	.1	-15.3	.9	-9.9	.8
400	1.8	3.4	10.7	.2	-23.7	1.8	-13.0	1.7
500	2.3	2.6	11.6	.3	-25.4	1.4	-13.7	1.4
600	5.8	4.1	11.8	.8	-29.7	3.3	-17.9	2.7
700	12.6	6.5	11.2	1.9	-32.9	3.4	-21.6	2.0
800	11.1	4.0	9.2	.9	-31.7	3.7	-22.5	3.2
900	9.9	4.3	7.7	1.3	-26.4	4.6	-18.6	3.9
1000	24.0	6.8	7.0	1.6	-16.9	3.8	-9.8	3.2
CLEAR	31.6	15.6	.4	.2	-4.1	.2	-3.6	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			77.9	2.3	-211.7	5.6	-133.8	5.4

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	9.4	6.9	4.5	1.2	-9.9	3.2	-5.4	2.5
200	23.2	7.3	12.3	3.4	-24.8	3.3	-12.5	3.4
300	17.2	5.0	10.8	2.7	-27.7	3.4	-17.0	2.6
400	15.2	4.1	6.9	3.2	-26.0	3.8	-19.0	3.0
500	11.9	2.7	4.5	2.8	-22.7	3.5	-18.2	3.0
600	9.2	3.4	1.4	1.2	-17.2	4.1	-15.8	3.7
700	7.2	4.3	.5	.9	-14.2	3.9	-13.7	3.4
800	3.4	2.4	.1	.2	-10.4	1.6	-10.3	1.5
900	2.7	2.9	.0	.0	-7.9	1.0	-7.9	1.0
1000 CLEAR 1012	.7	1.0	.0	.0	-4.0	.0	-4.0	.0
TOTAL TROPOSPHERE			41.1	5.2	-164.8	8.0	-123.7	8.1

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	.7	1.2	3.0	.3	-6.1	.4	-3.1	.3
200	6.5	7.5	7.1	2.5	-17.8	3.1	-10.8	1.4
300	8.9	5.4	11.8	.9	-27.3	2.6	-15.5	2.1
400	10.7	4.9	11.4	2.0	-29.2	2.5	-17.8	2.4
500	18.0	4.2	11.0	3.0	-35.3	5.5	-24.3	3.3
600	21.8	6.8	10.3	4.1	-32.1	6.6	-21.7	4.1
700	17.0	7.7	7.2	3.8	-22.2	6.0	-15.0	4.6
800	9.4	4.4	3.5	2.8	-12.4	3.5	-8.8	3.6
900	4.5	3.5	1.5	1.6	-7.9	.8	-6.4	1.8
1000 CLEAR 1012	2.6	2.9	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			66.8	12.5	-194.3	10.5	-127.5	7.2

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	.2	.4	2.8	.1	-5.9	.1	-3.1	.2
200	1.7	1.3	5.5	.3	-15.7	.5	-10.2	.6
300	4.7	1.9	11.1	.5	-25.2	1.0	-14.2	1.1
400	4.6	1.4	11.8	.2	-26.6	1.1	-14.8	1.1
500	6.0	1.5	11.6	.5	-29.2	1.3	-17.6	1.3
600	10.6	3.2	10.7	.8	-30.8	1.8	-20.1	1.8
700	14.7	3.2	9.8	1.4	-33.2	2.0	-23.4	2.7
800	30.0	5.2	10.3	2.4	-28.5	3.1	-18.1	3.3
900	20.7	5.7	5.7	1.8	-9.7	1.4	-4.0	2.1
1000 CLEAR 1012	6.8	6.4	.1	.1	-3.7	.1	-3.6	.1
TOTAL TROPOSPHERE			79.5	5.0	-208.6	2.5	-129.1	5.8

Average radiative convergence profiles and cloud top pressure distribution for the Southern sector of the GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

3.9 DAILY 24 HOUR MEANS OVER THE NORTHEAST SECTOR OF THE GATE B ARRAY (ENCOMPASSES C-SCALE ARRAY)

The following 20 tables, on pages 125 to 131, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the northeast sector of the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
200	2.2	4.3	2.9	.1	-6.9	2.0	-4.0	1.9
300	----	-----	-----	-----	-----	-----	-----	-----
400	8.8	7.2	5.8	.4	-18.7	3.0	-13.0	2.8
500	----	-----	-----	-----	-----	-----	-----	-----
600	12.6	4.5	11.5	.6	-28.5	3.0	-17.1	3.2
700	----	-----	-----	-----	-----	-----	-----	-----
800	17.0	7.7	12.6	.5	-32.7	7.2	-20.1	7.4
900	----	-----	-----	-----	-----	-----	-----	-----
1000	21.5	8.1	14.3	2.0	-35.5	6.4	-21.2	4.6
CLEAR	----	-----	-----	-----	-----	-----	-----	-----
1012	15.9	4.4	12.5	2.5	-24.2	5.2	-11.8	3.0
	----	-----	-----	-----	-----	-----	-----	-----
	9.9	4.8	7.0	3.4	-16.0	5.3	-9.0	2.3
	----	-----	-----	-----	-----	-----	-----	-----
	6.9	4.5	4.2	3.0	-11.6	3.5	-7.3	1.1
	----	-----	-----	-----	-----	-----	-----	-----
	2.3	3.1	2.0	2.3	-8.3	1.5	-6.3	1.3
	----	-----	-----	-----	-----	-----	-----	-----
	2.9	5.3	.1	.1	-4.1	.1	-4.0	.2
	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			72.7	6.7	-186.4	10.2	-113.7	5.2

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
200	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0
300	----	-----	-----	-----	-----	-----	-----	-----
400	0.0	0.0	5.3	.1	-15.0	.1	-9.6	.1
500	----	-----	-----	-----	-----	-----	-----	-----
600	.3	.7	10.7	.1	-23.0	.3	-12.3	.3
700	----	-----	-----	-----	-----	-----	-----	-----
800	2.2	2.4	11.6	.2	-25.4	1.4	-13.8	1.4
900	----	-----	-----	-----	-----	-----	-----	-----
1000	5.9	3.2	11.5	.5	-30.6	2.3	-19.0	2.2
CLEAR	----	-----	-----	-----	-----	-----	-----	-----
1012	8.4	3.2	11.0	1.3	-31.1	2.4	-20.2	1.6
	----	-----	-----	-----	-----	-----	-----	-----
	10.1	3.6	10.0	.8	-33.2	2.6	-23.2	2.6
	----	-----	-----	-----	-----	-----	-----	-----
	9.9	2.8	8.7	.8	-28.2	2.2	-19.5	1.8
	----	-----	-----	-----	-----	-----	-----	-----
	15.5	5.5	7.6	1.3	-17.4	1.7	-9.8	1.1
	----	-----	-----	-----	-----	-----	-----	-----
	47.7	12.0	.4	.2	-4.1	.1	-3.7	.1
	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			79.5	1.9	-213.7	1.6	-134.2	2.6

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.0	.0	2.8	.1	-5.8	.0	-3.0	.0
200	----	----	----	----	----	----	----	----
	.5	.5	5.6	.2	-15.1	.2	-9.5	.1
300	----	----	----	----	----	----	----	----
	1.3	1.1	11.1	.4	-23.5	.6	-12.4	.3
400	----	----	----	----	----	----	----	----
	1.9	1.4	11.7	.3	-25.1	.9	-13.4	.8
500	----	----	----	----	----	----	----	----
	2.5	1.8	11.3	.5	-27.5	1.2	-16.2	1.2
600	----	----	----	----	----	----	----	----
	5.4	3.0	10.3	.8	-29.8	1.3	-19.5	1.2
700	----	----	----	----	----	----	----	----
	9.6	3.1	9.5	1.1	-34.9	1.5	-25.4	.8
800	----	----	----	----	----	----	----	----
	14.6	4.0	8.0	1.2	-31.3	2.8	-23.3	1.9
900	----	----	----	----	----	----	----	----
	25.3	5.0	5.6	1.6	-17.2	2.2	-11.7	1.6
1000	----	----	----	----	----	----	----	----
CLEAR	38.9	10.8	.3	.1	-4.0	.1	-3.7	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			76.3	2.6	-214.2	2.1	-137.9	1.0

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	13.9	3.8	7.1	2.0	-12.5	2.4	-5.5	2.5
200	----	----	----	----	----	----	----	----
	14.8	3.2	10.3	2.0	-20.6	1.9	-10.3	1.8
300	----	----	----	----	----	----	----	----
	11.7	3.1	8.8	1.5	-24.9	2.3	-16.1	3.3
400	----	----	----	----	----	----	----	----
	12.3	4.8	6.5	1.9	-25.0	3.8	-18.5	4.5
500	----	----	----	----	----	----	----	----
	11.1	4.1	5.5	2.3	-24.9	3.7	-19.5	3.3
600	----	----	----	----	----	----	----	----
	10.8	3.6	3.9	2.2	-21.1	2.6	-17.2	2.8
700	----	----	----	----	----	----	----	----
	8.9	2.6	2.3	1.8	-17.6	3.2	-15.3	2.2
800	----	----	----	----	----	----	----	----
	8.8	4.8	1.3	1.2	-13.3	3.7	-12.0	3.1
900	----	----	----	----	----	----	----	----
	6.1	5.5	.5	.7	-7.5	.9	-6.9	.6
1000	----	----	----	----	----	----	----	----
CLEAR	1.7	2.6	.0	.0	-3.9	.1	-3.9	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			46.3	6.7	-171.4	4.4	-125.1	7.4

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	0.0	0.0	3.0	.1	-5.8	.0	-2.9	.1
200	----	----	----	----	----	----	----	----
	.1	.3	5.9	.1	-15.3	.1	-9.4	.1
300	----	----	----	----	----	----	----	----
	2.0	2.3	11.7	.2	-24.3	1.0	-12.6	.9
400	----	----	----	----	----	----	----	----
	23.4	5.3	13.4	.5	-40.4	3.5	-27.1	3.2
500	----	----	----	----	----	----	----	----
	22.9	3.4	15.5	.7	-40.1	3.1	-24.5	3.2
600	----	----	----	----	----	----	----	----
	16.0	3.5	11.1	2.9	-26.5	4.1	-15.4	2.2
700	----	----	----	----	----	----	----	----
	11.0	4.5	4.7	1.8	-19.8	3.0	-15.0	1.9
800	----	----	----	----	----	----	----	----
	7.0	3.9	1.2	.7	-14.3	1.6	-13.1	1.3
900	----	----	----	----	----	----	----	----
	9.7	5.2	.5	.5	-10.0	1.5	-9.6	1.5
1000	----	----	----	----	----	----	----	----
CLEAR	7.8	5.7	.0	.0	-4.0	.1	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			67.0	4.5	-200.5	2.2	-133.5	2.7

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	8.2	10.0	4.9	2.5	-9.8	4.9	-4.9	3.8
200	14.3	7.0	9.5	2.9	-20.4	2.9	-10.9	1.3
300	9.4	2.1	9.4	2.2	-25.0	3.8	-15.6	2.9
400	7.8	2.4	8.2	2.7	-23.8	3.8	-15.5	3.0
500	6.7	2.5	7.7	2.7	-23.7	2.8	-16.1	3.0
600	7.6	2.0	6.7	2.6	-22.8	2.5	-16.2	1.7
700	11.2	2.3	5.8	3.1	-24.4	3.5	-18.6	2.1
800	10.4	2.9	3.8	2.8	-18.8	4.4	-15.0	3.0
900	10.0	4.6	2.1	2.2	-10.2	3.2	-8.1	1.7
1000 CLEAR 1012	14.3	10.9	.1	.1	-3.9	.1	-3.9	.1
TOTAL TROPOSPHERE			58.1	12.9	-182.8	15.2	-124.8	10.0

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	19.2	11.5	8.7	4.8	-14.7	5.9	-6.0	1.8
200	25.3	8.2	13.9	3.2	-25.1	4.2	-11.2	3.8
300	13.0	5.5	5.8	4.3	-22.6	4.9	-16.7	1.9
400	9.3	2.5	2.9	3.3	-19.7	4.0	-16.7	2.9
500	9.9	3.7	2.1	2.6	-20.8	5.1	-18.6	4.8
600	8.5	3.7	1.7	2.2	-16.8	3.9	-15.1	3.3
700	6.5	3.2	.9	1.4	-14.2	2.7	-13.3	2.0
800	4.3	2.5	.5	.9	-10.6	1.3	-10.2	1.0
900	2.0	1.2	.1	.3	-6.9	.8	-6.8	.8
1000 CLEAR 1012	2.0	1.7	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			36.7	8.7	-155.4	12.1	-118.7	8.1

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.3	.7	2.9	.4	-6.0	.4	-3.1	.1
200	1.9	2.4	5.8	.8	-15.9	.9	-10.0	.4
300	3.5	3.3	11.1	.5	-24.7	1.6	-13.6	1.3
400	5.5	4.2	11.8	.9	-27.3	2.6	-15.4	2.4
500	9.2	3.9	11.9	1.3	-31.7	1.8	-19.7	1.7
600	13.2	3.9	11.1	2.0	-32.1	2.6	-21.0	1.3
700	14.9	4.1	8.8	1.7	-31.3	4.5	-22.5	3.1
800	21.8	3.7	7.5	2.3	-24.6	4.9	-17.1	3.2
900	14.5	5.3	4.6	2.5	-9.9	2.1	-5.4	1.5
1000 CLEAR 1012	15.4	12.3	.2	.2	-3.8	.1	-3.7	.2
TOTAL TROPOSPHERE			75.7	5.9	-207.2	6.6	-131.5	2.8

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.8	1.4	2.8	.0	-6.2	.6	-3.4	.6
200	----	----	----	----	----	----	----	----
	2.6	2.3	5.7	.1	-16.1	.9	-10.4	.8
300	----	----	----	----	----	----	----	----
	4.7	1.8	11.3	.2	-25.5	1.1	-14.2	1.1
400	----	----	----	----	----	----	----	----
	9.9	5.5	12.4	.2	-29.6	3.3	-17.1	3.1
500	----	----	----	----	----	----	----	----
	23.9	7.3	14.2	1.2	-42.5	5.3	-28.3	4.3
600	----	----	----	----	----	----	----	----
	23.4	4.1	13.2	1.5	-32.7	4.5	-19.6	3.8
700	----	----	----	----	----	----	----	----
	14.3	2.9	8.1	1.4	-21.0	4.8	-12.9	3.8
800	----	----	----	----	----	----	----	----
	11.9	4.8	5.3	1.7	-13.9	4.0	-8.6	2.4
900	----	----	----	----	----	----	----	----
	7.5	5.1	2.8	1.4	-7.9	.6	-5.1	.9
1000	----	----	----	----	----	----	----	----
CLEAR	1.0	1.2	.0	.0	-4.0	.1	-3.9	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			75.9	2.7	-199.4	5.0	-123.5	3.4

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	6.5	4.0	3.6	.6	-8.6	1.7	-5.0	1.6
200	----	----	----	----	----	----	----	----
	21.3	7.7	7.9	1.7	-23.8	3.3	-15.9	3.2
300	----	----	----	----	----	----	----	----
	17.9	4.0	11.9	.6	-29.7	3.1	-17.8	2.9
400	----	----	----	----	----	----	----	----
	17.5	5.4	11.3	1.9	-28.6	5.8	-17.3	5.6
500	----	----	----	----	----	----	----	----
	20.8	8.7	12.8	4.4	-30.2	8.1	-17.4	5.2
600	----	----	----	----	----	----	----	----
	11.0	4.9	5.9	3.7	-15.9	4.9	-10.1	3.4
700	----	----	----	----	----	----	----	----
	3.5	2.6	1.4	1.9	-9.7	2.5	-8.2	2.2
800	----	----	----	----	----	----	----	----
	1.1	1.4	.3	.7	-8.4	.6	-8.1	.8
900	----	----	----	----	----	----	----	----
	.3	.7	.1	.1	-8.0	.6	-8.0	.6
1000	----	----	----	----	----	----	----	----
CLEAR	.0	.1	.0	.0	-4.1	.0	-4.1	.0
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			55.2	7.6	-167.1	9.4	-111.9	10.8

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	2.1	2.0	3.5	.6	-6.9	.8	-3.4	.4
200	----	----	----	----	----	----	----	----
	13.8	6.3	8.4	2.3	-20.5	2.3	-12.0	1.4
300	----	----	----	----	----	----	----	----
	27.5	11.7	12.3	1.1	-37.1	6.5	-24.8	6.1
400	----	----	----	----	----	----	----	----
	22.7	5.9	10.5	2.4	-33.7	5.2	-23.2	3.6
500	----	----	----	----	----	----	----	----
	14.0	5.4	9.0	4.3	-24.5	8.4	-15.5	5.4
600	----	----	----	----	----	----	----	----
	11.0	7.5	6.1	4.7	-16.8	7.7	-10.7	3.9
700	----	----	----	----	----	----	----	----
	6.4	6.7	3.4	3.5	-12.4	4.5	-9.0	2.0
800	----	----	----	----	----	----	----	----
	2.0	1.8	1.2	1.2	-9.2	.8	-8.0	1.8
900	----	----	----	----	----	----	----	----
	.4	.5	.2	.3	-8.5	.7	-8.3	1.0
1000	----	----	----	----	----	----	----	----
CLEAR	.1	.1	.0	.0	-4.1	.0	-4.1	.0
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			54.6	12.1	-173.7	11.2	-119.1	3.9

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0
200	.7	1.2	5.3	.0	-15.3	.4	-9.9	.4
300	2.6	1.4	10.7	.1	-24.2	.8	-13.5	.8
400	4.4	2.3	11.5	.2	-26.7	1.5	-15.1	1.5
500	5.2	2.5	11.5	.4	-28.9	1.6	-17.4	1.4
600	7.8	3.5	10.7	.9	-29.7	2.3	-19.1	1.6
700	8.5	3.8	9.3	1.0	-31.9	2.7	-22.6	2.1
800	11.6	6.6	8.6	1.2	-28.2	2.9	-19.6	2.0
900	16.9	5.8	7.4	1.1	-16.6	2.5	-9.1	1.9
1000 CLEAR 1012	42.3	11.7	.5	.2	-4.0	.2	-3.5	.1
TOTAL TROPOSPHERE			78.2	2.4	-211.3	2.7	-133.0	2.3

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 10, 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	3.2	5.1	2.9	.4	-7.5	2.8	-4.5	2.4
200	7.0	5.7	5.9	.7	-17.8	2.4	-11.8	2.0
300	8.5	4.2	11.2	.5	-26.1	2.3	-14.9	2.2
400	10.0	3.9	11.6	.6	-28.0	3.1	-16.4	2.8
500	8.5	2.1	11.1	1.1	-27.8	3.1	-16.7	2.5
600	13.5	3.3	10.0	1.4	-27.9	4.3	-17.9	3.3
700	13.6	3.2	8.6	1.6	-25.9	4.4	-17.3	3.3
800	11.5	2.3	7.0	1.6	-18.7	3.7	-11.7	2.3
900	12.9	5.2	5.7	2.0	-11.0	1.9	-5.3	.6
1000 CLEAR 1012	11.2	6.1	.2	.1	-4.0	.0	-3.7	.1
TOTAL TROPOSPHERE			74.2	6.2	-194.6	12.1	-120.4	7.0

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 11, 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	16.0	10.2	9.6	4.9	-13.4	5.2	-3.8	.9
200	13.7	4.3	12.0	2.3	-20.1	1.9	-8.1	1.7
300	10.6	2.4	5.7	3.7	-23.6	1.9	-17.9	2.2
400	7.8	2.0	3.7	3.3	-22.0	2.6	-18.3	1.5
500	6.1	1.6	3.0	2.7	-21.4	3.6	-18.5	1.7
600	8.5	1.6	2.5	2.3	-21.4	3.6	-18.9	2.0
700	9.6	2.1	1.7	1.6	-21.1	3.8	-19.4	3.0
800	9.4	2.5	1.4	1.1	-16.6	4.1	-15.2	3.4
900	8.0	4.5	1.0	.9	-9.4	3.3	-8.4	2.6
1000 CLEAR 1012	10.2	10.0	.1	.1	-4.0	.1	-3.9	.1
TOTAL TROPOSPHERE			40.5	10.0	-172.9	15.8	-132.4	7.9

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 12, 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	20.0	17.4	6.5	3.8	-15.0	8.6	-8.4	5.4
200	18.2	6.0	10.7	2.2	-22.0	2.5	-11.3	2.0
300	10.6	3.5	8.6	3.2	-22.3	6.0	-13.7	3.9
400	8.3	2.9	6.6	3.2	-20.5	5.9	-13.9	3.7
500	6.8	4.0	5.6	3.5	-19.9	6.2	-14.4	3.3
600	6.2	4.1	3.8	2.9	-17.9	4.8	-14.1	2.6
700	6.1	3.5	2.4	1.8	-18.0	4.2	-15.6	2.7
800	7.6	2.8	1.6	1.3	-15.4	4.3	-13.8	3.2
900	6.0	3.3	1.0	1.3	-9.0	4.0	-7.9	2.8
1000 CLEAR 1012	10.2	13.7	.1	.1	-4.0	.2	-3.9	.1
TOTAL TROPOSPHERE			46.9	10.5	-163.9	22.5	-117.0	14.2

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	7.9	8.8	3.8	.7	-9.4	4.4	-5.7	3.9
200	18.9	8.4	10.2	2.2	-22.8	3.5	-12.6	2.9
300	15.0	4.8	11.6	1.4	-27.6	3.4	-16.0	2.9
400	14.8	3.1	8.8	1.9	-27.6	3.7	-18.8	2.5
500	13.9	3.2	7.2	2.2	-25.7	5.8	-18.5	4.3
600	11.0	4.4	4.7	2.9	-19.2	6.2	-14.5	5.3
700	6.8	4.4	2.5	2.5	-15.0	4.9	-12.5	4.3
800	5.2	4.7	1.2	1.4	-11.8	2.9	-10.6	2.7
900	3.0	2.4	.5	.6	-8.2	1.3	-7.7	1.5
1000 CLEAR 1012	3.4	5.5	.0	.0	-4.0	.0	-4.0	.1
TOTAL TROPOSPHERE			50.4	8.6	-171.4	16.8	-121.0	13.5

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.3	.6	2.7	.0	-6.0	.2	-3.2	.2
200	2.2	2.8	5.4	.1	-16.0	1.2	-10.6	1.2
300	2.3	1.8	10.9	.2	-24.0	.7	-13.1	.7
400	5.1	3.2	11.9	.2	-27.6	1.9	-15.7	1.8
500	21.8	7.0	12.3	.5	-41.0	4.5	-28.7	4.5
600	19.5	5.5	12.8	1.5	-32.8	5.6	-20.1	4.9
700	14.7	4.6	9.9	.7	-24.9	4.9	-15.0	4.7
800	12.3	3.5	7.8	.9	-17.8	3.0	-10.0	2.4
900	13.5	4.3	5.4	1.4	-10.1	1.4	-4.8	.8
1000 CLEAR 1012	8.4	6.4	.2	.1	-3.9	.1	-3.7	.1
TOTAL TROPOSPHERE			79.3	1.3	-204.2	5.5	-124.9	4.9

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 15 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	14.7	6.5	6.0	3.2	-13.1	3.6	-7.2	4.0
200	20.5	8.7	8.8	1.5	-22.6	3.8	-13.7	3.2
300	17.9	6.6	10.3	2.4	-27.8	3.8	-17.5	3.6
400	16.8	4.0	8.6	2.7	-26.3	4.8	-17.7	5.2
500	12.6	5.4	7.0	3.2	-22.2	7.4	-15.2	6.5
600	8.8	4.6	5.1	3.0	-15.6	5.1	-10.5	3.7
700	5.0	3.6	2.7	2.1	-11.5	2.8	-8.8	1.4
800	3.1	2.7	1.5	1.6	-9.4	1.4	-7.9	.9
900	.7	1.1	.4	.6	-7.1	.7	-6.7	1.1
1000 CLEAR 1012	.1	.3	.0	.0	-4.0	.0	-4.0	.1
TOTAL TROPOSPHERE			50.3	9.6	-159.6	11.6	-109.3	10.5

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	9.2	8.5	4.0	1.0	-10.4	4.7	-6.5	3.9
200	19.2	3.4	10.3	1.9	-22.7	1.5	-12.5	2.2
300	24.7	5.3	12.8	1.8	-32.3	4.2	-19.6	3.0
400	22.9	6.8	8.5	2.5	-32.4	5.8	-23.9	4.6
500	11.7	4.4	4.7	3.5	-19.9	5.9	-15.2	3.1
600	6.8	3.4	2.5	2.6	-12.8	3.5	-10.3	2.0
700	3.1	2.7	1.2	2.1	-10.3	2.7	-9.1	1.5
800	1.7	2.1	.6	1.3	-9.3	1.0	-8.7	.7
900	.4	.7	.2	.4	-8.1	.9	-7.9	1.1
1000 CLEAR 1012	.2	.4	.0	.0	-4.1	.1	-4.1	.1
TOTAL TROPOSPHERE			44.5	8.7	-162.2	9.5	-117.6	5.4

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	3.3	5.9	2.8	.3	-7.4	3.0	-4.6	2.7
200	4.4	4.7	5.6	.5	-16.7	1.7	-11.1	1.5
300	5.2	3.7	10.7	.3	-24.5	2.1	-13.8	1.9
400	5.2	2.8	11.4	.5	-25.7	2.0	-14.3	1.6
500	9.0	4.6	11.3	.7	-30.1	2.3	-18.8	2.5
600	10.9	3.1	10.2	.8	-28.9	4.2	-18.7	3.9
700	11.2	3.7	9.7	1.0	-28.9	6.1	-19.2	5.5
800	18.1	8.9	9.7	1.9	-23.8	5.7	-14.1	4.9
900	17.0	5.3	7.7	1.9	-11.0	2.2	-3.3	1.8
1000 CLEAR 1012	15.7	13.5	.3	.1	-3.8	.1	-3.5	.1
TOTAL TROPOSPHERE			79.5	3.9	-200.9	13.5	-121.4	10.9

Average radiative convergence profiles and cloud top pressure distribution for the Northeast sector of the GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another. This area encompasses the C-scale array.

3.10 DAILY 24 HOUR MEANS OVER THE SOUTHEAST SECTOR OF THE GATE B ARRAY

The following 20 tables, on pages 132 to 138, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the southeast sector of the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)							
			SHORTWAVE		LONGWAVE		TOTAL			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
100	----	-----	-----	-----	-----	-----	-----	-----		
200	1.7	2.8	3.1	.2	-6.6	1.2	-3.5	1.2		
300	----	-----	-----	-----	-----	-----	-----	-----		
400	6.0	4.8	6.2	.5	-17.9	2.1	-11.7	1.7		
500	----	-----	-----	-----	-----	-----	-----	-----		
600	22.4	10.6	12.8	1.7	-33.9	5.3	-21.1	4.3		
700	----	-----	-----	-----	-----	-----	-----	-----		
800	28.1	7.1	13.2	1.0	-40.5	6.1	-27.3	5.9		
900	----	-----	-----	-----	-----	-----	-----	-----		
1000	22.5	8.5	12.0	4.6	-33.2	9.4	-21.2	5.6		
CLEAR	----	-----	-----	-----	-----	-----	-----	-----		
1012	11.1	5.9	8.2	5.4	-16.5	6.8	-8.3	2.4		
	----	-----	-----	-----	-----	-----	-----	-----		
	5.6	5.7	4.0	4.5	-10.7	4.4	-6.7	1.2		
	----	-----	-----	-----	-----	-----	-----	-----		
	2.1	3.3	1.5	2.4	-8.7	1.6	-7.2	1.5		
	----	-----	-----	-----	-----	-----	-----	-----		
	.3	.7	.3	.7	-8.7	.6	-8.3	1.1		
	----	-----	-----	-----	-----	-----	-----	-----		
	.1	.3	.0	.0	-4.2	.0	-4.1	.1		
	----	-----	-----	-----	-----	-----	-----	-----		
TOTAL TROPOSPHERE			61.3	12.1	-180.9	9.8	-119.5	5.3		

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)							
			SHORTWAVE		LONGWAVE		TOTAL			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
100	----	-----	-----	-----	-----	-----	-----	-----		
200	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0		
300	----	-----	-----	-----	-----	-----	-----	-----		
400	.0	.0	5.4	.1	-15.0	.0	-9.6	.1		
500	----	-----	-----	-----	-----	-----	-----	-----		
600	1.1	1.9	10.7	.1	-23.4	1.0	-12.6	1.0		
700	----	-----	-----	-----	-----	-----	-----	-----		
800	3.0	2.0	11.7	.2	-25.9	1.2	-14.3	1.2		
900	----	-----	-----	-----	-----	-----	-----	-----		
1000	7.1	2.8	11.9	.5	-31.0	2.5	-19.1	2.2		
CLEAR	----	-----	-----	-----	-----	-----	-----	-----		
1012	9.4	3.0	11.5	.9	-31.0	2.1	-19.5	1.6		
	----	-----	-----	-----	-----	-----	-----	-----		
	9.2	2.4	9.8	.6	-32.0	2.1	-22.1	2.2		
	----	-----	-----	-----	-----	-----	-----	-----		
	10.1	2.7	8.5	1.1	-27.4	1.7	-18.9	1.1		
	----	-----	-----	-----	-----	-----	-----	-----		
	20.9	2.7	8.2	1.1	-17.4	1.2	-9.2	.8		
	----	-----	-----	-----	-----	-----	-----	-----		
	39.3	5.2	.3	.1	-4.1	.1	-3.7	.1		
	----	-----	-----	-----	-----	-----	-----	-----		
TOTAL TROPOSPHERE			80.8	1.1	-212.9	1.4	-132.1	2.1		

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.0	.0	2.7	.0	-5.8	.0	-3.1	.0
200	----	----	----	----	----	----	----	----
	.1	.2	5.4	.1	-14.9	.1	-9.5	.1
300	----	----	----	----	----	----	----	----
	.7	1.1	10.8	.2	-23.1	.6	-12.3	.4
400	----	----	----	----	----	----	----	----
	1.3	1.6	11.7	.2	-24.8	1.1	-13.1	1.0
500	----	----	----	----	----	----	----	----
	2.3	2.0	11.6	.5	-27.6	1.3	-16.0	1.1
600	----	----	----	----	----	----	----	----
	4.9	3.5	10.6	.7	-29.8	1.5	-19.2	1.1
700	----	----	----	----	----	----	----	----
	8.9	4.1	9.7	.9	-35.1	1.3	-25.4	.8
800	----	----	----	----	----	----	----	----
	13.0	3.0	8.7	1.2	-31.7	3.5	-23.0	2.4
900	----	----	----	----	----	----	----	----
	23.8	6.4	7.1	1.8	-18.4	2.2	-11.3	1.4
1000	----	----	----	----	----	----	----	----
CLEAR	44.9	9.1	.4	.1	-4.0	.1	-3.6	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			78.6	1.7	-215.2	2.3	-136.6	1.1

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	13.5	5.4	6.9	1.9	-12.4	2.9	-5.4	2.6
200	----	----	----	----	----	----	----	----
	19.6	6.7	10.9	2.6	-22.5	3.2	-11.6	2.5
300	----	----	----	----	----	----	----	----
	20.4	10.4	8.7	2.4	-29.4	6.6	-20.8	5.7
400	----	----	----	----	----	----	----	----
	12.6	6.1	5.9	2.1	-23.7	4.2	-17.8	5.0
500	----	----	----	----	----	----	----	----
	5.3	1.9	4.6	2.2	-17.2	3.6	-12.6	2.4
600	----	----	----	----	----	----	----	----
	5.0	1.8	3.4	1.9	-15.9	4.2	-12.5	2.6
700	----	----	----	----	----	----	----	----
	5.2	2.7	2.6	1.9	-16.5	4.7	-13.8	3.1
800	----	----	----	----	----	----	----	----
	6.2	4.1	1.8	1.5	-14.2	3.7	-12.4	2.5
900	----	----	----	----	----	----	----	----
	8.3	6.7	1.4	1.5	-8.8	.8	-7.4	1.0
1000	----	----	----	----	----	----	----	----
CLEAR	3.9	4.6	.0	.0	-3.9	.1	-3.9	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			46.2	7.2	-164.4	8.1	-118.2	7.0

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	4.0	5.0	3.0	.1	-8.0	2.9	-5.1	2.9
200	----	----	----	----	----	----	----	----
	1.6	1.6	5.9	.2	-15.5	.8	-9.6	.8
300	----	----	----	----	----	----	----	----
	2.7	1.1	11.6	.3	-23.5	1.0	-11.9	.9
400	----	----	----	----	----	----	----	----
	22.1	6.3	13.1	.5	-38.4	4.6	-25.3	4.3
500	----	----	----	----	----	----	----	----
	23.0	3.9	15.7	1.3	-39.0	3.1	-23.3	2.6
600	----	----	----	----	----	----	----	----
	16.4	2.9	10.5	2.7	-25.8	4.2	-15.3	2.8
700	----	----	----	----	----	----	----	----
	14.9	3.1	5.6	2.6	-19.8	3.8	-14.1	2.7
800	----	----	----	----	----	----	----	----
	9.0	4.0	2.2	1.7	-12.0	3.1	-9.9	2.7
900	----	----	----	----	----	----	----	----
	5.2	4.4	.8	.8	-7.8	.8	-6.9	.9
1000	----	----	----	----	----	----	----	----
CLEAR	1.1	1.2	.0	.0	-4.0	.1	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			68.5	5.3	-193.9	8.0	-125.4	8.5

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	----	----	----	----	----	----	----
	33.2	8.7	8.8	2.7	-22.9	5.2	-14.1	5.6
200	----	----	----	----	----	----	----	----
	22.3	7.2	11.0	2.1	-22.5	3.5	-11.4	3.1
300	----	----	----	----	----	----	----	----
	11.8	3.4	7.4	1.9	-19.4	2.2	-12.1	2.9
400	----	----	----	----	----	----	----	----
	8.4	1.6	4.9	2.1	-16.8	3.4	-11.9	3.0
500	----	----	----	----	----	----	----	----
	5.8	1.7	3.8	2.4	-15.3	4.3	-11.5	3.0
600	----	----	----	----	----	----	----	----
	5.4	2.9	2.8	2.3	-13.6	5.0	-10.8	3.1
700	----	----	----	----	----	----	----	----
	6.2	5.0	1.9	2.2	-13.3	5.1	-11.4	3.5
800	----	----	----	----	----	----	----	----
	4.0	3.7	.8	1.2	-9.7	2.5	-8.9	1.8
900	----	----	----	----	----	----	----	----
	1.7	2.1	.2	.4	-5.4	.8	-5.2	.8
1000	----	----	----	----	----	----	----	----
CLEAR	1.2	2.3	.0	.0	-3.9	.0	-3.9	.0
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			41.6	8.5	-142.8	15.3	-101.2	10.8

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	----	----	----	----	----	----	----
	7.7	9.6	4.9	4.1	-9.2	4.7	-4.3	1.2
200	----	----	----	----	----	----	----	----
	18.8	7.7	9.3	3.6	-22.8	3.6	-13.5	3.4
300	----	----	----	----	----	----	----	----
	14.8	5.3	10.0	3.5	-27.5	4.2	-17.5	1.6
400	----	----	----	----	----	----	----	----
	13.6	3.6	8.7	4.2	-26.4	5.0	-17.7	3.5
500	----	----	----	----	----	----	----	----
	12.9	3.8	8.2	4.7	-25.9	5.4	-17.7	4.5
600	----	----	----	----	----	----	----	----
	11.7	3.2	7.0	4.7	-20.7	4.3	-13.7	4.3
700	----	----	----	----	----	----	----	----
	10.3	4.4	4.4	3.7	-17.0	4.3	-12.6	3.7
800	----	----	----	----	----	----	----	----
	6.2	4.0	2.2	2.3	-11.4	2.5	-9.2	1.9
900	----	----	----	----	----	----	----	----
	2.2	2.0	1.0	1.2	-7.7	1.0	-6.7	1.0
1000	----	----	----	----	----	----	----	----
CLEAR	1.9	2.7	.0	.1	-4.0	.1	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			55.7	16.2	-172.6	14.9	-116.8	11.2

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	----	----	----	----	----	----	----	----
	8.5	9.0	4.5	1.5	-9.7	4.4	-5.2	3.6
200	----	----	----	----	----	----	----	----
	13.4	8.2	11.2	3.8	-20.4	3.4	-9.3	1.8
300	----	----	----	----	----	----	----	----
	12.8	4.8	10.5	2.2	-26.9	3.5	-16.5	1.8
400	----	----	----	----	----	----	----	----
	11.7	3.0	7.3	3.6	-26.5	4.2	-19.2	2.1
500	----	----	----	----	----	----	----	----
	13.8	2.4	5.9	4.2	-27.7	4.8	-21.8	2.0
600	----	----	----	----	----	----	----	----
	14.7	3.9	4.7	4.7	-24.1	6.1	-19.5	3.2
700	----	----	----	----	----	----	----	----
	11.3	4.3	2.6	3.2	-18.3	5.5	-15.7	2.8
800	----	----	----	----	----	----	----	----
	9.4	6.7	1.6	2.2	-12.6	3.7	-11.0	1.9
900	----	----	----	----	----	----	----	----
	3.5	3.1	.5	.8	-7.2	.7	-6.7	.9
1000	----	----	----	----	----	----	----	----
CLEAR	1.0	1.1	.0	.0	-4.0	.1	-4.0	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			48.7	14.5	-177.6	17.4	-128.8	7.2

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100								
	.5	1.2	2.8	.0	-6.1	.5	-3.3	.5
200								
	.9	1.2	5.6	.1	-15.5	.5	-10.0	.4
300								
	4.0	3.9	11.1	.2	-25.2	2.1	-14.0	2.0
400								
	9.6	5.6	12.3	.3	-30.0	3.3	-17.7	3.1
500								
	19.2	5.0	13.4	.9	-39.4	3.7	-26.1	3.3
600								
	22.7	3.9	14.5	.9	-34.0	2.6	-19.5	2.9
700								
	14.9	2.6	9.7	1.6	-23.5	5.2	-13.9	3.8
800								
	11.7	3.4	5.9	2.0	-16.0	4.5	-10.2	2.9
900								
	10.9	6.7	3.2	1.6	-9.1	1.4	-6.0	1.0
1000								
CLEAR	5.6	5.0	.1	.0	-3.9	.1	-3.9	.1
1012								
TOTAL TROPOSPHERE			78.4	2.9	-202.8	6.0	-124.4	3.6

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	1.6	2.6	3.0	.1	-6.6	1.0	-3.6	1.0
200								
	9.9	4.8	5.9	.3	-19.1	2.1	-13.2	2.0
300								
	12.2	3.9	11.7	.5	-28.8	2.6	-17.1	2.3
400								
	19.2	5.7	12.8	.5	-34.5	4.8	-21.7	4.8
500								
	27.2	6.7	16.5	2.4	-38.9	4.5	-22.4	2.8
600								
	13.5	5.3	9.3	3.6	-20.0	6.5	-10.6	3.5
700								
	6.9	3.9	4.7	3.3	-13.3	4.8	-8.6	1.8
800								
	4.1	3.2	2.5	2.5	-10.4	3.0	-7.9	1.0
900								
	3.8	4.7	1.6	2.0	-8.9	1.1	-7.2	1.3
1000								
CLEAR	1.5	2.7	.0	.1	-4.1	.1	-4.1	.1
1012								
TOTAL TROPOSPHERE			68.1	7.6	-184.6	8.2	-116.5	5.2

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	1.8	1.7	3.6	.5	-6.8	.8	-3.2	.3
200								
	15.6	7.0	9.6	2.3	-21.1	2.6	-11.6	1.4
300								
	25.1	9.7	12.7	.9	-35.4	5.4	-22.7	5.0
400								
	28.8	5.4	9.6	2.7	-38.3	6.0	-28.7	4.7
500								
	14.4	5.1	6.6	3.5	-23.7	7.4	-17.0	5.6
600								
	8.0	4.8	3.4	3.0	-13.5	5.1	-10.1	2.9
700								
	3.7	3.3	1.6	1.9	-10.6	2.7	-9.1	1.6
800								
	1.9	2.4	.6	.9	-9.5	1.1	-8.9	.9
900								
	.6	1.6	.2	.4	-8.9	.4	-8.7	.6
1000								
CLEAR	.2	.5	.0	.0	-4.1	.0	-4.1	.0
1012								
TOTAL TROPOSPHERE			47.9	9.3	-172.0	10.2	-124.1	3.8

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	.4	.8	2.8	.2	-6.0	.4	-3.2	.4
200	----	-----	-----	-----	-----	-----	-----	-----
	4.4	3.6	6.0	1.1	-16.6	1.4	-10.6	.7
300	----	-----	-----	-----	-----	-----	-----	-----
	7.0	5.1	11.2	1.2	-26.5	2.8	-15.2	1.8
400	----	-----	-----	-----	-----	-----	-----	-----
	9.9	4.9	11.2	.7	-28.9	2.3	-17.6	2.7
500	----	-----	-----	-----	-----	-----	-----	-----
	8.4	4.3	10.8	1.4	-29.3	2.0	-18.5	2.8
600	----	-----	-----	-----	-----	-----	-----	-----
	9.4	3.2	9.1	1.9	-26.5	2.1	-17.4	1.3
700	----	-----	-----	-----	-----	-----	-----	-----
	7.3	1.8	7.6	2.1	-26.2	5.1	-18.7	3.3
800	----	-----	-----	-----	-----	-----	-----	-----
	8.7	2.9	6.7	2.2	-23.1	5.2	-16.4	3.3
900	----	-----	-----	-----	-----	-----	-----	-----
	10.9	4.6	5.9	2.4	-14.9	3.8	-9.0	1.9
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	33.8	19.7	.4	.3	-4.1	.1	-3.7	.2
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			71.8	8.1	-202.1	9.0	-130.4	4.6

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 10 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	10.6	6.3	3.1	.5	-11.4	3.5	-8.4	3.1
200	----	-----	-----	-----	-----	-----	-----	-----
	11.9	4.1	6.5	1.6	-19.1	1.9	-12.7	1.7
300	----	-----	-----	-----	-----	-----	-----	-----
	7.8	3.2	11.1	.7	-23.6	2.3	-12.5	2.0
400	----	-----	-----	-----	-----	-----	-----	-----
	8.4	3.4	11.1	1.2	-24.3	3.4	-13.2	2.8
500	----	-----	-----	-----	-----	-----	-----	-----
	6.9	2.3	10.4	1.6	-24.2	2.7	-13.8	1.8
600	----	-----	-----	-----	-----	-----	-----	-----
	9.9	2.0	9.2	1.6	-23.7	3.1	-14.6	1.9
700	----	-----	-----	-----	-----	-----	-----	-----
	9.2	1.9	7.8	1.7	-22.9	3.3	-15.0	2.0
800	----	-----	-----	-----	-----	-----	-----	-----
	10.2	2.3	6.5	1.8	-18.5	2.7	-12.0	1.3
900	----	-----	-----	-----	-----	-----	-----	-----
	11.6	3.6	5.1	2.3	-10.8	1.9	-5.7	.8
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	13.5	6.1	.3	.1	-4.0	.1	-3.7	.1
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			71.1	7.7	-182.6	10.0	-111.5	4.1

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 11 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	13.4	9.7	8.9	5.1	-12.7	5.0	-3.8	1.4
200	----	-----	-----	-----	-----	-----	-----	-----
	14.4	7.6	8.9	2.3	-19.9	3.1	-11.1	2.4
300	----	-----	-----	-----	-----	-----	-----	-----
	15.6	3.3	7.6	4.2	-27.4	4.0	-19.7	1.6
400	----	-----	-----	-----	-----	-----	-----	-----
	10.8	2.2	5.8	3.8	-23.8	3.4	-18.0	2.6
500	----	-----	-----	-----	-----	-----	-----	-----
	7.2	1.2	5.1	3.5	-21.1	3.2	-16.0	2.7
600	----	-----	-----	-----	-----	-----	-----	-----
	7.5	1.7	4.4	3.1	-19.3	3.5	-14.9	2.9
700	----	-----	-----	-----	-----	-----	-----	-----
	8.1	2.8	3.1	2.1	-19.0	4.2	-15.9	3.9
800	----	-----	-----	-----	-----	-----	-----	-----
	10.2	4.8	2.9	2.0	-15.8	5.0	-12.9	4.1
900	----	-----	-----	-----	-----	-----	-----	-----
	6.3	5.8	1.8	1.5	-8.5	2.9	-6.7	2.0
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	6.4	8.2	.1	.1	-4.0	.1	-3.9	.1
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			48.7	13.0	-171.5	16.7	-122.7	11.1

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 12 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	11.7	14.7	4.0	2.5	-11.4	7.3	-7.4	5.0
200	10.3	7.8	7.0	2.4	-18.9	2.9	-11.9	1.5
300	7.2	2.4	10.5	1.8	-23.1	4.1	-12.7	2.7
400	8.1	2.0	10.3	2.6	-24.3	5.1	-14.0	3.0
500	9.9	2.7	10.0	3.2	-26.5	6.3	-16.6	3.7
600	9.7	3.4	8.5	3.7	-23.5	5.9	-15.1	2.9
700	8.8	3.0	6.6	3.4	-22.1	5.7	-15.5	2.8
800	10.6	3.4	5.5	3.3	-18.4	5.4	-12.8	2.8
900	8.5	4.2	4.1	3.1	-10.3	3.8	-6.2	2.0
1000								
CLEAR	15.2	13.5	.2	.2	-4.0	.1	-3.8	.1
1012								
TOTAL TROPOSPHERE			66.7	15.0	-182.5	24.8	-115.7	12.2

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	6.9	9.2	3.2	.7	-9.1	4.7	-5.9	4.1
200	8.4	8.3	6.9	2.0	-18.5	3.3	-11.6	2.0
300	7.5	5.5	11.7	.8	-24.8	1.9	-13.2	1.5
400	12.5	5.9	11.6	1.7	-28.8	3.0	-17.2	2.3
500	16.6	3.6	11.4	2.4	-32.8	7.5	-21.4	5.9
600	15.6	6.1	9.1	3.5	-25.6	8.7	-16.5	6.1
700	12.9	7.6	6.4	4.1	-20.3	7.3	-13.9	4.5
800	7.8	5.1	3.7	3.2	-13.6	4.6	-9.8	3.5
900	5.5	4.4	1.8	1.9	-8.7	2.0	-6.9	2.0
1000								
CLEAR	6.3	7.4	.0	.1	-4.0	.0	-4.0	.1
1012								
TOTAL TROPOSPHERE			65.8	12.7	-186.1	20.8	-120.3	12.4

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.0	.0	2.7	.0	-5.8	.0	-3.1	.0
200	.2	.5	5.4	.1	-15.0	.3	-9.6	.3
300	.3	.6	10.8	.2	-23.0	.4	-12.2	.4
400	.9	.9	11.8	.3	-24.8	.7	-13.1	.6
500	8.6	5.6	12.1	.7	-32.6	4.2	-20.4	3.7
600	14.8	7.3	12.3	1.7	-34.6	4.2	-22.3	2.7
700	13.9	5.7	9.6	1.0	-32.4	2.5	-22.8	2.1
800	11.7	4.8	7.7	1.3	-25.4	4.7	-17.7	4.2
900	22.5	6.2	6.3	1.5	-15.3	4.5	-9.0	3.7
1000								
CLEAR	27.1	17.1	.3	.2	-4.0	.2	-3.7	.1
1012								
TOTAL TROPOSPHERE			79.0	2.0	-212.9	2.7	-133.8	3.8

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)						TOTAL	
			SHORTWAVE		LONGWAVE					
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----			-----	-----
	9.2	5.9	4.4	1.4	-9.7	2.6			-5.3	2.9
200	-----	-----	-----	-----	-----	-----			-----	-----
	26.4	6.9	12.9	3.3	-26.1	2.8			-13.2	4.4
300	-----	-----	-----	-----	-----	-----			-----	-----
	20.3	6.0	10.5	3.0	-29.3	3.6			-18.8	2.3
400	-----	-----	-----	-----	-----	-----			-----	-----
	15.6	5.5	6.4	3.3	-25.5	4.6			-19.1	4.4
500	-----	-----	-----	-----	-----	-----			-----	-----
	9.6	2.7	3.7	2.7	-19.2	3.9			-15.6	5.1
600	-----	-----	-----	-----	-----	-----			-----	-----
	7.0	3.5	1.6	1.9	-15.0	5.0			-13.4	5.1
700	-----	-----	-----	-----	-----	-----			-----	-----
	5.8	5.0	.8	1.2	-13.4	4.6			-12.6	4.2
800	-----	-----	-----	-----	-----	-----			-----	-----
	2.5	2.0	.3	.5	-10.4	1.5			-10.1	1.6
900	-----	-----	-----	-----	-----	-----			-----	-----
	2.5	3.2	.1	.1	-8.1	.5			-8.0	.9
1000	-----	-----	-----	-----	-----	-----			-----	-----
CLEAR	.7	1.1	.0	.0	-4.0	.1			-4.0	.1
1012	-----	-----	-----	-----	-----	-----			-----	-----
TOTAL TROPOSPHERE			40.8	6.8	-160.8	8.9			-120.0	11.5

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)						TOTAL	
			SHORTWAVE		LONGWAVE					
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			Mean	Std Dev.
100	-----	-----	-----	-----	-----	-----			-----	-----
	2.9	6.1	3.2	.8	-7.2	3.1			-4.0	2.3
200	-----	-----	-----	-----	-----	-----			-----	-----
	9.5	8.5	7.5	2.6	-19.1	3.5			-11.6	1.8
300	-----	-----	-----	-----	-----	-----			-----	-----
	11.5	7.0	11.6	.9	-27.9	2.9			-16.3	2.5
400	-----	-----	-----	-----	-----	-----			-----	-----
	12.5	6.3	10.8	2.5	-29.0	3.1			-18.2	3.0
500	-----	-----	-----	-----	-----	-----			-----	-----
	18.7	4.6	10.4	3.9	-33.9	8.1			-23.4	5.0
600	-----	-----	-----	-----	-----	-----			-----	-----
	20.5	8.9	9.7	5.0	-28.8	9.8			-19.1	6.2
700	-----	-----	-----	-----	-----	-----			-----	-----
	14.0	8.2	6.8	4.3	-18.6	6.6			-11.8	3.9
800	-----	-----	-----	-----	-----	-----			-----	-----
	7.0	4.4	3.6	3.2	-10.5	2.6			-7.0	1.6
900	-----	-----	-----	-----	-----	-----			-----	-----
	2.4	2.9	1.5	1.8	-7.5	.6			-6.1	1.8
1000	-----	-----	-----	-----	-----	-----			-----	-----
CLEAR	.8	1.3	.0	.1	-4.0	.1			-4.0	.1
1012	-----	-----	-----	-----	-----	-----			-----	-----
TOTAL TROPOSPHERE			65.2	15.1	-186.6	16.9			-121.5	7.9

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)						TOTAL	
			SHORTWAVE		LONGWAVE					
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			Mean	Std. Dev.
100	-----	-----	-----	-----	-----	-----			-----	-----
	.3	.4	2.7	.0	-5.9	.1			-3.2	.1
200	-----	-----	-----	-----	-----	-----			-----	-----
	1.8	1.4	5.4	.0	-15.8	.5			-10.4	.5
300	-----	-----	-----	-----	-----	-----			-----	-----
	4.4	2.4	10.7	.1	-25.1	1.3			-14.4	1.3
400	-----	-----	-----	-----	-----	-----			-----	-----
	4.3	1.5	11.7	.1	-26.3	1.1			-14.6	1.1
500	-----	-----	-----	-----	-----	-----			-----	-----
	6.7	3.0	11.8	.3	-29.9	2.3			-18.0	2.4
600	-----	-----	-----	-----	-----	-----			-----	-----
	11.4	3.3	11.1	.5	-31.3	1.9			-20.2	1.9
700	-----	-----	-----	-----	-----	-----			-----	-----
	14.0	2.6	10.7	.7	-32.5	2.7			-21.7	2.6
800	-----	-----	-----	-----	-----	-----			-----	-----
	29.8	5.2	11.7	1.3	-28.5	3.3			-16.8	2.9
900	-----	-----	-----	-----	-----	-----			-----	-----
	22.3	5.5	6.8	1.5	-9.6	1.1			-2.8	1.5
1000	-----	-----	-----	-----	-----	-----			-----	-----
CLEAR	5.0	3.2	.2	.0	-3.7	.1			-3.6	.1
1012	-----	-----	-----	-----	-----	-----			-----	-----
TOTAL TROPOSPHERE			82.9	1.4	-208.6	3.1			-125.7	3.5

Average radiative convergence profiles and cloud top pressure distribution for the Southeast sector of the GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

3.11 DAILY 24 HOUR MEANS OVER THE SOUTHWEST SECTOR OF THE GATE B ARRAY

The following 20 tables, on pages 139 to 145, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the southwest sector of the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	8.0	9.3	3.3	.1	-10.0	5.2	-6.8	5.2
200	12.9	6.7	7.0	.6	-19.8	3.0	-12.8	2.7
300	32.2	10.1	14.2	1.4	-38.2	7.3	-24.0	6.7
400	26.0	6.1	12.3	1.1	-34.7	5.5	-22.4	5.2
500	14.3	6.9	9.1	4.0	-22.1	7.0	-13.0	4.7
600	4.8	3.2	3.6	3.3	-9.9	3.1	-6.3	2.1
700	1.3	1.3	.7	.9	-8.3	1.3	-7.7	1.2
800	.5	.5	.1	.2	-8.7	.9	-8.6	.9
900	.0	.0	.0	.0	-8.5	1.0	-8.5	1.0
1000 CLEAR 1012	.0	.0	.0	.0	-4.1	.1	-4.1	.1
TOTAL TROPOSPHERE			50.4	6.5	-164.4	7.9	-114.1	9.4

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	.5	.6	2.9	.2	-6.0	.2	-3.1	.1
200	2.6	3.0	6.8	1.5	-16.1	1.3	-9.3	.4
300	4.0	2.9	11.2	.5	-24.7	1.2	-13.4	1.1
400	5.8	3.0	11.1	.9	-27.2	1.7	-16.1	2.0
500	9.1	4.1	10.6	1.4	-31.1	2.7	-20.5	3.1
600	9.8	2.5	9.6	2.0	-29.0	2.3	-19.4	1.9
700	13.1	4.4	8.5	2.5	-30.7	4.1	-22.2	3.0
800	12.6	3.2	6.3	2.9	-24.0	3.6	-17.7	2.2
900	14.9	5.2	4.2	3.2	-13.7	2.5	-9.5	1.6
1000 CLEAR 1012	27.5	8.7	.1	.1	-4.0	.1	-3.9	.1
TOTAL TROPOSPHERE			71.4	9.8	-206.4	6.2	-135.0	5.1

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0
200	.0	.0	5.3	.1	-14.9	.0	-9.5	.0
300	.2	.4	10.7	.1	-22.8	.2	-12.1	.1
400	.7	1.1	11.5	.2	-24.3	.8	-12.8	.6
500	2.3	2.0	11.3	.2	-27.7	1.5	-16.4	1.6
600	3.6	2.4	10.1	.5	-29.0	1.1	-18.9	1.0
700	5.5	2.5	9.3	.8	-34.3	1.2	-25.1	.7
800	9.5	2.8	8.6	.8	-32.6	1.8	-24.0	1.4
900	21.0	2.8	7.8	1.0	-20.4	1.7	-12.6	1.4
1000								
CLEAR	57.4	8.9	.5	.1	-4.1	.1	-3.6	.1
1012								
TOTAL TROPOSPHERE			77.8	1.5	-215.9	1.2	-138.1	1.3

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	20.4	4.1	6.3	1.6	-15.9	2.4	-9.6	2.8
200	21.7	6.1	9.9	1.9	-22.7	2.8	-12.8	1.6
300	12.0	6.5	9.2	1.4	-22.6	4.1	-13.4	4.6
400	7.2	2.6	7.0	1.8	-19.0	1.6	-12.0	2.1
500	5.4	3.1	6.0	2.0	-18.1	3.1	-12.1	1.6
600	5.6	2.0	4.6	1.7	-17.5	2.6	-12.9	1.4
700	5.9	1.6	3.3	1.7	-17.5	4.0	-14.2	2.8
800	7.5	4.0	2.6	1.8	-14.9	3.6	-12.3	2.4
900	10.0	6.4	2.0	1.6	-8.1	1.2	-6.1	1.3
1000								
CLEAR	4.4	3.9	.0	.0	-3.9	.1	-3.8	.1
1012								
TOTAL TROPOSPHERE			50.9	7.5	-160.1	7.7	-109.2	5.4

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.7	1.5	3.0	.1	-6.2	.7	-3.2	.8
200	1.0	1.0	6.0	.3	-15.6	.4	-9.6	.3
300	4.7	3.6	12.0	.6	-25.6	2.1	-13.5	1.5
400	28.7	11.5	13.6	.9	-43.1	7.8	-29.5	6.9
500	22.2	5.3	13.4	1.6	-38.2	4.4	-24.8	4.0
600	16.0	3.8	8.4	3.5	-24.6	6.2	-16.2	3.0
700	14.1	5.1	4.5	3.7	-18.6	5.7	-14.2	2.9
800	8.2	5.5	2.3	2.6	-11.3	3.0	-9.0	1.5
900	3.2	2.5	1.0	1.2	-8.2	.5	-7.1	1.6
1000								
CLEAR	1.2	1.2	.0	.0	-4.1	.1	-4.1	.1
1012								
TOTAL TROPOSPHERE			64.2	8.6	-195.5	4.2	-131.3	5.5

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	32.4	13.1	4.8	1.5	-23.6	7.7	-18.8	6.8
200	19.6	8.8	10.8	3.2	-20.6	3.8	-9.8	3.4
300	10.7	3.4	10.1	1.8	-19.5	3.0	-9.4	2.2
400	6.5	1.5	7.2	3.0	-16.2	4.4	-9.0	2.1
500	4.9	1.9	5.9	3.4	-15.7	5.6	-9.8	2.7
600	5.0	2.7	4.5	3.0	-14.9	6.0	-10.4	3.1
700	6.3	4.3	3.7	2.8	-15.2	6.4	-11.5	3.7
800	5.4	4.1	2.4	2.0	-11.8	4.5	-9.4	2.6
900	3.7	3.9	1.3	1.3	-6.1	2.4	-4.8	1.3
1000 CLEAR 1012	5.4	7.4	.1	.1	-3.9	.1	-3.8	.1
TOTAL TROPOSPHERE			50.8	12.3	-147.5	22.3	-96.7	10.8

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	16.4	16.2	5.6	5.5	-13.9	8.5	-8.2	4.1
200	20.8	8.0	9.3	4.3	-22.9	3.4	-13.6	2.9
300	16.8	5.4	9.7	4.4	-26.3	6.5	-16.6	3.2
400	15.7	4.7	8.3	5.1	-25.3	6.4	-17.0	4.3
500	12.5	5.9	7.9	5.5	-22.7	7.6	-14.8	3.5
600	8.6	4.6	6.3	5.5	-15.3	5.9	-9.0	1.6
700	5.9	5.3	3.8	4.4	-12.1	4.5	-8.3	1.3
800	2.3	2.8	1.5	2.1	-8.8	1.5	-7.3	1.2
900	.7	1.1	.5	.9	-7.1	1.4	-6.5	1.4
1000 CLEAR 1012	.2	.4	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			53.0	18.1	-158.4	19.9	-105.4	8.6

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	4.3	6.3	3.9	1.3	-7.9	3.0	-3.9	2.4
200	8.6	7.6	8.9	3.1	-18.5	3.0	-9.6	1.2
300	8.3	6.1	10.8	1.8	-25.9	3.1	-15.1	2.1
400	7.5	4.2	8.9	2.7	-25.8	2.0	-16.9	2.1
500	11.3	2.6	8.3	3.2	-29.8	4.1	-21.5	1.7
600	16.2	4.2	7.2	3.4	-29.5	6.8	-22.3	3.8
700	16.6	5.6	5.6	3.1	-25.6	7.5	-19.9	4.6
800	15.3	6.9	4.6	2.9	-16.9	4.8	-12.3	2.2
900	7.7	4.6	2.2	1.8	-7.8	1.0	-5.6	1.2
1000 CLEAR 1012	4.2	4.7	.1	.1	-3.9	.1	-3.8	.1
TOTAL TROPOSPHERE			60.5	13.3	-191.5	16.9	-131.0	5.1

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	0.0	0.0	2.8	.1	-5.8	.0	-3.1	.1
200	.2	.5	5.5	.3	-15.2	.2	-9.7	.1
300	.6	1.0	11.0	.4	-23.4	.6	-12.4	.4
400	2.8	3.1	12.0	.2	-26.1	1.8	-14.1	1.6
500	13.9	4.1	12.3	.4	-36.8	3.0	-24.5	2.8
600	17.2	4.5	12.1	1.5	-34.9	2.7	-22.8	2.8
700	16.9	4.7	10.3	1.9	-30.9	3.9	-20.5	2.9
800	16.4	3.1	7.9	1.9	-22.6	3.3	-14.7	1.9
900	19.3	5.3	5.4	1.9	-10.9	1.5	-5.6	1.1
1000 CLEAR 1012	12.6	5.4	.1	.1	-3.8	.1	-3.7	.1
TOTAL TROPOSPHERE			79.4	5.1	-210.3	2.9	-130.9	3.1

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.1	.1	2.9	.1	-5.9	.1	-3.1	.1
200	2.9	3.5	5.9	.6	-16.2	1.3	-10.4	.9
300	9.6	4.9	11.5	.7	-28.4	2.7	-16.9	2.3
400	20.8	6.2	12.2	.4	-37.4	4.0	-25.1	3.9
500	21.7	5.3	13.1	2.2	-36.9	3.8	-23.8	3.3
600	15.6	4.6	10.5	2.4	-25.0	6.5	-14.5	4.9
700	10.8	4.2	7.6	3.1	-18.3	5.4	-10.7	2.9
800	6.8	3.2	4.8	2.5	-13.0	3.2	-8.1	1.2
900	7.4	5.0	3.5	2.3	-9.7	1.2	-6.2	1.3
1000 CLEAR 1012	4.2	4.7	.1	.1	-4.1	.1	-3.9	.2
TOTAL TROPOSPHERE			72.1	7.6	-194.9	8.1	-122.8	4.5

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	1.2	2.0	3.5	.5	-6.5	.8	-3.0	.3
200	10.5	6.2	9.4	2.6	-19.2	2.4	-9.8	1.1
300	22.9	11.2	12.8	1.1	-35.4	6.0	-22.6	6.1
400	21.4	5.1	9.3	2.7	-33.6	4.1	-24.2	3.1
500	18.6	5.6	7.2	3.9	-30.4	8.5	-23.2	5.6
600	14.3	7.1	4.5	3.7	-19.8	7.4	-15.3	4.5
700	7.1	4.8	2.1	2.4	-12.8	3.5	-10.7	2.1
800	2.6	2.6	.7	.9	-9.1	1.0	-8.4	.9
900	1.0	1.1	.2	.4	-8.5	.4	-8.3	.6
1000 CLEAR 1012	.2	.3	.0	.0	-4.1	.0	-4.1	.0
TOTAL TROPOSPHERE			49.8	10.6	-179.4	11.4	-129.6	4.0

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	.5	.9	2.8	.1	-6.0	.4	-3.2	.3
200								
	1.7	2.9	5.6	.6	-15.7	1.1	-10.1	.7
300								
	3.9	3.7	11.0	.8	-24.8	1.8	-13.9	1.2
400								
	9.9	4.8	11.4	.4	-29.7	3.2	-18.3	3.2
500								
	9.2	3.3	11.1	.8	-31.0	2.1	-19.9	2.3
600								
	10.1	3.0	9.4	1.0	-28.0	2.2	-18.6	2.1
700								
	7.2	1.7	8.1	1.3	-27.2	3.4	-19.2	2.4
800								
	9.6	2.0	7.5	1.5	-24.1	3.8	-16.6	2.6
900								
	12.9	3.7	6.9	1.9	-15.4	2.9	-8.5	1.4
1000								
CLEAR	35.0	13.5	.5	.2	-4.1	.1	-3.6	.2
1012								
TOTAL TROPOSPHERE			74.2	5.0	-206.1	6.7	-131.9	3.9

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 10 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std Dev.
100								
	4.7	5.4	2.7	.0	-8.4	3.2	-5.7	3.2
200								
	5.0	3.5	5.4	.2	-16.5	1.5	-11.1	1.6
300								
	4.9	2.4	10.7	.3	-23.9	1.6	-13.2	1.7
400								
	5.8	3.1	11.5	.2	-25.4	1.6	-13.9	1.6
500								
	5.0	2.0	11.2	.2	-26.3	1.2	-15.1	1.2
600								
	8.9	2.9	10.0	.4	-27.3	1.9	-17.3	1.8
700								
	9.1	2.2	9.0	.5	-28.5	3.9	-19.5	3.8
800								
	12.3	3.4	8.5	.9	-24.6	4.7	-16.1	4.2
900								
	16.4	3.3	7.9	1.2	-14.5	2.8	-6.6	2.1
1000								
CLEAR	27.9	11.9	.5	.1	-4.1	.1	-3.5	.1
1012								
TOTAL TROPOSPHERE			77.3	1.9	-199.4	10.2	-122.1	9.6

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 11 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100								
	18.6	11.7	7.7	4.2	-14.9	6.1	-7.2	3.5
200								
	26.3	4.3	10.2	2.2	-24.7	1.8	-14.5	1.9
300								
	17.2	3.1	8.2	3.1	-25.5	4.4	-17.3	3.4
400								
	12.0	3.2	6.0	3.4	-21.0	4.6	-14.9	3.7
500								
	7.3	2.4	5.0	3.4	-17.4	4.0	-12.5	3.0
600								
	7.1	2.9	3.7	3.1	-14.8	3.4	-11.1	2.1
700								
	5.4	2.2	2.7	2.4	-12.9	2.3	-10.3	1.4
800								
	3.3	1.8	1.7	1.7	-10.2	1.7	-8.5	.6
900								
	1.2	1.3	.7	.9	-7.0	1.2	-6.3	.8
1000								
CLEAR	1.4	2.1	.0	.0	-4.0	.1	-4.0	.1
1012								
TOTAL TROPOSPHERE			46.0	11.9	-152.5	13.8	-106.5	8.8

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 12 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)							
			SHORTWAVE		LONGWAVE		TOTAL			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
100	6.3	7.5	3.3	1.2	-8.9	3.7	-5.6	2.7		
200	7.7	7.1	6.6	2.2	-17.8	2.7	-11.2	1.1		
300	6.6	3.2	10.6	.7	-24.4	1.8	-13.7	1.6		
400	8.5	2.7	10.8	1.9	-26.2	3.4	-15.4	2.1		
500	10.4	4.7	11.0	2.5	-28.8	5.2	-17.8	3.2		
600	9.6	2.7	9.2	3.1	-24.9	4.6	-15.7	2.1		
700	10.6	3.8	8.0	4.0	-24.8	6.1	-16.8	2.5		
800	13.5	6.3	7.2	4.1	-20.6	5.0	-13.4	1.8		
900	9.0	3.5	4.4	2.8	-11.0	2.2	-6.6	1.9		
1000 CLEAR 1012	17.7	9.4	.2	.1	-4.0	.1	-3.8	.1		
TOTAL TROPOSPHERE			71.5	13.9	-191.6	17.0	-120.1	6.3		

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)							
			SHORTWAVE		LONGWAVE		TOTAL			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
100	17.3	12.9	4.3	1.2	-14.5	7.2	-10.3	6.6		
200	18.7	9.7	8.6	2.5	-22.1	3.6	-13.5	2.2		
300	14.3	5.4	11.3	1.1	-25.2	4.2	-13.9	3.8		
400	16.3	6.0	10.2	2.9	-26.5	7.3	-16.3	6.0		
500	12.5	5.0	8.6	3.5	-22.7	8.6	-14.1	6.9		
600	9.1	5.1	5.7	3.4	-15.9	7.1	-10.1	5.0		
700	6.2	6.3	3.2	2.8	-12.7	5.6	-9.6	3.6		
800	3.6	4.2	1.5	1.7	-9.7	2.5	-8.1	1.7		
900	2.0	3.4	.6	.7	-7.0	1.3	-6.4	1.2		
1000 CLEAR 1012	.1	.2	.0	.0	-4.0	.1	-4.0	.1		
TOTAL TROPOSPHERE			54.0	11.4	-160.2	22.0	-106.2	16.4		

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)							
			SHORTWAVE		LONGWAVE		TOTAL			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
100	.5	.8	2.7	.0	-6.0	.3	-3.3	.3		
200	3.1	3.8	5.4	.1	-16.2	1.7	-10.8	1.6		
300	4.0	4.2	10.7	.2	-24.7	2.1	-14.0	1.9		
400	5.0	3.6	11.6	.3	-26.3	1.6	-14.8	1.5		
500	5.8	3.6	11.6	.7	-28.4	1.6	-16.8	1.4		
600	11.6	6.1	10.4	1.1	-30.7	3.8	-20.3	3.4		
700	10.3	4.5	9.2	1.0	-29.8	4.7	-20.6	4.5		
800	10.5	5.3	8.2	1.0	-25.2	5.3	-17.0	5.0		
900	22.6	7.1	7.6	1.2	-15.7	4.6	-8.2	4.0		
1000 CLEAR 1012	26.6	18.9	.5	.2	-4.0	.2	-3.6	.1		
TOTAL TROPOSPHERE			77.9	2.9	-207.2	8.7	-129.3	9.1		

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	11.3	6.3	4.7	1.0	-11.1	3.2	-6.5	2.7
200	20.2	5.9	9.9	1.8	-23.3	3.0	-13.4	1.8
300	17.8	5.6	11.6	1.1	-28.0	3.5	-16.4	3.3
400	17.3	4.4	9.0	1.7	-27.6	3.5	-18.6	3.5
500	13.5	2.4	6.6	2.7	-23.7	3.8	-17.1	3.1
600	9.2	4.3	2.4	2.1	-16.2	4.9	-13.8	4.1
700	5.9	3.4	.8	1.1	-12.4	2.8	-11.7	2.6
800	2.8	2.5	.2	.3	-9.7	1.5	-9.5	1.5
900	1.5	2.2	.0	.0	-7.6	.9	-7.6	.9
1000 CLEAR 1012	.4	.9	.0	.0	-4.0	.0	-4.0	.0
TOTAL TROPOSPHERE			45.1	5.4	-163.6	7.4	-118.5	7.6

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	5.5	8.4	3.6	.9	-8.4	4.2	-4.8	3.5
200	13.5	12.1	9.6	3.8	-20.5	5.0	-10.9	1.7
300	10.8	5.6	11.5	1.3	-26.1	2.7	-14.6	2.3
400	10.5	4.6	9.1	3.5	-26.7	4.4	-17.6	2.5
500	12.8	4.4	7.6	4.5	-28.4	8.2	-20.7	4.2
600	15.4	7.5	6.4	4.6	-26.5	9.2	-20.1	4.9
700	14.5	10.0	4.5	4.1	-21.2	7.4	-16.8	3.8
800	8.5	4.8	2.1	2.3	-13.0	3.2	-10.9	3.3
900	4.7	3.2	.9	1.1	-7.9	1.0	-7.0	1.4
1000 CLEAR 1012	3.8	3.5	.0	.0	-4.0	.0	-3.9	.1
TOTAL TROPOSPHERE			55.3	15.3	-182.7	21.0	-127.4	8.4

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.2	.6	2.8	.1	-5.9	.3	-3.1	.3
200	1.2	1.0	5.6	.4	-15.5	.4	-9.9	.4
300	4.1	2.1	11.2	.5	-24.9	1.2	-13.7	1.2
400	4.3	1.5	11.8	.2	-26.6	1.2	-14.8	1.1
500	5.3	1.9	11.5	.4	-29.0	1.0	-17.5	1.1
600	10.0	3.4	10.4	.6	-30.9	1.4	-20.5	1.2
700	15.1	3.3	9.3	1.2	-34.1	2.0	-24.8	2.6
800	28.0	5.3	9.5	2.1	-28.4	3.4	-18.9	3.8
900	19.0	4.7	5.4	1.5	-10.5	1.9	-5.1	1.9
1000 CLEAR 1012	12.8	9.1	.2	.1	-3.8	.1	-3.6	.1
TOTAL TROPOSPHERE			77.6	4.4	-209.5	2.8	-131.9	4.9

Average radiative convergence profiles and cloud top pressure distribution for the Southwest sector of the GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

3.12 DAILY 24 HOUR MEANS OVER THE NORTHWEST SECTOR OF THE GATE B ARRAY

The following 20 tables, on pages 146 to 152, give vertical profiles of the daily 24 hour means of the cloud top distribution, shortwave, longwave and total radiative divergence. The domain is the northwest sector of the GATE B array during Phase III and the vertical resolution is 100 mb. Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	14.2	8.7	3.1	.2	-13.2	5.3	-10.1	5.1
200	----	-----	-----	-----	-----	-----	-----	-----
	13.2	4.3	6.4	.6	-20.0	2.8	-13.5	3.1
300	----	-----	-----	-----	-----	-----	-----	-----
	16.2	5.4	12.3	.7	-27.5	2.0	-15.2	1.6
400	----	-----	-----	-----	-----	-----	-----	-----
	19.3	6.6	13.0	.8	-29.8	4.2	-16.8	3.9
500	----	-----	-----	-----	-----	-----	-----	-----
	19.5	5.2	14.0	1.9	-29.4	6.2	-15.4	5.1
600	----	-----	-----	-----	-----	-----	-----	-----
	10.6	7.2	8.6	5.0	-16.1	8.7	-7.5	4.5
700	----	-----	-----	-----	-----	-----	-----	-----
	4.3	4.9	2.9	2.9	-9.8	4.2	-6.9	1.8
800	----	-----	-----	-----	-----	-----	-----	-----
	2.2	3.2	1.2	1.7	-8.4	1.6	-7.2	.7
900	----	-----	-----	-----	-----	-----	-----	-----
	.5	1.1	.3	.5	-7.2	.4	-6.9	.6
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	.0	.0	.0	.0	-4.1	.0	-4.1	.0
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			61.8	8.9	-165.5	13.1	-103.7	6.2

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for August 30, 1974 (Julian Day 242). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	-----	-----	-----	-----	-----	-----	-----
	.0	.1	2.8	.1	-5.8	.0	-3.1	.1
200	----	-----	-----	-----	-----	-----	-----	-----
	.5	1.3	5.6	.7	-15.2	.5	-9.6	.2
300	----	-----	-----	-----	-----	-----	-----	-----
	1.6	1.8	10.9	.4	-23.6	.8	-12.7	.6
400	----	-----	-----	-----	-----	-----	-----	-----
	5.1	3.2	11.7	.3	-27.3	2.1	-15.6	2.1
500	----	-----	-----	-----	-----	-----	-----	-----
	9.6	3.2	11.6	.8	-32.8	2.1	-21.2	1.8
600	----	-----	-----	-----	-----	-----	-----	-----
	9.4	2.1	10.7	1.5	-29.9	1.8	-19.1	1.4
700	----	-----	-----	-----	-----	-----	-----	-----
	10.9	2.9	10.0	1.5	-31.0	2.4	-21.0	1.8
800	----	-----	-----	-----	-----	-----	-----	-----
	12.7	3.2	8.7	1.9	-25.9	3.1	-17.3	2.0
900	----	-----	-----	-----	-----	-----	-----	-----
	12.6	3.1	5.8	2.2	-14.9	2.1	-9.1	1.2
1000	----	-----	-----	-----	-----	-----	-----	-----
CLEAR	37.6	11.0	.3	.2	-4.0	.1	-3.8	.1
1012	----	-----	-----	-----	-----	-----	-----	-----
TOTAL TROPOSPHERE			78.0	5.3	-210.4	3.6	-132.4	3.1

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for August 31, 1974 (Julian Day 243). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	0.0	0.0	2.7	.0	-5.8	.0	-3.1	.0
200	.2	.4	5.4	.2	-15.0	.1	-9.5	.1
300	.7	.9	10.8	.3	-23.1	.5	-12.3	.2
400	1.0	1.0	11.5	.2	-24.5	.7	-13.0	.6
500	1.5	1.4	11.3	.3	-26.9	1.0	-15.7	.9
600	3.1	2.0	10.1	.5	-28.6	.7	-18.5	.5
700	6.0	2.9	9.4	.8	-34.7	1.1	-25.4	.7
800	9.6	4.1	8.3	.8	-32.7	1.8	-24.4	1.2
900	22.6	4.2	7.0	1.5	-20.2	2.3	-13.2	1.5
1000 CLEAR 1012	55.4	13.0	.5	.2	-4.1	.1	-3.6	.1
TOTAL TROPOSPHERE			77.0	1.6	-215.6	1.6	-138.5	1.0

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 1, 1974 (Julian Day 244). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	16.4	5.3	7.1	2.9	-13.9	3.2	-6.8	2.1
200	21.4	4.7	10.1	1.4	-23.0	2.4	-12.9	1.8
300	11.1	4.3	9.1	2.0	-23.5	3.8	-14.4	3.3
400	8.6	4.3	6.4	1.7	-20.6	3.8	-14.3	3.4
500	8.4	4.3	5.1	1.7	-21.5	3.4	-16.4	3.6
600	7.5	3.0	3.7	1.5	-18.8	1.5	-15.1	1.5
700	7.1	1.8	2.6	1.3	-17.5	2.7	-14.9	1.9
800	7.3	3.4	1.8	1.3	-14.0	3.4	-12.2	2.4
900	7.4	5.7	1.1	1.1	-7.9	.8	-6.8	.8
1000 CLEAR 1012	4.6	3.3	.0	.0	-3.9	.1	-3.9	.1
TOTAL TROPOSPHERE			46.9	5.9	-164.6	4.4	-117.7	5.1

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 2, 1974 (Julian Day 245). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	.0	.1	3.1	.1	-5.9	.1	-2.8	.1
200	2.0	2.4	6.4	.7	-16.0	.9	-9.6	.3
300	9.0	4.0	12.6	.5	-27.9	2.0	-15.3	1.6
400	26.5	10.5	13.5	1.1	-41.0	7.5	-27.4	6.7
500	25.3	3.8	13.2	1.9	-40.5	4.1	-27.3	3.5
600	15.6	3.6	6.4	2.5	-22.8	4.0	-16.4	3.3
700	8.5	2.1	2.0	1.2	-15.0	2.6	-13.0	2.4
800	4.1	2.0	.4	.3	-10.9	2.1	-10.5	1.9
900	3.3	1.9	.1	.1	-9.2	.8	-9.2	.7
1000 CLEAR 1012	5.5	5.7	.0	.0	-4.1	.0	-4.1	.0
TOTAL TROPOSPHERE			57.8	4.6	-193.4	3.7	-135.6	2.3

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 3, 1974 (Julian Day 246). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	4.8	8.4	2.9	.3	-8.3	4.2	-5.3	4.0
200	6.3	5.3	6.2	1.0	-17.3	1.9	-11.1	1.3
300	8.0	2.7	11.2	.4	-25.7	2.9	-14.4	2.9
400	7.7	2.2	11.4	.7	-26.4	3.9	-15.0	3.3
500	7.3	2.9	11.0	1.0	-26.7	4.0	-15.7	3.2
600	9.2	3.2	10.0	1.4	-26.4	3.4	-16.4	2.2
700	13.2	4.1	9.6	1.9	-27.7	3.3	-18.1	1.9
800	9.8	1.2	6.7	1.6	-20.5	3.0	-13.8	2.0
900	10.9	4.2	4.3	1.8	-12.0	2.4	-7.6	1.5
1000 CLEAR 1012	22.8	8.2	.2	.1	-4.0	.1	-3.8	.1
TOTAL TROPOSPHERE			73.6	5.7	-194.9	13.4	-121.4	7.9

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 4, 1974 (Julian Day 247). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	25.5	19.1	11.5	7.9	-18.9	10.9	-7.5	3.6
200	26.1	8.2	12.2	5.4	-24.5	5.0	-12.3	2.8
300	15.2	5.6	5.1	4.9	-22.5	6.6	-17.5	3.3
400	11.5	3.1	2.3	3.2	-19.5	4.0	-17.2	3.6
500	7.8	2.4	1.6	2.5	-16.6	4.3	-15.1	3.1
600	6.2	3.2	1.2	2.1	-13.1	4.5	-11.9	3.4
700	4.3	3.1	.7	1.3	-11.3	3.4	-10.7	2.6
800	2.4	2.3	.3	.8	-8.9	1.9	-8.6	1.5
900	.8	1.0	.1	.3	-6.1	1.7	-6.0	1.6
1000 CLEAR 1012	.3	.5	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			34.8	8.6	-145.5	16.3	-110.7	10.8

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 5, 1974 (Julian Day 248). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.4	.8	2.9	.5	-6.0	.4	-3.1	.1
200	1.6	2.5	5.8	.8	-15.7	.9	-9.9	.4
300	1.9	2.7	10.8	.2	-23.8	1.2	-13.0	1.2
400	3.0	2.5	11.4	.7	-25.7	.8	-14.3	1.4
500	7.2	3.2	11.4	1.0	-31.1	1.8	-19.7	1.9
600	12.2	4.8	10.5	1.3	-32.8	2.7	-22.3	2.1
700	13.3	4.6	9.1	1.0	-32.6	3.5	-23.5	2.6
800	20.1	3.7	8.4	1.2	-26.5	4.6	-18.1	3.7
900	14.4	3.7	5.9	1.7	-11.3	2.2	-5.5	1.3
1000 CLEAR 1012	26.0	14.1	.3	.2	-3.8	.1	-3.5	.2
TOTAL TROPOSPHERE			76.5	4.7	-209.4	6.3	-132.9	2.3

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 6, 1974 (Julian Day 249). Standard deviations represent the vari-

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.0	.0	2.8	.1	-5.8	.0	-3.0	.1
200	1.2	1.7	5.7	.3	-15.6	.6	-9.9	.6
300	2.1	1.6	11.3	.4	-24.1	.9	-12.8	.8
400	4.0	2.7	12.2	.3	-26.6	1.8	-14.4	1.5
500	14.8	3.2	12.4	.6	-36.9	2.1	-24.5	2.0
600	18.6	4.7	11.8	1.6	-34.8	2.4	-22.9	1.7
700	15.8	2.1	9.1	1.9	-29.0	3.2	-19.8	2.1
800	18.4	3.0	6.9	1.8	-21.6	3.5	-14.7	2.5
900	16.0	4.5	4.2	1.5	-9.6	1.2	-5.4	1.3
1000 CLEAR 1012	9.2	6.3	.1	.1	-3.8	.1	-3.7	.1
TOTAL TROPOSPHERE			76.5	5.2	-207.7	3.6	-131.3	4.5

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 7, 1974 (Julian Day 250). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	3.1	3.6	3.7	.7	-7.1	1.3	-3.4	.8
200	12.6	7.7	10.1	3.2	-20.5	3.4	-10.4	2.6
300	15.4	4.2	11.6	1.7	-30.0	2.2	-18.3	2.1
400	21.5	4.9	9.1	2.7	-34.1	4.8	-25.0	3.6
500	19.6	3.8	7.8	3.6	-31.8	4.0	-24.0	4.0
600	13.8	4.9	4.1	3.4	-20.2	6.0	-16.1	4.7
700	7.6	4.6	2.1	2.8	-13.5	4.9	-11.4	3.7
800	3.6	3.5	.9	1.5	-9.6	2.0	-8.7	1.8
900	1.9	2.5	.4	.7	-8.4	.6	-8.0	.8
1000 CLEAR 1012	.9	2.0	.0	.0	-4.1	.1	-4.1	.1
TOTAL TROPOSPHERE			49.9	10.4	-179.3	11.7	-129.4	8.7

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 8, 1974 (Julian Day 251). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	4.0	3.4	4.2	1.3	-7.7	1.6	-3.5	.5
200	15.7	2.5	10.4	2.1	-21.4	1.1	-10.9	1.5
300	32.9	8.0	11.4	2.3	-39.7	5.1	-28.3	4.5
400	18.5	3.9	8.1	2.0	-28.9	4.1	-20.9	3.0
500	11.3	3.2	6.2	2.7	-20.6	4.5	-14.4	3.4
600	9.5	3.4	4.4	2.6	-15.8	3.4	-11.5	2.9
700	5.5	2.4	2.7	2.0	-12.3	1.8	-9.6	1.6
800	1.8	1.5	1.2	1.3	-9.5	.9	-8.3	.9
900	.7	.9	.4	.6	-8.5	.5	-8.1	.8
1000 CLEAR 1012	.1	.2	.0	.0	-4.1	.0	-4.1	.0
TOTAL TROPOSPHERE			49.0	7.9	-168.5	5.5	-119.5	5.9

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 9, 1974 (Julian Day 252). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.0	.0	2.8	.1	-5.8	.0	-3.1	.1
200	----	----	----	----	----	----	----	----
	.2	.3	5.5	.2	-15.2	.2	-9.7	.1
300	----	----	----	----	----	----	----	----
	3.8	2.5	10.9	.4	-24.9	1.2	-14.0	1.1
400	----	----	----	----	----	----	----	----
	14.0	6.3	11.8	.4	-33.1	3.9	-21.3	3.8
500	----	----	----	----	----	----	----	----
	11.1	3.4	12.2	1.0	-32.6	3.1	-20.5	2.2
600	----	----	----	----	----	----	----	----
	11.9	3.4	10.4	.9	-28.4	2.7	-18.0	2.0
700	----	----	----	----	----	----	----	----
	9.5	3.7	8.6	1.0	-26.5	3.0	-18.0	2.5
800	----	----	----	----	----	----	----	----
	10.9	3.9	7.3	1.3	-22.0	3.6	-14.7	2.7
900	----	----	----	----	----	----	----	----
	12.3	3.4	6.1	2.0	-13.4	2.8	-7.2	1.7
1000	----	----	----	----	----	----	----	----
CLEAR	26.4	14.2	.4	.2	-4.0	.1	-3.6	.2
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			75.9	2.7	-206.0	3.4	-130.1	2.8

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 10 1974 (Julian Day 253). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	.4	1.0	2.7	.0	-6.0	.4	-3.3	.4
200	----	----	----	----	----	----	----	----
	1.8	3.2	5.3	.0	-15.7	1.3	-10.4	1.3
300	----	----	----	----	----	----	----	----
	2.9	2.9	10.7	.1	-24.1	1.7	-13.4	1.7
400	----	----	----	----	----	----	----	----
	4.8	3.7	11.6	.2	-26.5	2.5	-14.9	2.4
500	----	----	----	----	----	----	----	----
	5.9	2.5	11.6	.4	-29.3	2.6	-17.7	2.4
600	----	----	----	----	----	----	----	----
	12.3	4.6	10.7	.8	-31.7	3.2	-21.0	2.8
700	----	----	----	----	----	----	----	----
	14.3	3.4	10.1	.7	-32.1	2.8	-21.9	2.9
800	----	----	----	----	----	----	----	----
	15.7	2.9	9.3	.8	-25.1	3.5	-15.8	3.2
900	----	----	----	----	----	----	----	----
	15.3	2.7	7.4	1.3	-14.0	2.0	-6.5	1.6
1000	----	----	----	----	----	----	----	----
CLEAR	26.5	9.3	.4	.1	-4.1	.1	-3.7	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			79.9	1.2	-208.6	4.6	-128.7	4.2

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 11 1974 (Julian Day 254). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	----	----	----	----	----	----	----	----
	3.9	6.2	3.8	2.2	-7.5	2.8	-3.7	1.1
200	----	----	----	----	----	----	----	----
	12.7	10.2	8.4	3.3	-20.0	4.1	-11.6	3.0
300	----	----	----	----	----	----	----	----
	12.5	4.6	10.5	2.5	-27.7	2.4	-17.2	1.8
400	----	----	----	----	----	----	----	----
	10.9	2.7	9.5	3.1	-26.9	3.4	-17.4	2.3
500	----	----	----	----	----	----	----	----
	8.0	1.7	8.5	3.1	-24.9	4.1	-16.4	3.0
600	----	----	----	----	----	----	----	----
	9.7	1.9	7.2	2.8	-23.2	4.2	-16.0	3.2
700	----	----	----	----	----	----	----	----
	8.4	2.1	5.9	2.5	-21.9	5.2	-16.0	4.3
800	----	----	----	----	----	----	----	----
	7.6	2.6	4.5	2.1	-18.1	5.1	-13.6	4.1
900	----	----	----	----	----	----	----	----
	8.2	4.2	3.4	1.9	-12.3	3.3	-8.9	2.4
1000	----	----	----	----	----	----	----	----
CLEAR	18.0	12.7	.2	.1	-4.1	.1	-3.9	.1
1012	----	----	----	----	----	----	----	----
TOTAL TROPOSPHERE			61.8	12.0	-186.6	17.9	-124.7	12.3

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 12 1974 (Julian Day 255). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	12.4	5.2	4.3	1.1	-11.4	2.8	-7.1	2.3
200	20.1	6.5	11.0	3.2	-23.1	2.9	-12.1	1.5
300	12.1	3.1	10.3	1.5	-24.7	2.2	-14.5	2.2
400	9.7	2.8	7.7	2.7	-22.4	3.2	-14.7	2.3
500	6.8	5.6	6.5	3.4	-20.7	5.8	-14.2	3.4
600	5.3	3.1	4.1	2.0	-17.8	1.7	-13.7	1.1
700	4.4	1.9	2.6	1.6	-18.3	2.9	-15.7	1.7
800	5.7	2.2	2.0	1.4	-16.9	3.6	-14.9	2.4
900	6.5	2.5	1.5	1.3	-11.4	3.3	-9.9	2.1
1000 CLEAR 1012	17.0	14.2	.1	.1	-4.1	.2	-4.0	.1
TOTAL TROPOSPHERE			49.9	8.6	-170.6	10.1	-120.7	4.5

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 13, 1974 (Julian Day 256). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std Dev.
100	18.1	13.5	4.6	2.0	-14.9	7.5	-10.3	6.9
200	20.8	8.4	9.2	2.6	-22.7	3.2	-13.5	1.7
300	16.5	5.7	10.8	2.2	-26.0	5.2	-15.1	5.1
400	15.6	5.8	9.0	3.0	-25.4	7.7	-16.3	6.2
500	11.7	4.6	7.8	3.4	-20.9	7.1	-13.1	5.1
600	7.9	4.3	5.9	3.3	-14.6	5.9	-8.7	3.3
700	4.2	3.5	3.6	2.6	-11.6	4.1	-8.0	1.9
800	3.2	4.1	1.9	1.9	-9.6	2.5	-7.7	1.1
900	1.5	2.4	.8	1.1	-7.0	1.4	-6.2	1.2
1000 CLEAR 1012	.5	1.0	.0	.0	-4.0	.1	-4.0	.1
TOTAL TROPOSPHERE			53.7	11.8	-156.5	20.1	-102.9	13.4

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 14, 1974 (Julian Day 257). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%)		RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp)					
			SHORTWAVE		LONGWAVE		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
100	.5	.8	2.7	.0	-6.1	.3	-3.3	.3
200	3.2	3.3	5.4	.1	-16.4	1.4	-11.0	1.4
300	3.4	3.0	10.8	.1	-24.5	1.2	-13.8	1.2
400	7.0	2.7	11.7	.2	-27.9	1.1	-16.2	1.1
500	17.3	7.1	11.8	.6	-37.2	6.1	-25.3	6.4
600	14.3	4.9	11.0	.9	-29.9	5.2	-18.8	4.5
700	10.5	4.4	9.5	.7	-25.1	2.8	-15.6	2.4
800	10.5	3.8	8.2	.9	-20.4	1.2	-12.2	1.5
900	17.4	3.8	7.0	.9	-12.3	1.4	-5.2	1.3
1000 CLEAR 1012	15.7	8.6	.4	.1	-3.9	.1	-3.5	.1
TOTAL TROPOSPHERE			78.6	1.9	-203.6	5.2	-125.0	5.1

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 15, 1974 (Julian Day 258). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	16.5	4.6	6.8	2.5	-13.8	2.3	-7.0	2.7
200	17.5	4.0	9.9	1.9	-21.6	2.0	-11.7	1.6
300	14.0	6.8	8.7	1.8	-25.3	4.2	-16.6	3.7
400	19.4	2.8	7.3	2.3	-28.6	2.6	-21.3	3.0
500	15.2	3.5	6.7	3.1	-25.2	4.2	-18.5	4.2
600	8.8	3.6	4.5	2.6	-15.1	4.6	-10.5	2.8
700	4.7	3.8	2.5	2.1	-11.0	3.3	-8.5	1.5
800	2.8	3.1	1.5	1.9	-9.1	1.9	-7.6	.7
900	.9	1.7	.6	1.0	-7.1	.6	-6.5	1.2
1000 CLEAR 1012	.2	.7	.0	.0	-4.0	.0	-4.0	.1
TOTAL TROPOSPHERE			48.5	9.1	-160.8	7.3	-112.4	6.4

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 16, 1974 (Julian Day 259). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	23.9	8.1	5.3	1.2	-18.6	5.5	-13.2	5.1
200	23.5	4.0	13.3	1.5	-23.2	2.6	-9.9	2.3
300	16.0	5.6	10.6	1.9	-23.6	3.7	-12.9	3.0
400	12.8	4.5	4.8	1.4	-22.1	4.5	-17.3	3.7
500	6.9	1.9	1.8	1.0	-15.5	2.7	-13.7	2.1
600	5.1	1.7	.8	.6	-13.2	2.9	-12.4	2.4
700	4.1	1.8	.3	.4	-12.3	3.0	-12.0	2.6
800	2.7	1.7	.1	.2	-10.0	2.0	-9.9	1.8
900	1.4	1.5	.0	.1	-6.6	1.0	-6.6	1.0
1000 CLEAR 1012	3.6	3.1	.0	.0	-4.0	.0	-4.0	.0
TOTAL TROPOSPHERE			37.1	2.1	-149.1	8.1	-112.0	7.1

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 17, 1974 (Julian Day 260). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

PRESSURE (mb)	CLOUD TOP DISTRIBUTION (%) Mean	Std. Dev.	RADIATIVE CONVERGENCE (+) / DIVERGENCE (-) (watts per square meter per layer, Δp) SHORTWAVE Mean	Std. Dev.	LONGWAVE Mean	Std. Dev.	TOTAL Mean	Std. Dev.
100	.3	.7	2.7	.0	-6.0	.3	-3.3	.3
200	.8	1.3	5.3	.0	-15.4	.5	-10.1	.5
300	1.6	1.8	10.6	.1	-23.5	.9	-12.9	.9
400	1.7	1.4	11.5	.2	-24.9	.7	-13.4	.6
500	2.7	1.3	11.3	.3	-27.8	.8	-16.5	.8
600	5.8	2.4	10.0	.4	-30.2	1.5	-20.2	1.4
700	9.4	3.3	9.3	.6	-35.0	1.6	-25.7	1.7
800	18.7	5.9	9.4	.7	-31.4	2.3	-22.0	2.5
900	19.0	4.3	8.0	1.0	-14.8	2.1	-6.8	1.7
1000 CLEAR 1012	40.1	15.4	.5	.1	-3.9	.1	-3.4	.1
TOTAL TROPOSPHERE			78.8	1.5	-212.9	3.5	-134.2	4.2

Average radiative convergence profiles and cloud top pressure distribution for the Northwest sector of the GATE B-scale array for September 18, 1974 (Julian Day 261). Standard deviations represent the variability in space of the 24 hour means from one 1/2 degree latitude by 1/2 degree longitude area to another.

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APPENDIX A

RADIATIVE PROFILE MODELS

The following tables contain the radiative profiles that were used to construct the GATE budgets. They are divided into categories based on cloud top pressure. There are twenty-eight cloud top categories for the shortwave profiles and eighteen for the longwave. As discussed in the text, there were two basic groupings for the longwave cloud profiles. One is the thin cloud in which the cloud base occurs in the same 100 mb layer as the cloud top. The other is the deep cloud with cloud base at 950 mb regardless of cloud top pressure. In addition, there are seven clear sky LW profiles for various ranges of water vapour content.

The values given are in units of watts per square meter for the pressure interval, Δp. The pressure interval thickness is 100 mb for all layers except the surface layer, which is 12 mb thick. The numbers given represent the average instantaneous rate of energy gain (positive) or loss (negative) for the layer. For the LW case the instantaneous value is not a function of time. However, the SW value is an average over a 12.0 hour interval in which the instantaneous values are changing due to changing solar zenith angle.

CLEAR SKY

LONGWAVE POWER DIVERGENCE (Wm^{-2} PER GIVEN PRESSURE INTERVAL)

Precipitable Water (cm) → Standard Pres. Levels (mb) ↓	5.8 or Greater	5.8 to 5.6	5.6 to 5.4	5.4 to 5.2	5.2 to 5.0	5.0 to 4.8	4.8 or Less
100							
	-5.81	-5.81	-5.81	-5.81	-5.81	-5.81	-5.81
200							
	-15.98	-15.72	-15.46	-15.21	-14.95	-14.69	-14.44
300							
	-22.90	-22.84	-22.78	-22.72	-22.66	-22.60	-22.54
400							
	-24.56	-24.44	-24.20	-23.97	-23.85	-23.61	-23.37
500							
	-29.07	-28.24	-27.53	-26.81	-26.10	-25.39	-24.80
600							
	-31.32	-30.37	-29.42	-28.48	-27.64	-26.58	-25.75
700							
	-36.07	-35.59	-35.12	-34.64	-34.05	-33.22	-32.39
800							
	-30.97	-31.80	-32.51	-33.10	-33.58	-33.81	-34.05
900							
	-12.70	-15.33	-17.96	-20.59	-23.22	-25.85	-28.48
1000							
	-4.00	-4.06	-4.10	-4.20	-4.37	-4.74	-5.10
1012							

Table A1. Clear sky longwave divergence, watts per square meter per pressure interval, for different values of precipitable water.

THICK CLOUD

LONGWAVE POWER DIVERGENCE (Wm^{-2} PER GIVEN PRESSURE INTERVAL)

Divergence = Negative

Convergence = Positive

Cloud top Pressure (mb) → Standard Pres. Levels (mb) ↓	100 to 192	192 to 289	289 to 387	387 to 484	484 to 593	593 to 692	692 to 791	791 to 890	890 to 975
100	-88.31	-7.34	-6.18	-5.93	-5.83	-5.81	-5.81	-5.81	-5.81
200	-1.42	-114.85	-16.90	-15.69	-15.32	-15.15	-15.05	-15.02	-14.97
300	-0.42	-1.90	-137.08	-25.23	-23.76	-23.23	-22.96	-22.76	-22.71
400	-0.07	-1.07	-2.72	-137.10	-26.80	-25.12	-24.55	-24.15	-24.00
500	-0.83	-0.71	-0.89	-2.95	-127.89	-29.48	-27.50	-26.60	-26.40
600	-0.95	-0.89	-0.91	-0.97	-2.95	-111.97	-31.14	-28.74	-28.19
700	-0.36	-0.26	-0.24	-0.12	-1.12	-1.90	-89.64	-37.30	-34.95
800	+0.95	+0.71	+0.71	+0.95	+0.95	-0.47	-0.47	-60.57	-36.58
900	+7.20	+7.20	+7.20	+7.23	+7.41	+7.82	+6.11	+6.04	-24.33
1000	-3.29	-3.29	-3.29	-3.29	-3.29	-3.29	-3.29	-3.29	-2.86
1012									

Table A2. Thick cloud longwave power divergence, watts per square meter per pressure interval, as a function of cloud top pressure.

THIN CLOUD

LONGWAVE POWER DIVERGENCE (Wm^{-2} PER GIVEN PRESSURE INTERVAL)

Divergence = Negative

Convergence = Positive

Cloud top Pressure (mb) → Standard Pres. Levels ↓ (mb)	100 to 192	192 to 289	289 to 387	387 to 484	484 to 593	593 to 692	692 to 791	791 to 890	890 to 975
100	-4.74	-7.34	-6.18	-5.93	-5.83	-5.81	-5.81	-5.81	-5.81
200	-1.70	-21.67	-16.90	-15.69	-15.32	-15.15	-15.05	-15.02	-14.97
300	-1.92	-2.96	-71.39	-25.23	-23.76	-23.23	-22.96	-22.76	-22.71
400	-6.48	-7.82	-0.59	-94.85	-26.80	-25.12	-24.55	-24.15	-24.00
500	-9.63	-11.08	-5.92	+1.11	-99.52	-29.48	-27.50	-26.60	-26.40
600	-12.50	-13.98	-9.48	-3.98	+1.66	-92.80	-31.14	-28.74	-28.19
700	-15.56	-16.94	-13.03	-7.61	-3.46	+1.42	-75.12	-37.30	-34.95
800	-15.66	-17.24	-14.22	-9.90	-6.98	-3.14	-0.47	-54.50	-36.58
900	-14.94	-16.00	-14.22	-12.85	-10.06	-7.23	-5.33	+1.93	-23.95
1000	-4.37	-4.37	-4.37	-4.37	-4.33	-4.16	-3.87	-3.65	-3.04
1012									

Table A3. Thin cloud longwave power divergence, watts per square meter per pressure interval, as a function of cloud top pressure.

MEAN SHORTWAVE POWER CONVERGENCE (Wm^{-2} PER GIVEN PRESSURE INTERVAL)

Cloud top Pressure (mb) → Standard Pres. Levels ↓ (mb)	100 to 163	163 to 177	177 to 192	192 to 250	250 to 269	269 to 289	289 to 337
100	55.84	38.18	20.51	7.51	7.51	7.51	6.83
200	0	17.66	35.33	53.85	41.17	27.33	13.46
300	0	0	0	0	15.95	31.62	49.00
400	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0
600	0	0	0	0	0	0	0
700	0	0	0	0	0	0	0
800	0	0	0	0	0	0	0
900	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0
1012							

Table A4. Mean shortwave power convergence over a 12.0 hour daylight period, in watts per square meter per pressure interval, as a function of cloud top pressure (100 mb to 337 mb).

MEAN SHORTWAVE POWER CONVERGENCE (Wm^{-2} PER GIVEN PRESSURE INTERVAL)

Cloud top Pressure (mb) → / Standard Pres. Levels (mb) ↓	337 to 361	361 to 387	387 to 425	425 to 454	454 to 484	484 to 546	546 to 578
100							
	6.83	6.83	6.65	6.65	6.65	6.31	6.31
200							
	13.46	13.46	12.77	12.77	12.77	12.38	12.38
300							
	42.43	34.11	24.72	24.72	24.72	23.77	23.77
400							
	14.25	28.21	41.60	35.64	29.87	26.19	26.19
500							
	0	0	0	12.54	23.93	46.55	47.79
600							
	0	0	0	0	0	0	16.24
700							
	0	0	0	0	0	0	0
800							
	0	0	0	0	0	0	0
900							
	0	0	0	0	0	0	0
1000							
	0	0	0	0	0	0	0
1012							

Table A5. Mean shortwave power convergence over a 12.0 hour daylight period, in watts per square meter per pressure interval, as a function of cloud top pressure (337 mb to 578 mb)

MEAN SHORTWAVE POWER CONVERGENCE (Wm^{-2} PER GIVEN PRESSURE INTERVAL)

Cloud top Pressure (mb) → / Standard Pres. Levels (mb) ↓	578 to 593	593 to 639	639 to 675	675 to 692	692 to 731	731 to 772	772 to 791
100	6.31	5.41	5.41	5.41	5.41	5.41	5.41
200	12.38	11.57	11.57	11.57	10.58	10.58	10.58
300	23.77	23.05	23.05	23.05	22.05	22.05	22.05
400	26.19	25.56	25.56	25.56	24.55	24.55	24.55
500	37.07	25.60	25.60	25.60	24.58	24.58	24.58
600	33.05	57.26	54.90	42.45	22.24	22.24	22.24
700	0	0	7.98	22.51	49.86	45.97	35.73
800	0	0	0	0	0	7.98	20.80
900	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0
1012							

Table A6. Mean shortwave power convergence over a 12.0 hour daylight period, in watts per square meter per pressure interval, as a function of cloud top pressure (578 mb to 791 mb).

MEAN SHORTWAVE POWER CONVERGENCE (Wm^{-2} PER GIVEN PRESSURE INTERVAL)

Cloud top Pressure (mb) → / Standard Pres. Levels ↓ (mb)	791 to 824	824 to 869	869 to 890	890 to 919	919 to 966	966 to 975	975 to 1012 (clear sky)
100	5.41	5.41	5.41	5.41	5.41	5.41	5.41
200	10.58	10.58	10.58	10.58	10.58	10.58	10.58
300	21.07	21.07	21.07	21.07	21.07	21.07	21.07
400	23.60	23.60	23.60	22.59	22.59	22.59	22.59
500	23.66	23.66	23.66	22.68	22.68	22.68	21.64
600	21.35	21.35	21.35	20.40	20.40	20.40	18.32
700	20.27	20.27	20.27	19.35	19.35	19.35	16.23
800	43.02	39.80	31.35	19.39	19.39	19.39	15.23
900	0	6.27	17.38	34.19	31.35	15.85	14.59
1000	0	0	0	0	0.68	0.68	1.68
1012							

Table A7. Mean shortwave power convergence over a 12.0 hour daylight period, in watts per square meter per pressure interval, as a function of cloud top pressure (791 mb to 1012 mb [surface]).

APPENDIX B

RADIATIVE DIVERGENCE TO HEATING RATE CONVERSION FACTORS

The conversion factors listed in Table B1 provide for obtaining the radiative heating rate (°C per unit time) from the radiative flux divergence values (watts per square meter per pressure interval) found in Tables A1 through A7 according to this formulation:

$$\begin{array}{c}\text{Heating rate} \\ (^\circ\text{C per unit time})\end{array} = \begin{array}{c}\text{Flux Div.} \\ (\text{Tables A1 - A7})\end{array} \times \begin{array}{c}\text{Conv. Factor} \\ (\text{Table B1})\end{array}$$

This is a form of the basic equation:

$$\frac{\Delta T}{\Delta t} = \frac{g}{Cp} \frac{\Delta H}{\Delta p}$$

where $\Delta T/\Delta t$ represents the change in temperature per unit time interval, g is the acceleration due to gravity, Cp is the specific heat of dry air at constant pressure, ΔH is the radiative divergence and Δp is the pressure interval. All of the constants, including the pressure interval, Δp, have been compressed into the conversion factors in Table B1. Note that there are two sets of conversion factors. The first, Set I, gives the 24 hour integrated heating rate, accounting for the fact that there are only 12 hours of solar insolation. Set II produces an instantaneous rate of heating, in °C/day, that would be attained if the current divergence value persisted for 24 hours. The only difference between the two sets of numbers is in the conversion of the shortwave convergence to °C/day. Otherwise, either the process continues over all 24 hours

(LW, °C/day) or the averaging period is shorter than the duration of the phenomenon (LW and SW, °C/h).

The total radiative divergence column cannot be directly converted to a daily integrated heating rate using the factors in Set I of Table B1 because there are two different time scales involved. The total daily integrated heating may be obtained by determining separately the longwave and shortwave components and then summing them. If the total instantaneous rate of heating is required, then the factors in Set II of Table B1 may be applied directly to the totals column of the tables in Part 3.

	SET I		SET II	
	100 mb layer	12 mb layer	100 mb layer	12 mb layer
Longwave °C/day	.08428	.70234	.08428	.70234
Longwave °C/hour	.00351	.02926	.00351	.02926
Shortwave °C/day	.04214	.35117	.08428	.70234
Shortwave °C/hour	.00351	.02926	.00351	.02926

Table B1. Conversion factors useful for obtaining heating rates from values of radiative flux convergence or divergence in Tables A1 through A7. Set I factors provide a daily integrated heating rate, accounting for 12.0 hours of insolation. Set II factors provide an instantaneous heating rate. The units of these conversion factors are (°C/Day) per $Wm^{-2}[\Delta p]^{-1}$ for °C/day or (°C/hour) per $Wm^{-2}[\Delta p]^{-1}$ for °C/hour. See text for further explanation.

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16. Abstracts

The model divergence profiles were derived from several radiative transfer computational routines with adjustments to accommodate the observational data collected during the GATE experiment. The technique involves the compositing of twenty-eight shortwave and twenty-five longwave vertical divergence profiles based on SMS-1 satellite data and synoptic data. Tables of the longwave, shortwave and total radiative divergence profiles and the cloud top pressure distribution are given for a variety of space and time scales.

Analysis of the GATE Phase III radiative divergence profiles generally shows less upper tropospheric divergence and more middle level divergence than previous climatological estimates. The convectively disturbed days show significantly more upper tropospheric longwave divergence and daytime shortwave convergence than either the Phase III mean or the convectively suppressed sample. The magnitudes of the diurnal variability of the horizontal gradients in the radiative divergence fields appear adequate to explain at least some of the diurnal variations in cloud cover and precipitation reported by other authors.

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