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GUIDELINES FOR FLIGHT PLANNING DURING PERIODS OF HIGH OZONE OCCURRENCE

By

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ABSTRACT

At jet cruising altitudes high ozone amounts sometimes occur in the cabin. The purpose of this report is to present, for airline operational personnel, the best current estimate of the average ambient (outside) ozone and its variability with time and space. These summaries are based on two types of observations: balloon ozonesonde data for stations in Japan, North America, and western Europe; and "GASP" data from commercial airliners obtained under the Global Atmospheric Sampling Program (GASP) conducted by the National Aeronautics and Space Administration. The relationship of ozone amount with stratospheric transport mechanisms is discussed, leading to the identification of several meteorological parameters which can be used to qualitatively forecast ozone on a daily basis. Also presented is a preliminary regression of ozone with stratospheric temperature, developed from GASP data.

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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
m cm mm	inches feet yards miles	LENGTH		m cm mm
		2.5	centimeters	
		30	centimeters	
1.6	meters			
1.6	kilometers			
m ² ft ² yd ² acres	square inches square feet square yards square miles acres	AREA		m ² ft ² yd ² hectares
		6.5	square centimeters	
		0.09	square meters	
		0.8	square meters	
2.5	square kilometers			
0.4	hectares			
g kg short tons (2000 lb)	ounces pounds short tons	MASS (weight)		g kg t
		28	grams	
		4.5	kilograms	
2.2	tonnes			
l ml qt gal cu ft cu yd	fluid ounces pints quarts gallons cubic feet cubic yards	VOLUME		l ml qt gal cu m cu yd
		3	milliliters	
		16	milliliters	
		28	milliliters	
		0.24	liters	
		0.47	liters	
		0.26	liters	
2.8	liters			
0.03	cubic meters			
0.76	cubic meters			

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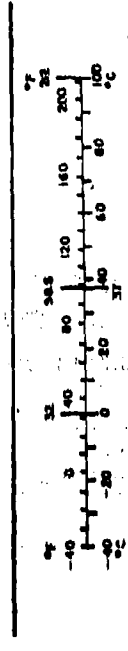
Fahrenheit temperature	5/9 (Fahr subtracting 32)	Celsius temperature
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Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
m cm mm	meters centimeters millimeters	LENGTH		in ft yd mi
		0.04	inches	
		0.4	inches	
		3.3	feet	
1.1	yards			
0.6	miles			
m ² ft ² yd ² acres	square millimeters square centimeters square inches square feet square yards square miles acres	AREA		sq in sq ft sq yd acres
		0.36	square inches	
		1.2	square yards	
		0.4	square feet	
2.5	acres			
g kg	grams kilograms	MASS (weight)		oz lb
		0.035	ounces	
		2.2	pounds	
1.1	short tons			
l ml qt gal cu ft cu yd	milliliters liters cubic centimeters cubic meters	VOLUME		fluid ounces pints quarts gallons cubic feet cubic yards
		0.03	fluid ounces	
		2.1	pints	
		1.06	quarts	
		0.26	gallons	
35	cubic feet			
1.3	cubic yards			
°C	Celsius temperature	TEMPERATURE (exact)		°F
		9/5 (Fahr add 32)	Fahrenheit temperature	

TEMPERATURE (exact)

°C	5/9 (Fahr add 32)	°F
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TABLE OF CONTENTS

	Page
I. THE PROBLEM	1
II. OZONE STATISTICS	2
A. Introduction	2
B. Types of observations	2
C. Ozonesonde statistics	4
1. Units	4
2. Explanation of tables	4
D. GASP aircraft statistics	8
E. Characteristics of the mean vertical distribution	8
F. General circulation of the stratosphere related to ozone transport	9
III. GENERAL GUIDELINES FOR ESTIMATING OZONE CONCENTRATIONS	10
A. Known correlations of ozone and meteorological parameters	10
1. Ozone and stratospheric temperature	10
2. Ozone and tropopause height	12
3. Ozone and potential vorticity	12
4. Ozone and wind curvature	12
5. Ozone and surface pressure	12
B. Summary of the meteorological control of ozone mixing ratio	13
C. Recommended usage of NMC products in forecasting ozone	15
1. Tropopause height	15
2. 200 mb height and temperature	15
3. Wind curvature	15
4. Surface pressure	15
IV. SUGGESTED OZONE FORECASTING PROCEDURES	16
A. Adjusted climatology	16
B. Statistical regression	16
APPENDICES	
A. Ozonesonde data	A1-97
B. GASP data	B1-32
C. Regression of GASP data with stratospheric temperature	C1- 4
D. Ozone conversion factors	D1

I. THE PROBLEM. In order to conserve fuel, jet aircraft are presently using higher flight levels than a few years ago. At these higher levels in the stratosphere there is generally more ozone, and it has been found that uncomfortably high levels of ozone sometimes occur in the cabin. The purpose of this report is to acquaint airline operational personnel with ozone variability in space and time, and to suggest general guidelines for recognizing and avoiding areas of potentially high ozone amounts. As an example of an effort to quantify the estimates, a simple regression formula is also presented in Appendix C, in terms of temperature only. While temperature cannot be the sole predictor, this formula is shown to be useful as a "qualitative" flight planning aid. It is emphasized that both the guidelines and the regression should be considered as preliminary measures, disseminated rapidly to make them immediately available for operations personnel to use during the January - May 1978 winter-spring seasons. It should be noted that as of this writing, December 1977, no firm maximum allowable cabin ozone dosage guidelines have been set. Further complicating the problem is lack of precise knowledge of the percentage reduction of ozone as it travels through the aircraft pressurization system and of the variation of the ozone amount within the cabin itself [2].

II. OZONE STATISTICS.

A. Introduction. The troposphere is the lowest layer of the atmosphere and is one in which the temperature generally decreases with increasing altitude. The stratosphere is the next higher layer and is one in which the temperature increases with increasing altitude up to about 150,000 feet. The minimum temperature region between the two layers is called the tropopause which may be a sharp, easily defined surface, or an indistinct transition layer. The average tropopause height ranges from about 55,000 feet in the tropics to 25,000 in polar regions and has a mid-latitude average, in the standard atmosphere, near 35,000 feet.

Ozone is primarily formed photochemically in the tropical middle and upper stratosphere, above about 80,000 feet. The actual distribution of ozone is controlled largely by the wind, which systematically transports it downward and poleward from the source region in the tropical stratosphere. The annual mean total ozone* is distributed over the Northern Hemisphere as shown in Figure 1. It is readily seen that more total ozone exists over middle and high latitudes than over the tropics. It is known that the amount of ozone in the low stratosphere is closely related to the total amount; therefore, longitudinal variation, clearly seen in the total amount, is also present in the ozone in the low stratosphere. The low stratosphere of the middle and high latitudes acts as an ozone reservoir because there ozone is largely protected from dissociation by ultraviolet radiation.

B. Types of observations. Total ozone is observed from the ground, usually by an ozone spectrophotometer. About 100 stations in the world now make total ozone observations, and some records go back fifty years. Satellites are also now starting to make total ozone measurements.

However, observations of total ozone do not directly yield information about the vertical distribution of ozone, especially in the low stratosphere at typical jet flight levels. Data on the vertical distribution of ozone from balloon-borne ozonesondes have been taken at about 40 locations, although only about 15 stations are now active. With few exceptions, ozone soundings have occurred only over North America, western Europe, Japan, and at a few

*All the ozone in a column through the total depth of the atmosphere.

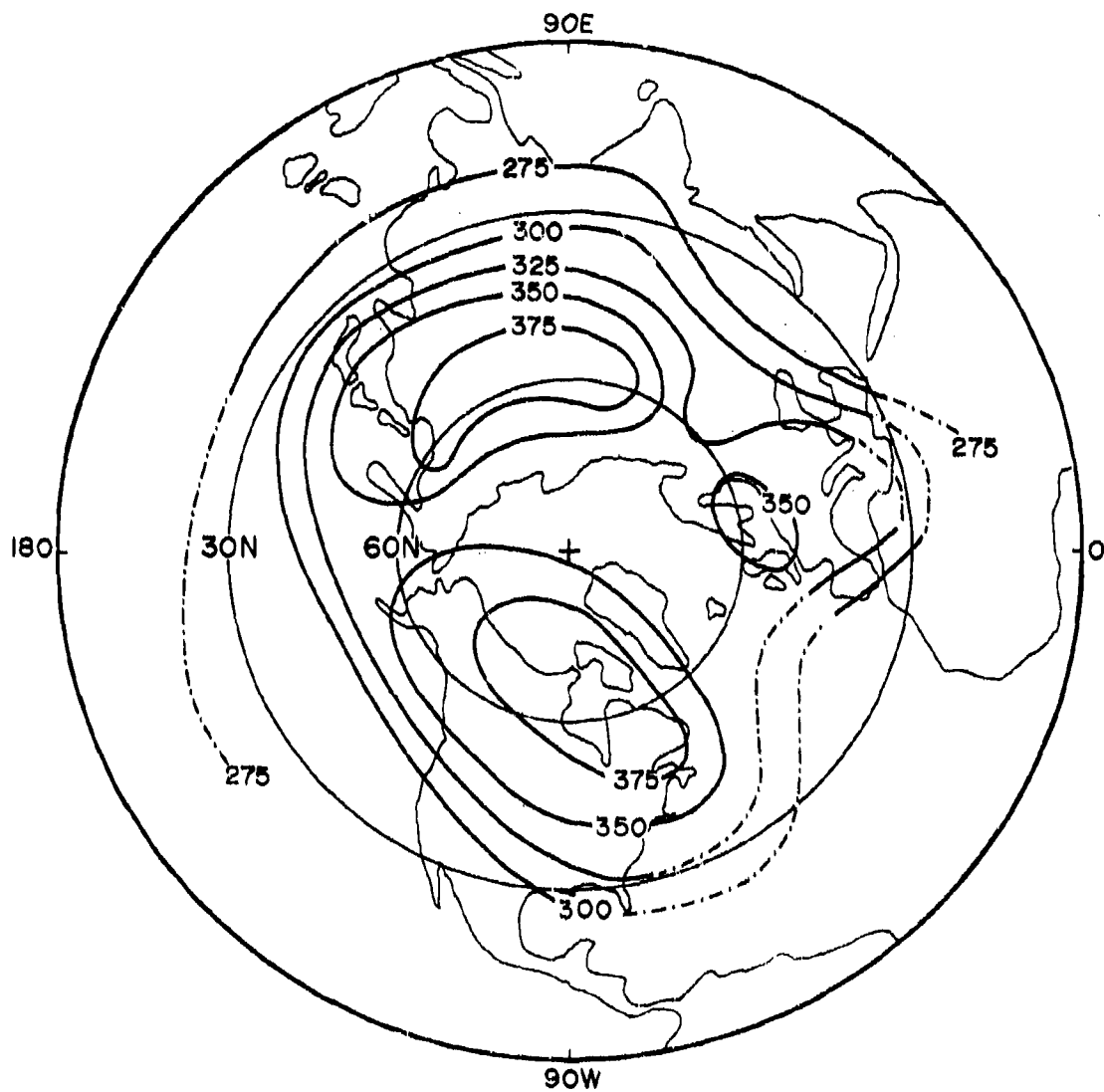


Figure 1. Distribution of the annual mean total ozone (reduced to sea level pressure and temperature) over the Northern Hemisphere, from [9]. Units are thousandths of centimeters of ozone.

stations in the Southern Hemisphere. These soundings are the basis for the tables of ozone mixing ratios presented in Appendix A. There are many areas of aeronautical interest for which no ozonesonde data exist. Partially alleviating this problem have been the recent GASP measurements. In GASP, four commercial 747 aircraft have been equipped to monitor the ambient (outside) ozone on various routes and flight levels. Values are instantaneous and measured usually at five-minute intervals. Twenty-two months of these data are summarized in Appendix B.

C. Ozonesonde statistics.

1. Units. Throughout this report, ozone amounts will be expressed in the volumetric mixing ratio, parts per million by volume (ppmv), which is the unit commonly used by regulatory agencies. The benefit of using ppmv in the present context is that mixing ratio does not change through pressurization, as would ozone expressed in a unit such as micrograms per cubic meter. Ozone is commonly measured in six different units whose inter-relationships are given in Appendix D.

2. Explanation of tables. Appendix A contains ozonesonde statistics for four regions: Japan, western North America (west of 100°W), eastern North America (east of 100°W), and western Europe. The stations used for each region are listed in Table 1, and their locations are mapped in Figures 2, 3, and 4.

For each month and region, statistics are given as functions of height and of latitude. For Japan, which has three stations, statistics by single station location serve this purpose. For Europe, stations are grouped by latitude centered at 52, 47, and 39°N . For western North America, statistics are linearly interpolated to every 5 degree latitude from the four stations available. Note that there are no stations between 48°N and 65°N over western North America, and that three of the four stations have only three-year periods of record. Eastern North America has had the most extensive network of ozonesonde stations, although not all stations had concurrent programs. For this region, station statistics were plotted at several standard pressures and then analyzed. Gridpoint values, read at 5° latitude intervals from the analyses, are consistent with a previous report [10], and GASP data essentially confirm these values. Note that in the previous report, statistics [10] were presented as functions of actual height, while in the present report, statistics at

TABLE 1

Ozonesonde Stations by Region

<u>Station</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Period of Record</u>	<u>Total No. of Ascents</u>
A. <u>Japan</u>				
Sapporo	43.0N	141.3E	12/68-12/74	211
Tateno	36.0N	140.1E	3/68-12/74	202
Kagoshima	31.6N	130.6E	12/68-12/74	190
B. <u>Western North America</u>				
Fairbanks	64.8N	147.9W	1/63-12/65	107
Seattle	47.4N	122.3W	1/63-12/65	148
Boulder/Ft. Collins	40.3N	105.1W	1/63- 6/67	703
Albuquerque	35.0N	106.6W	1/63-12/65	208
C. <u>Eastern North America</u>				
Thule	76.5N	68.8W	1/63- 1/66	92
Resolute	74.7N	95.0W	1/66-12/75	441
Churchill	58.8N	94.1W	1/63-12/65	100
Goose Bay	53.3N	60.4W	1/63- 5/69	207
Madison	43.1N	89.4W	1/63-12/65	83
Bedford	42.5N	71.3W	12/62- 3/71	586
Sterling	39.0N	77.5W	8/62- 6/66	179
Wallops Island	37.8N	75.5W	2/67- 4/75	223
Tallahassee	30.4N	84.3W	1/63-12/65	138
Cape Kennedy	28.4N	80.5W	2/66- 5/69	135
Grand Turk	21.5N	71.1W	12/63- 5/69	129
Canal Zone	9.0N	79.6W	1/63- 5/69	126
D. <u>Western Europe</u>				
1. 52°N				
Berlin	52.5N	13.4E	11/66- 1/73	358
Uccle	50.8N	4.3E	12/65- 8/67	100
2. 47°N				
Paris	48.8N	2.3E	1/64- 5/67	62
Hohenpeissenberg	47.8N	11.0E	3/65-12/75	515
Thalwil	47.3N	8.6E	9/66- 7/68	243
Payerne	46.8N	6.9E	8/68- 6/72	483
3. 39°N				
Cagliari	39.2N	9.0E	7/68- 7/70	55
Lisbon	38.8N	9.2W	6/73-12/75	70

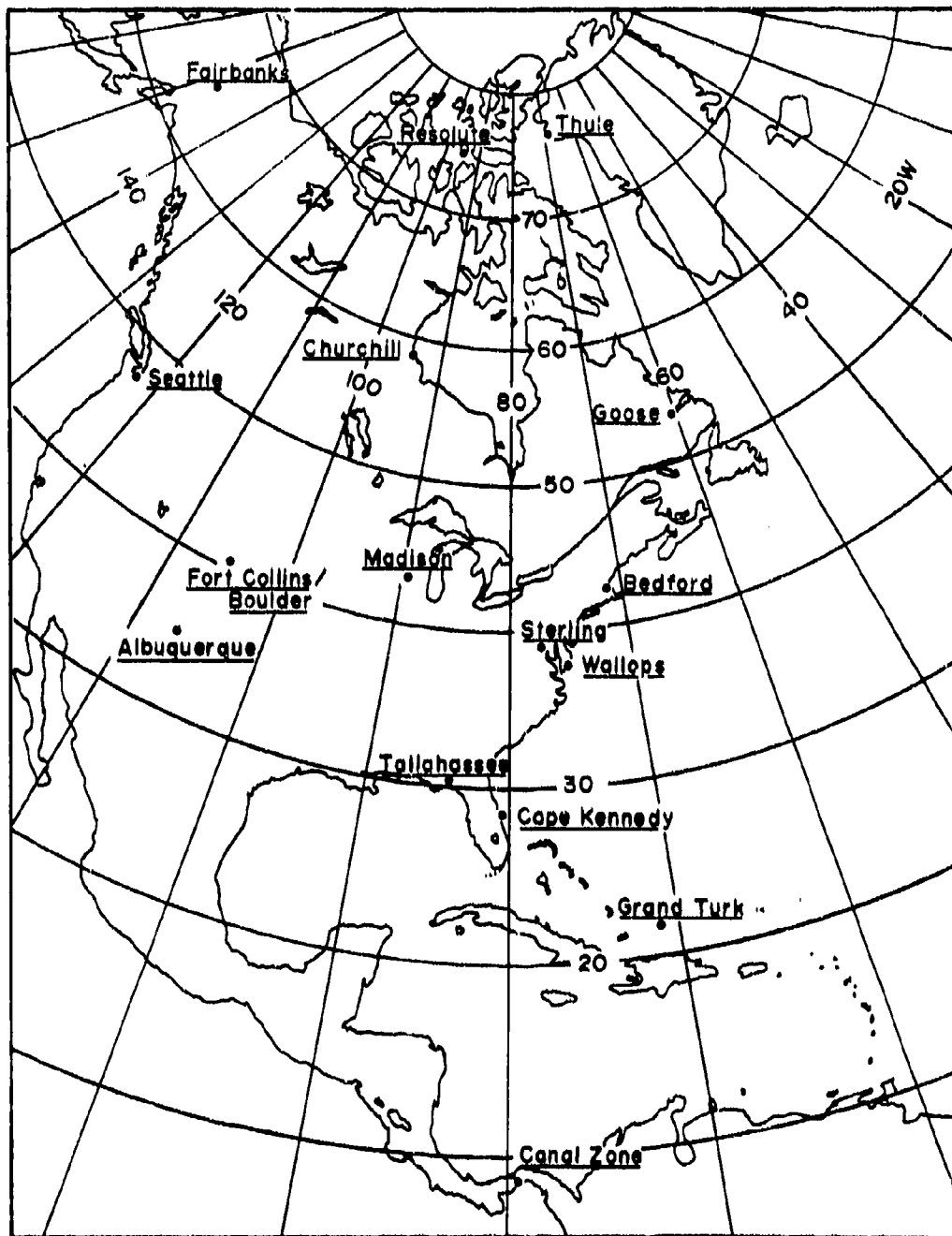


Figure 2. North American ozonesonde (balloon) stations. 100°W divides "western" and "eastern" North America.

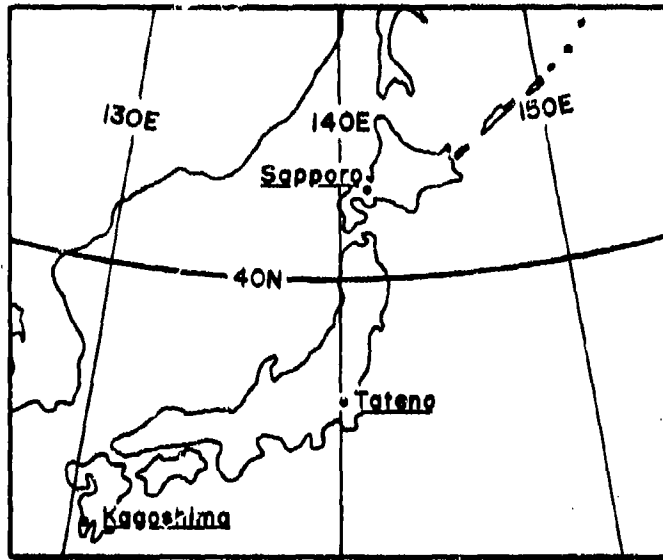


Figure 3. Japanese ozonesonde (balloon) stations.

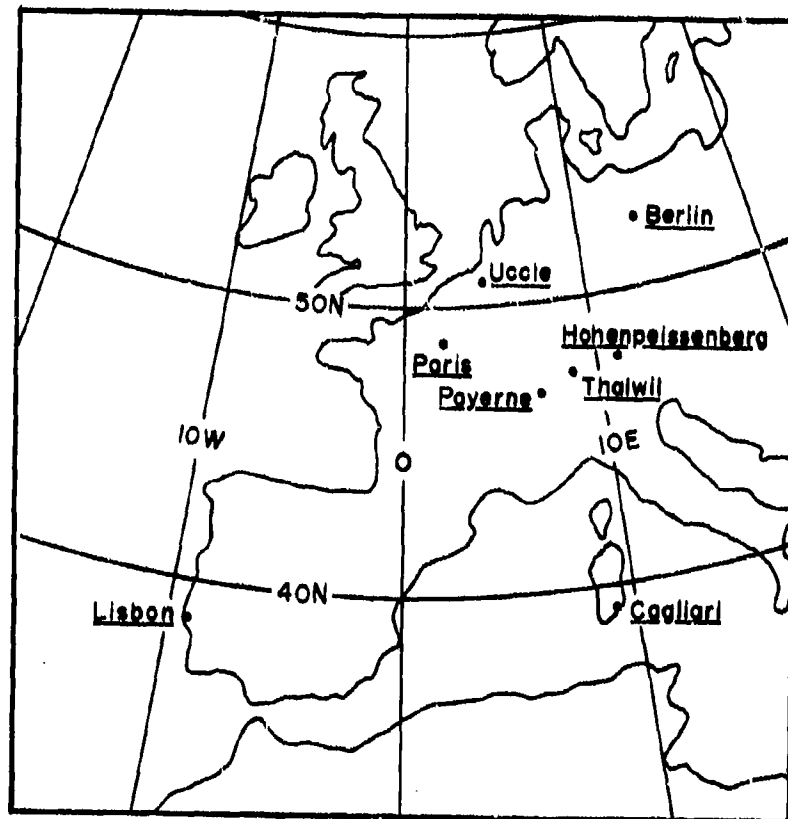


Figure 4. Western European ozonesonde (balloon) stations.

standard pressures have been linearly interpolated to the flight levels (FL) from FL190 to FL590 (in hundreds of feet), using the U.S. Standard Atmosphere, 1962.

For each month, flight level, and region, the tables include the mean, and the mean plus one, two, and three standard deviations. If one assumes a "normal" frequency distribution of ozone mixing ratio observations, i.e., a bell-shaped curve, then the mean plus one, two, and three standard deviations can be interpreted as 16%, 2%, and 0.1% probability, respectively, that any random observation will be larger than that amount. Also given are the maximum and minimum amounts observed to date and the number of soundings available. For western North America, the number of soundings is given as zero for 55°N and 60°N to emphasize the lack of stations near these latitudes.

D. Global Atmospheric Sampling Program aircraft statistics. The GASP observations are extremely valuable for determining ozone statistics for aircraft operations because they are made where airplanes fly.

The GASP data in Appendix B have been summarized by regions of six degrees latitude by 50 degrees longitude. Within each region statistics are given by season and flight level. It must be understood that in most of these regions, as well as for the ozonesonde regions discussed above, there have not yet been enough observations to have good confidence in the statistics, but it is thought that the spatial variability depicted here has value for flight planning operations.

The GASP statistics include the mean and the mean plus one, two, and three standard deviations (again, interpreted as 16%, 2%, and 0.1% probabilities of randomly observing a value more than the amount shown). Also given are the maximum value observed, the number of observations used, and the average values for each latitude belt.

E. Characteristics of the mean vertical distribution. There is a small, relatively constant mixing ratio of ozone in the troposphere. At the tropopause, the mixing ratio increases rapidly with height and then becomes nearly constant above about 90,000 feet. The mean vertical distribution is known to change with month and with longitude as well as with latitude. In the winter and spring months ozone has a larger mixing ratio in the extratropical low stratosphere than in the summer and autumn months. Also, in Figure 1 it is seen that

the mean total ozone has maxima over eastern Asia, eastern North America, and Europe. Since ozone mixing ratio in the low stratosphere is well correlated with total ozone amount, corresponding areas of maxima exist in the vertical distribution tables for eastern North America compared to western North America. Indeed, this is the reason that the statistics are grouped by longitude. It should be noted that the mean values at common jet aircraft altitudes at and above 31,000 feet and at latitudes north of 40 degrees are 0.1 ppmv or more.

F. General circulation of the stratosphere related to ozone transport.

It is convenient to consider the motions of the stratosphere as a mean flow with superposed waves ("eddies"). Both types of motions are important in transporting ozone northward and downward, but in the low stratosphere of middle and high latitudes eddy motions appear to be the more important. Pressure troughs in the low stratosphere are characterized by subsidence in regions of northward flow, which brings down ozone-rich air from higher levels. Thus, the passage of transient eddies leads to a large day-to-day variability in low stratospheric ozone amount at a given location.

During the winter half year in middle and high latitudes, the stratospheric circulation is generally west to east with superposed eddies. In the spring the high latitude stratosphere warms enough to reverse the equator-to-pole temperature gradient, reversing the circulation to easterly through the summer half year above about 50 mb (68,000 feet). During the summer, stratospheric wave activity is much reduced, and therefore so is the poleward, downward transport of ozone.

Each winter there occur intense disturbances known as Stratospheric Warmings. Their maximum intensity is in the middle stratosphere (above 100,000 feet) so they do not directly affect present aircraft. These warmings are characterized by strong temperature and wind gradients and rapid temperature changes. These conditions are especially conducive to poleward and downward ozone transport. At the time of these events, announced by the National Oceanic and Atmospheric Administration (NOAA) on teletype circuits, the ozone levels may be higher than normal even at aircraft flight altitudes below the location of the strong horizontal temperature and wind gradients at 70,000 feet.

III. GENERAL GUIDELINES FOR ESTIMATING OZONE CONCENTRATIONS.

A. Known correlations of ozone and meteorological parameters. Various correlations of meteorological parameters with the vertical distribution of ozone have been documented in the literature on a station-by-station basis. As computation and analysis procedures vary with author, it is difficult to draw general conclusions. In making correlations of two parameters, each of which may have large variations on more than one time scale, care must be taken not to allow a correlation on one time scale from interfering with that of another. This can be done by removing from the data any known variations on time scales different from that of current interest [5]. For example, temperature and ozone have opposite seasonal variations near 50 mb on an annual scale, but may have identical variations on a day-to-day scale. If daily temperature and ozone for a period of years are correlated, a low correlation may be expected, yet if the daily and seasonal variations were treated separately, each scale of variability could show high correlation between the two variables. These considerations must be applied to results reported in the literature where various methods are used.

The following correlations are all inter-related, having their origin in the basic process which transports ozone downward, i.e., sinking of stratospheric air into regions above tropospheric pressure troughs.

1. Ozone and stratospheric temperature. The correlation of ozone and temperature in the stratosphere is due to the fact that descending, adiabatically-warmed air brings down ozone from levels where the mixing ratio of ozone is generally higher, and is the basis for the experimental forecast procedure in Section IV.

Ozone and temperature have been correlated at several individual stations. From January to April, correlations of +0.8 have been found at Berlin (52.5°N) for the 250 and 200 mb levels, without removal of the seasonal variation [8]. Significant correlation was also found to exist at 250 through 100 mb in May to September and at 200 through 100 mb in October through December at Berlin.

Figure 5, from a study of five years of Swiss data (47°N) [5], shows the annual mean correlation coefficients both with (a) and without (b) first subtracting the seasonal variation. The same general behavior of the correlation coefficients has been found from analysis of five years of data at Cagliari (39°N).

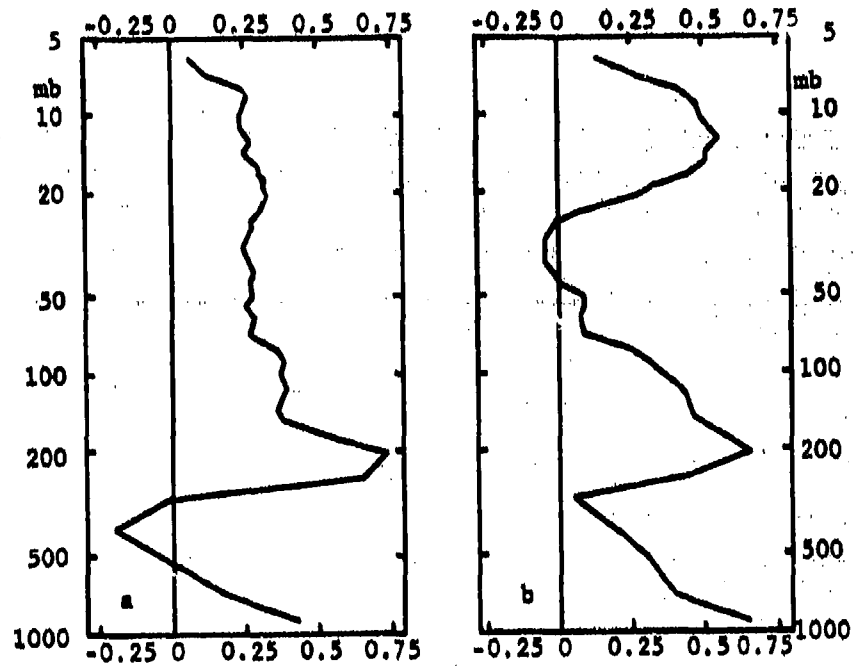


Figure 5. Correlation coefficients between ozone and temperature for five years of Swiss data; (a) with, and (b) without subtracting the seasonal variation. From [5].

2. Ozone and tropopause height. The sinking motion above upper tropospheric troughs can be thought to "force down" the tropopause. Therefore, it is in keeping with the physical reasoning developed above that ozone mixing ratio increases as the tropopause height decreases. Although no statistical correlations were found in the literature, the existence of the relationship for individual synoptic case histories is well documented [4].

3. Ozone and potential vorticity. Potential vorticity is a measure of the combined dynamic and thermodynamic properties of atmospheric flow. It does not change for an individual volume of air as that volume moves with the wind. Although this quantity is not now used on synoptic weather maps, it could be easily computed from numerical forecast parameters at the National Meteorological Center (NMC). Potential vorticity is mentioned here because it is highly correlated with ozone mixing ratio [3,4] in the lower stratosphere. Therefore, it could be an important predictor of ozone in a future forecast scheme. Unfortunately, no numerical correlations with ozone over wide areas have yet been given in the literature.

4. Ozone and wind curvature. As was previously mentioned, in the middle latitude stratosphere ozone is advected downward and northward into the regions above upper tropospheric troughs. Through synoptic analysis of total ozone and rawinsonde observations over Europe, it has further been shown [6] that the gradient of ozone is largest across the cyclonically curved portions of the jet stream. This is in agreement with the theory [3] that the preferred area for the injection of stratospheric air downward into the troposphere is poleward of a cyclonically curved jet.

5. Ozone and surface pressure. Studies of ozone vertical distribution over northern Europe [1] have shown significant correlation of high surface pressure with large amounts of ozone just above the tropopause and with intrusions into the upper troposphere of ozone-rich stratospheric air. This relationship has also been documented for several other individual case studies. Increasing pressure behind a cold front usually underlies an upper-level pressure trough due to the sloping of baroclinic tropospheric features. The upper tropospheric trough is where the stratospheric air is injected downward, leading to the correlation mentioned earlier.

B. Summary of the meteorological control of ozone mixing ratio. The above correlations are inter-related; each is tied to the existence of a basic mechanism through which ozone is transported from the tropical stratosphere downward to its ultimate destruction at the ground. Figure 6 shows the relationship of ozone to a wave near tropopause level. The sinking motion over the eastern portion of the pressure trough leads to the significant positive correlations of ozone with temperature, with wind curvature, and with potential vorticity, and the significant negative correlation of ozone with tropopause height. The fact that this transport region is preferentially located over surface areas of high and increasing pressure leads to the positive correlation of ozone and surface pressure.

It is seen, therefore, that the northward, downward ozone transport in extratropical latitudes is carried out by eddy motion. These eddies tend to be most vigorous in autumn through spring, but large ozone values are not usually found in middle and high latitudes until early winter. This lag in buildup is most likely associated with a smaller subtropical supply of ozone for the eddies from the tropical mean meridional circulation (Hadley Cell) which only becomes sufficiently developed then. As summer approaches, the Northern Hemisphere Hadley Cell becomes much weaker again leading to a lack of supply of ozone for the extratropical eddies (which are themselves weaker) to transport poleward and downward.

A portion of the eddy transport is accomplished by the standing waves, the locations and intensities of which are basically controlled by the distribution of continents and mountain ranges. This standing wave transport leads to the longitudinal variation in the vertical distribution of ozone mixing ratios, similar to what is seen graphically in Figure 1 for total ozone.

Basically, then, the spatial and seasonal variations in both the mean distribution and day-to-day variability is explained through circulation processes. Adequate forecasting of the circulation processes leads to the possibility of forecasting ozone through the known relationships. Unfortunately, no systematic quantitative correlations of ozone to the various meteorological parameters have been made. Until this is done, qualitative ozone forecasts will have to be made from the relationships described above. Success will rely quite heavily on forecaster experience and interest. The next section describes the tools which the forecaster might use in forecasting ozone.

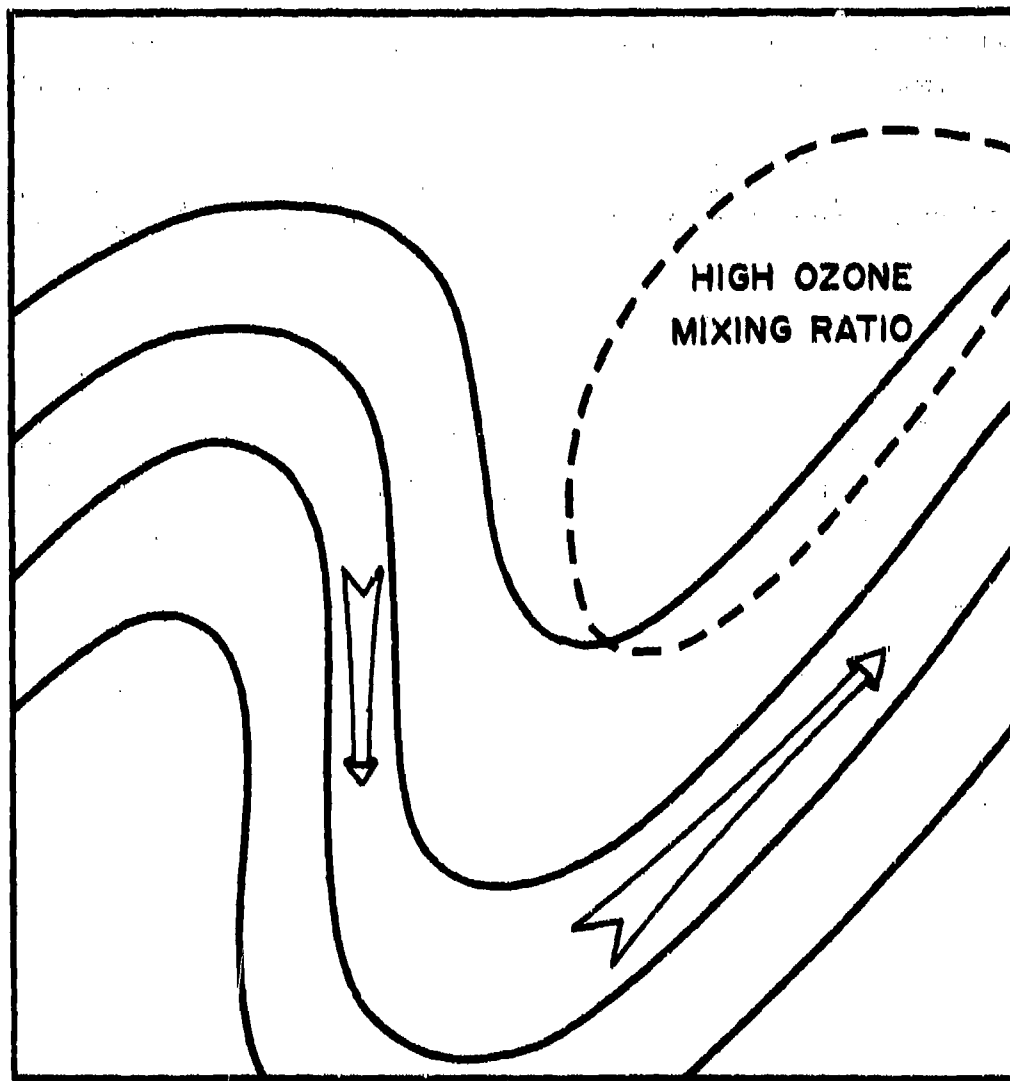


Figure 6. Schematic representation of the area of expected high ozone mixing ratio related to position of pressure ridges and troughs near tropopause level.

C. Recommended usage of National Meteorological Center (NMC) products in forecasting ozone. The National Meteorological Center transmits via facsimile several analysis and forecast products which are related to the ozone mixing ratio. In this section, selected products and their suggested use are described. Further discussion of the products themselves is best obtained from the Forecaster's Handbook No. 1: Facsimile Products, published by the National Weather Service. Of course, forecasters may alternatively use locally-produced analyses and forecasts.

1. Tropopause height. Injection of stratospheric air into the troposphere tends to result in localized high ozone concentrations, but it is highly unlikely that an aircraft flying in the troposphere would encounter uncomfortably high concentrations for more than a few minutes. Tropopause height or pressure is available in both analyzed and forecast form. The analyzed tropopause is the tropopause as coded by the radiosonde field stations. The forecast tropopause, however, has been subject to considerable vertical and horizontal smoothing as well as the simplified physics of the forecast model. Due to shortcomings in the NMC-forecast tropopause, some airlines choose to use a locally-produced, subjective tropopause forecast. At a particular flight level above the tropopause, one would forecast higher than average ozone when the tropopause is low.

2. 200 mb height and temperature. Like tropopause height, the 200 mb height is negatively correlated with ozone mixing ratio at levels just above the tropopause. The deeper a 200 mb low is forecast to be, the higher is the expected ozone amount. Also, a higher than average temperature in the low stratosphere is indicative of higher than average ozone mixing ratio.

3. Wind curvature. Areas of cyclonically curved wind contours at tropopause height typically will have more ozone than will the poleward side of anticyclonically curved contours.

4. Surface pressure. In mid-latitude winter and spring, the highest ozone concentrations at and just above the tropopause are most likely to lie over regions of increasing surface pressure, i.e., areas a few hundred miles behind cold fronts.

IV. SUGGESTED OZONE FORECASTING PROCEDURES. During the course of this study, the meteorology departments of several U.S. and foreign airlines* were visited to learn which type of ozone forecast might be practicable. Flight planning procedures and the amount and type of detailed meteorological input vary appreciably among the airlines, so ozone forecasting procedures will also vary in practice. The purpose of this section is to suggest two procedures which seem suitable for most airlines, in view of the limited extent of the data and correlation studies presently available.

A. Adjusted climatology. It is suggested that, prior to each day's flying, an ozone forecaster judge the potential for high ozone mixing ratios on the routes to be flown. As a starting point, the forecaster could use the probability statistics in the appendices. For example, during February over Green Bay, Wisconsin (45°N, 88°W) the ozonesonde statistics (Appendix A) indicate a 16% chance that the mixing ratio would be 0.45 ppmv or higher at FL370. The GASP statistics (Appendix B) put the FL370 "16% worst" value at 0.27 ppmv. Depending on guidelines yet to be set, this may be an unacceptable risk, and alternate routes or lower flight levels may need to be selected for that day.

However, a much better guess than climatology is available using the relationships presented in Section IIIC to adjust the climatology estimates. For example, if a 200 mb ridge were over Green Bay on a February day, one might expect a smaller than 16% chance of observing a value as high as 0.45 ppmv at FL370. If, however, there existed signs of high ozone mixing ratio (e.g., low tropopause, high temperature) the probability of encountering 0.45 ppmv or more is correspondingly increased.

B. Statistical regression. An example of what could be an alternative, objective method for refining the climatological forecast of ozone is to utilize a regression equation developed from the GASP data using temperature as the sole predictor.

Regression equations for stratospheric ozone as a function of temperature are given for each season in Appendix C. The physical reasons for this rela-

*American, Continental, Delta, Eastern, Northwest, Pan American, Trans-World, United, and Western Airlines. Also visited were the foreign carriers Scandinavian, Lufthansa and Air France. Interviewed by telephone were Braniff, National, and Japan Airlines, and the private aviation forecasting firm DeNardo and McFarland.

tionship were discussed in Section III. Although other variables are also related with ozone, only forecast temperature has been used here because it is a well-defined quantity (as opposed to tropopause height, for example) and because forecast temperature is routinely available to airline personnel (as opposed to potential vorticity, for example).

The regression equations apply only to stratospheric flight. They are based on GASP measurements made in the stratosphere; measurements made in the troposphere were not used in making these tables. Also, the regression equations must be regarded as examples of what could be done if better data were available. Also, they have not been verified by independent data.

To use Tables C-1 to C-4 to predict the ozone amount at a given place along the flight path, use the forecast temperature at that place along with the mean temperature and ozone values for that flight level and latitude in the regression equation given at the top of the table. For example, suppose that in February an aircraft was expected to fly in the stratosphere at FL370 at 45°N, where the temperature was forecast to be -65°C. The mean temperature and ozone are -56°C and 0.24 ppmv, respectively (Table C-1). Thus, the forecast ozone would be $OZ = 0.0143 \times (-65 - (-56)) + 0.24$ which gives $OZ = 0.11$ ppmv. This forecast is for considerably less ozone than the climatological "16% worst" values discussed in Section IVA. Recall that these regression equations are for the stratosphere only.

Table 2 shows the frequency distribution of forecast errors for each of five different regression schemes, all based on stratospheric GASP data. In the first scheme, $\bar{OZ}(LAT,HT)$, the mean ozone values as given in Tables C-1 to C-4 were taken as the forecast. In the second scheme, (A+BT), a regression relation between all stratospheric ozone and temperature data, regardless of altitude or latitude, was used. The third scheme is that used in Tables C-1 to C-4. In the fourth and fifth schemes, regression relations were used just as in scheme two, but with distance from the NMC tropopause (DTROP) and geostrophic potential vorticity (PV) used as independent variables.

From the percent of cases where the absolute value of the error is over 0.2 ppmv in Table 2, it appears that regression with a dynamic variable almost always produces a better forecast of the ozone amount than just using the mean value for a given latitude and height. However, combining the means with a regression relation, as done in the third scheme, in general produces the best

TABLE 2. Comparison of statistical forecasting schemes, as described in the text. The numbers given are the percent of observations for which each scheme had the indicated forecast error (i.e., observed value minus forecast value).

ERROR OF FORECAST	1					2					3					4					5									
	OZ (LAT, HT)					A + BT					$(T-T)B + OZ$					A' + B' DTROP					A'' + B'' PV									
Winter (N=1894)	3%					3%					2%					2%					1%									
< -.2	14	19	12	12	14	19	10	10	17	8	12	6	6	8	8	19	10	10	17	8	12	6	6	8	8	14	12	12	14	14
-.2 to -.1	67	60	74	74	67	60	19	19	55	41	60	17	17	23	23	60	19	19	55	41	70	70	70	70	70	69	69	69	69	69
-.1 to .1	9	9	8	8	9	9	47	47	14	13	9	14	14	15	15	9	47	47	14	13	10	10	10	10	10	10	10	10	10	10
.1 to .2	7	9	4	4	7	9	10	10	9	15	9	9	9	13	13	9	9	9	9	9	6	6	6	6	6	7	7	7	7	7
> .2																														
TOTAL ABS. ERROR > .2	10	12	6	6	10	12	30	30	15	30	12	15	15	21	21	12	20	20	15	20	8	8	8	8	8	8	8	8	8	8
Spring (N=3296)	15					10					6					8					10									
< -.2	16	19	17	17	16	19	10	10	6	10	10	6	6	8	8	19	10	10	6	10	23	23	23	23	23	21	21	21	21	21
-.2 to -.1	41	47	55	55	41	47	19	19	17	41	47	17	17	41	41	47	19	19	17	41	41	41	41	41	41	42	42	42	42	42
-.1 to .1	13	14	14	14	13	14	47	47	14	13	14	14	14	15	15	14	47	47	14	13	15	15	15	15	15	15	15	15	15	15
.1 to .2	15	10	9	9	15	10	10	10	9	15	10	9	9	13	13	10	10	10	9	15	13	13	13	13	13	12	12	12	12	12
> .2																														
TOTAL ABS. ERROR > .2	30	20	15	15	30	20	30	30	15	30	20	15	15	21	21	20	20	20	15	20	21	21	21	21	21	22	22	22	22	22
Summer (N=898)	1					1					1					1					1									
< -.2	18	11	9	9	18	11	1	1	1	1	1	1	1	1	1	11	1	1	1	1	16	16	16	16	16	17	17	17	17	17
-.2 to -.1	67	80	81	81	67	80	1	1	9	18	80	1	1	9	9	80	1	1	9	18	72	72	72	72	72	69	69	69	69	69
-.1 to .1	11	6	6	6	11	6	80	80	6	11	6	6	6	9	9	6	80	80	6	11	9	9	9	9	9	10	10	10	10	10
.1 to .2	3	2	2	2	3	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	3	3	3	3	3
> .2																														
TOTAL ABS. ERROR > .2	4	4	3	3	4	4	30	30	3	4	4	3	3	4	4	4	20	20	3	4	3	3	3	3	3	4	4	4	4	4
Autumn (N=3790)	2					2					1					1					1									
< -.2	17	18	13	13	17	18	2	2	1	2	2	1	1	1	1	18	2	2	1	2	11	11	11	11	11	13	13	13	13	13
-.2 to -.1	64	61	71	71	64	61	2	2	13	17	61	2	2	13	13	61	2	2	13	17	73	73	73	73	73	70	70	70	70	70
-.1 to .1	12	13	12	12	12	13	61	61	12	12	13	13	13	11	11	13	61	61	12	12	11	11	11	11	11	11	11	11	11	11
.1 to .2	5	6	3	3	5	6	13	13	3	5	6	6	6	3	3	6	13	13	3	5	3	3	3	3	3	5	5	5	5	5
> .2																														
TOTAL ABS. ERROR > .2	7	8	4	4	7	8	30	30	4	7	8	4	4	4	4	8	20	20	4	7	4	4	4	4	4	6	6	6	6	6

forecast of all. Comparison of the percent of cases with large errors for schemes two, four, and five, which do not use means, shows that temperature is the best predictor in spring, distance from the tropopause in summer and autumn, and potential vorticity in winter. Clearly, a forecast scheme which incorporated the means of ozone as a function of latitude and height along with multiple regression relations of temperature, tropopause height, and potential vorticity would be even better than scheme three.

Of course, no reasonable statistical forecast scheme can be expected to perfectly predict spot ozone measurements such as the GASP data. Ozone is much more variable in space and time than available measurements of other meteorological variables as illustrated by the selected examples of actual GASP data in Table 3. Pockets of ozone such as these are not predictable from conventional data, but that may not be important if one needs to forecast only the average ozone amount for periods on the order of an hour. Thus, in developing a forecast scheme, ozone data should be averaged along the flight path for a time equal to that which may be used in future FAA regulations for establishing ozone concentration limits.

In summary, the optimum ozone prediction scheme should include the means of ozone, more than one dynamic variable, and should yield expected average ozone amounts along a flight path. Until such a scheme is developed, the simple regression equations in Tables C-1 to C-4 are recommended, as they appear to have much more success than climatology alone has, although climatology may easily show where and when conditions are clearly below limits.

TABLE 3. Examples of large ozone changes with no apparent relation to other variables.

<u>LAT</u>	<u>LONG</u>	<u>TIME</u>	<u>DISTANCE ABOVE TROPopause</u>	<u>WIND DIRECTION</u>	<u>WIND SPEED</u>	<u>TEMPERATURE</u>	<u>OZONE</u>
a. Enroute from San Francisco to Tokyo on January 23, 1976; at FL 370.							
45.9N	155.3E	0538Z	159 MB	281°	16 ms ⁻¹	-49°C	0.70 ppmv
45.7	153.1	0553	165	274	25	-48	0.63
44.9	151.7	0603	170	274	34	-48	0.41
44.1	150.5	0613	177	270	37	-48	0.44
42.8	148.6	0628	189	266	37	-48	0.49
42.0	147.4	0638	198	265	43	-44	0.80
41.6	146.9	0643	202	267	44	-44	0.45
40.8	145.8	0653	211	268	51	-44	0.67
b. Enroute from Boston to San Francisco on May 12, 1975; at FL 390.							
43.0	79.4W	1447	49	253	25	-52	0.25
43.2	81.1	1457	51	262	18	-52	0.47
43.6	82.8	1507	55	260	17	-52	0.51
43.7	83.6	1512	57	252	16	-52	0.53
c. Enroute from Seattle to London on March 20, 1975; at FL 330							
56.7	101.3	2323	47	264	18	-47	0.54
57.1	100.2	2328	47	263	20	-48	0.54
57.5	99.0	2333	47	259	23	-48	0.38
57.8	97.8	2338	49	260	21	-47	0.49

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Appendix A

Monthly Ozonesonde Statistics

for Four Regions:

Japan

Western North America

Eastern North America

Western Europe

JANUARY - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43°N							36°N						
N=18							N=17						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.9	3.5	4.0	3.3	1.5	590	1.5	2.0	2.4	2.9	2.3	.7
570	2.1	2.6	3.2	3.7	3.0	1.2	570	1.3	1.7	2.2	2.6	2.2	.55
550	1.8	2.3	2.8	3.3	2.6	1.0	550	1.0	1.5	1.9	2.4	2.0	.40
530	1.5	2.0	2.4	2.9	2.3	.7	530	.8	1.2	1.7	2.1	1.8	.30
510	1.4	1.8	2.2	2.6	2.1	.65	510	.7	1.1	1.5	1.9	1.6	.25
490	1.2	1.6	2.0	2.4	1.9	.55	490	.60	1.0	1.4	1.7	1.5	.25
470	1.0	1.4	1.7	2.1	1.7	.45	470	.50	.8	1.2	1.5	1.4	.20
450	.8	1.1	1.4	1.7	1.5	.35	450	.40	.7	1.0	1.3	1.2	.16
430	.7	1.0	1.2	1.5	1.3	.30	430	.35	.60	.8	1.1	1.0	.14
410	.60	.8	1.0	1.3	1.1	.30	410	.30	.50	.7	.9	.8	.12
390	.50	.65	.8	1.0	.8	.25	390	.25	.40	.50	.65	.50	.12
370	.45	.55	.7	.8	.7	.25	370	.25	.35	.45	.55	.45	.10
350	.35	.45	.55	.7	.55	.18	350	.20	.30	.35	.45	.40	.08
330	.25	.35	.45	.55	.45	.14	330	.16	.20	.30	.35	.30	.06
310	.18	.25	.30	.35	.30	.07	310	.10	.16	.20	.25	.25	.04
290	.12	.18	.20	.25	.20	.05	290	.08	.12	.16	.20	.20	.03
270	.10	.16	.20	.25	.18	.04	270	.07	.12	.16	.18	.18	.03
250	.10	.14	.16	.20	.16	.04	250	.07	.10	.14	.16	.16	.03
230	.08	.12	.14	.16	.12	.04	230	.06	.09	.12	.14	.12	.02
210	.07	.09	.10	.12	.10	.04	210	.05	.07	.09	.12	.10	.02
190	.05	.06	.07	.08	.08	.04	190	.05	.06	.07	.09	.07	.02

32°N						
N=21						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.4	1.9	2.3	2.3	.30
570	.7	1.1	1.5	1.8	1.8	.20
550	.50	.7	1.0	1.2	1.2	.14
530	.25	.35	.50	.60	.55	.07
510	.20	.30	.40	.55	.45	.06
490	.18	.25	.35	.45	.40	.05
470	.14	.20	.25	.35	.30	.05
450	.10	.14	.18	.20	.18	.04
430	.09	.12	.16	.20	.16	.04
410	.09	.11	.14	.18	.16	.04
390	.08	.12	.14	.16	.16	.04
370	.08	.10	.14	.16	.14	.04
350	.08	.10	.12	.16	.14	.04
330	.07	.10	.12	.14	.14	.04
310	.07	.09	.12	.14	.14	.04
290	.06	.09	.10	.12	.12	.04
270	.06	.08	.10	.12	.12	.04
250	.06	.08	.10	.12	.10	.04
230	.06	.07	.09	.10	.10	.03
210	.05	.07	.08	.10	.09	.03
190	.05	.06	.07	.09	.07	.03

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JANUARY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65°N							60°N						
N=5							N=0						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.7	3.3	3.9	4.6	3.4	1.6	590	2.4	3.0	3.6	4.1	3.2	1.5
570	2.3	2.9	3.6	4.2	3.0	1.3	570	2.1	2.7	3.2	3.7	2.8	1.2
550	2.0	2.6	3.1	3.7	2.5	1.1	550	1.8	2.3	2.8	3.3	2.4	.9
530	1.6	2.1	2.7	3.2	2.1	.8	530	1.4	1.9	2.4	2.9	2.0	.60
510	1.4	1.9	2.4	2.9	1.9	.65	510	1.2	1.7	2.2	2.6	1.8	.55
490	1.2	1.7	2.2	2.6	1.7	.55	490	1.1	1.5	1.9	2.3	1.6	.45
470	1.0	1.4	1.8	2.2	1.5	.40	470	.9	1.3	1.6	2.0	1.3	.30
450	.8	1.2	1.5	1.8	1.2	.25	450	.7	1.0	1.3	1.6	1.1	.20
430	.7	1.0	1.3	1.5	1.0	.25	430	.60	.9	1.1	1.4	.9	.18
410	.50	.8	1.0	1.3	.9	.25	410	.50	.7	.9	1.1	.8	.20
390	.50	.65	.8	1.0	.7	.25	390	.40	.55	.7	.8	.65	.20
370	.40	.55	.65	.8	.60	.20	370	.35	.45	.55	.7	.55	.18
350	.30	.45	.55	.65	.50	.16	350	.25	.35	.45	.55	.45	.14
330	.25	.30	.40	.50	.35	.12	330	.20	.25	.35	.40	.35	.10
310	.14	.20	.25	.30	.25	.06	310	.10	.16	.20	.25	.20	.05
290	.08	.12	.18	.25	.16	.03	290	.07	.10	.14	.18	.14	.03
270	.07	.12	.16	.20	.14	.03	270	.06	.10	.14	.16	.12	.03
250	.07	.10	.14	.18	.12	.03	250	.06	.09	.12	.14	.10	.03
230	.06	.09	.12	.14	.10	.03	230	.05	.08	.10	.12	.09	.03
210	.05	.08	.10	.12	.09	.03	210	.05	.07	.08	.10	.08	.03
190	.05	.06	.07	.09	.06	.03	190	.04	.05	.06	.08	.06	.03

55°N							50°N						
N=0							N=11						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.7	3.2	3.6	3.0	1.4	590	1.9	2.3	2.8	3.2	2.8	1.2
570	1.9	2.3	2.8	3.3	2.6	1.1	570	1.6	2.0	2.5	2.9	2.4	.9
550	1.5	2.0	2.5	2.9	2.3	.8	550	1.3	1.7	2.1	2.5	2.1	.60
530	1.1	1.6	2.1	2.5	1.9	.45	530	.9	1.3	1.8	2.2	1.7	.30
510	1.0	1.4	1.9	2.3	1.7	.40	510	.8	1.2	1.6	2.0	1.5	.25
490	.9	1.3	1.7	2.0	1.5	.30	490	.7	1.1	1.4	1.7	1.3	.20
470	.7	1.1	1.4	1.7	1.2	.25	470	.60	.9	1.2	1.5	1.1	.14
450	.60	.9	1.1	1.4	1.0	.14	450	.45	.7	1.0	1.2	.9	.09
430	.50	.7	1.0	1.2	.8	.14	430	.40	.60	.8	1.0	.7	.09
410	.40	.60	.8	1.0	.7	.14	410	.30	.50	.65	.8	.65	.10
390	.35	.45	.60	.7	.60	.16	390	.25	.35	.50	.60	.50	.10
370	.25	.40	.50	.60	.50	.14	370	.20	.30	.40	.50	.45	.09
350	.20	.30	.40	.50	.40	.10	350	.16	.25	.30	.40	.35	.07
330	.16	.20	.30	.35	.30	.08	330	.12	.18	.25	.30	.25	.05
310	.09	.14	.18	.20	.18	.04	310	.07	.10	.14	.18	.16	.03
290	.05	.09	.12	.16	.12	.03	290	.04	.07	.09	.12	.10	.02
270	.05	.08	.10	.14	.10	.03	270	.04	.06	.08	.10	.09	.02
250	.05	.07	.10	.12	.09	.03	250	.04	.06	.07	.09	.08	.02
230	.04	.06	.08	.10	.08	.03	230	.04	.05	.07	.08	.07	.02
210	.04	.06	.07	.09	.07	.03	210	.03	.05	.06	.07	.06	.02
190	.04	.05	.06	.07	.05	.03	190	.03	.04	.05	.06	.05	.02

JANUARY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45°N N=30							40°N N=65						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.1	2.5	2.9	2.6	1.0	590	1.5	2.0	2.4	2.8	2.6	.8
570	1.4	1.8	2.2	2.6	2.4	.8	570	1.3	1.7	2.1	2.6	2.5	.55
550	1.1	1.5	1.9	2.3	2.2	.50	550	1.0	1.4	1.9	2.3	2.5	.40
530	.7	1.2	1.6	2.0	1.9	.18	530	.65	1.1	1.6	2.0	2.4	.18
510	.65	1.1	1.4	1.8	1.7	.16	510	.60	1.0	1.4	1.8	2.2	.16
490	.60	.9	1.3	1.6	1.5	.14	490	.55	.9	1.3	1.6	1.9	.12
470	.50	.8	1.1	1.4	1.2	.10	470	.45	.8	1.1	1.4	1.6	.09
450	.40	.65	.9	1.1	1.0	.06	450	.35	.65	.9	1.2	1.3	.06
430	.35	.55	.7	1.0	.8	.06	430	.35	.55	.8	1.1	1.1	.04
410	.25	.45	.60	.8	.7	.06	410	.30	.50	.7	.9	1.0	.03
390	.20	.35	.50	.60	.60	.06	390	.25	.40	.60	.7	.8	.01
370	.18	.30	.40	.50	.50	.05	370	.20	.35	.50	.65	.7	.01
350	.14	.25	.30	.40	.40	.04	350	.16	.30	.40	.50	.60	.01
330	.10	.18	.25	.30	.30	.03	330	.12	.20	.30	.40	.45	.01
310	.06	.10	.14	.18	.20	.02	310	.08	.14	.20	.25	.30	.01
290	.04	.07	.10	.12	.14	.02	290	.06	.10	.14	.18	.25	.01
270	.04	.07	.09	.12	.12	.02	270	.05	.09	.14	.18	.20	.01
250	.04	.06	.08	.10	.10	.02	250	.05	.08	.12	.16	.18	.01
230	.04	.05	.07	.09	.09	.02	230	.05	.07	.10	.12	.16	.01
210	.03	.05	.06	.08	.08	.02	210	.04	.06	.09	.10	.12	.01
190	.03	.04	.05	.06	.06	.02	190	.04	.05	.07	.08	.09	.01

35°N N=24						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.6	1.9	2.3	2.0	.60
570	1.0	1.3	1.6	2.0	1.8	.45
550	.8	1.0	1.3	1.6	1.5	.30
530	.50	.8	1.0	1.3	1.2	.10
510	.45	.7	.9	1.2	1.1	.10
490	.40	.60	.8	1.1	1.0	.08
470	.35	.55	.7	.9	.9	.07
450	.30	.45	.60	.8	.7	.05
430	.25	.40	.55	.7	.65	.04
410	.18	.30	.45	.60	.55	.03
390	.14	.25	.35	.45	.45	.02
370	.12	.20	.30	.40	.40	.02
350	.10	.18	.25	.35	.35	.02
330	.08	.14	.20	.30	.25	.02
310	.06	.12	.16	.20	.20	.02
290	.05	.09	.12	.16	.16	.02
270	.05	.08	.12	.14	.14	.01
250	.04	.07	.10	.12	.12	.01
230	.04	.06	.08	.10	.10	.01
210	.03	.05	.07	.09	.08	.01
190	.03	.04	.05	.06	.06	.01

JANUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N N=15							75°N N=35						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	3.2	3.7	4.2	4.7	3.8	1.6	590	3.0	3.5	3.9	4.4	3.8	1.6
570	3.0	3.4	3.9	4.4	3.6	1.3	570	2.7	3.2	3.7	4.1	3.6	1.3
550	2.7	3.2	3.6	4.1	3.4	1.0	550	2.5	2.9	3.4	3.8	3.4	1.0
530	2.5	2.9	3.3	3.7	3.1	.65	530	2.2	2.6	3.1	3.5	3.1	.65
510	2.3	2.7	3.1	3.5	2.8	.60	510	2.0	2.4	2.8	3.2	2.8	.60
490	2.0	2.4	2.8	3.2	2.5	.60	490	1.8	2.2	2.6	2.9	2.5	.60
470	1.8	2.1	2.5	2.8	2.2	.55	470	1.6	1.9	2.3	2.6	2.2	.55
450	1.5	1.8	2.2	2.5	1.9	.50	450	1.3	1.6	1.9	2.3	1.9	.50
430	1.3	1.6	1.9	2.2	1.6	.45	430	1.1	1.4	1.7	2.0	1.6	.45
410	1.1	1.3	1.6	1.8	1.3	.40	410	.9	1.2	1.4	1.6	1.3	.35
390	.8	1.0	1.2	1.4	1.1	.30	390	.7	.9	1.1	1.3	1.1	.25
370	.7	.9	1.0	1.2	.9	.25	370	.60	.8	.9	1.1	.9	.20
350	.55	.7	.9	1.0	.7	.20	350	.50	.65	.8	.9	.7	.16
330	.45	.55	.65	.8	.55	.14	330	.35	.50	.60	.7	.55	.10
310	.30	.35	.45	.55	.40	.06	310	.25	.35	.40	.50	.40	.05
290	.18	.25	.30	.40	.25	.03	290	.16	.25	.30	.35	.25	.02
270	.14	.20	.25	.30	.20	.03	270	.14	.18	.25	.30	.20	.02
250	.10	.16	.20	.25	.16	.02	250	.10	.14	.20	.25	.16	.02
230	.07	.12	.16	.18	.12	.02	230	.07	.10	.14	.18	.12	.02
210	.06	.09	.12	.14	.10	.02	210	.06	.09	.12	.14	.10	.02
190	.05	.07	.08	.10	.08	.01	190	.05	.06	.08	.10	.08	.01

70°N N=20							65°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.7	3.2	3.7	4.2	3.8	1.6	590	2.6	3.1	3.6	4.1	3.7	1.6
570	2.5	3.0	3.4	3.9	3.5	1.3	570	2.4	2.9	3.4	3.8	3.4	1.4
550	2.2	2.7	3.1	3.6	3.2	1.0	550	2.1	2.6	3.0	3.5	3.1	1.1
530	2.0	2.4	2.8	3.2	2.9	.7	530	1.9	2.3	2.7	3.1	2.7	.8
510	1.8	2.2	2.6	3.0	2.6	.65	510	1.7	2.1	2.5	2.9	2.5	.7
490	1.6	1.9	2.3	2.7	2.4	.55	490	1.5	1.9	2.2	2.6	2.3	.60
470	1.3	1.7	2.0	2.4	2.1	.50	470	1.3	1.6	2.0	2.3	2.0	.50
450	1.1	1.4	1.7	2.1	1.8	.40	450	1.0	1.3	1.7	2.0	1.8	.35
430	.9	1.2	1.5	1.8	1.5	.35	430	.9	1.1	1.4	1.7	1.5	.35
410	.8	1.0	1.2	1.5	1.3	.30	410	.7	.9	1.2	1.4	1.2	.30
390	.60	.8	1.0	1.2	1.0	.25	390	.55	.7	.9	1.1	1.0	.25
370	.50	.65	.8	1.0	.9	.20	370	.45	.60	.8	1.0	.8	.20
350	.40	.55	.7	.8	.7	.16	350	.35	.50	.65	.8	.65	.16
330	.30	.40	.55	.65	.55	.10	330	.30	.40	.50	.60	.50	.10
310	.20	.30	.35	.45	.40	.05	310	.20	.25	.35	.45	.35	.05
290	.14	.20	.25	.35	.25	.02	290	.14	.20	.25	.30	.25	.02
270	.12	.18	.20	.25	.20	.02	270	.12	.16	.20	.25	.20	.02
250	.09	.14	.18	.20	.16	.02	250	.09	.12	.16	.20	.16	.02
230	.07	.10	.14	.16	.12	.02	230	.07	.10	.14	.16	.12	.02
210	.06	.08	.10	.14	.10	.02	210	.06	.08	.12	.14	.10	.02
190	.05	.06	.08	.09	.08	.01	190	.05	.07	.09	.10	.08	.02

JANUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N N=10							55°N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.6	3.1	3.6	4.1	3.6	1.7	590	2.4	2.9	3.4	3.9	3.6	1.6
570	2.3	2.8	3.3	3.8	3.2	1.4	570	2.1	2.6	3.1	3.6	3.2	1.3
550	2.0	2.5	3.0	3.4	2.9	1.1	550	1.9	2.3	2.7	3.2	2.8	1.0
530	1.8	2.2	2.6	3.0	2.5	.8	530	1.6	2.0	2.4	2.8	2.4	.7
510	1.6	2.0	2.4	2.8	2.3	.7	510	1.4	1.8	2.2	2.5	2.3	.60
490	1.4	1.8	2.1	2.5	2.2	.60	490	1.2	1.6	1.9	2.3	2.1	.50
470	1.2	1.5	1.9	2.2	2.0	.45	470	1.0	1.4	1.7	2.0	1.9	.40
450	.9	1.3	1.6	1.9	1.7	.35	450	.8	1.1	1.4	1.7	1.7	.25
430	.8	1.1	1.4	1.7	1.5	.30	430	.7	.9	1.2	1.4	1.5	.25
410	.65	.9	1.1	1.4	1.2	.25	410	.55	.8	1.0	1.2	1.2	.20
390	.50	.7	.9	1.1	1.0	.25	390	.45	.60	.8	1.0	1.0	.20
370	.40	.55	.7	.9	.8	.20	370	.35	.50	.65	.8	.8	.18
350	.35	.45	.60	.8	.65	.16	350	.30	.45	.55	.7	.65	.14
330	.25	.35	.45	.60	.50	.10	330	.25	.35	.45	.55	.50	.09
310	.16	.25	.30	.40	.35	.05	310	.16	.25	.30	.40	.35	.04
290	.12	.18	.25	.30	.25	.02	290	.12	.18	.20	.30	.25	.02
270	.10	.16	.20	.25	.20	.02	270	.10	.14	.18	.25	.20	.02
250	.08	.12	.16	.20	.16	.02	250	.08	.12	.14	.18	.16	.02
230	.07	.10	.12	.16	.12	.02	230	.06	.09	.12	.14	.12	.02
210	.06	.08	.12	.14	.10	.02	210	.05	.07	.10	.12	.10	.02
190	.05	.07	.10	.12	.09	.02	190	.04	.06	.08	.10	.09	.02

50°N N=17							45°N N=25						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.7	3.2	3.7	3.4	1.3	590	2.0	2.5	3.0	3.5	3.1	1.1
570	1.9	2.4	2.9	3.4	3.1	1.1	570	1.7	2.2	2.7	3.1	2.9	.9
550	1.7	2.1	2.5	2.9	2.8	.8	550	1.5	1.9	2.3	2.7	2.7	.60
530	1.4	1.8	2.1	2.5	2.4	.50	530	1.2	1.5	1.9	2.2	2.4	.30
510	1.3	1.6	1.9	2.3	2.2	.45	510	1.0	1.4	1.7	2.0	2.1	.30
490	1.1	1.4	1.7	2.0	2.0	.40	490	.9	1.2	1.5	1.8	1.9	.25
470	.9	1.2	1.5	1.7	1.7	.35	470	.8	1.0	1.3	1.5	1.6	.25
450	.7	1.0	1.2	1.4	1.5	.25	450	.60	.8	1.0	1.2	1.3	.20
430	.60	.8	1.0	1.2	1.3	.25	430	.50	.7	.9	1.0	1.2	.18
410	.50	.7	.9	1.0	1.1	.20	410	.40	.55	.7	.9	1.1	.16
390	.40	.55	.7	.8	.9	.18	390	.30	.45	.60	.7	1.1	.12
370	.35	.45	.60	.7	.8	.16	370	.25	.40	.50	.45	1.0	.10
350	.30	.40	.50	.60	.65	.12	350	.25	.35	.45	.45	.8	.08
330	.20	.30	.40	.50	.50	.08	330	.18	.25	.35	.45	.60	.05
310	.16	.20	.30	.35	.35	.04	310	.12	.20	.25	.30	.40	.02
290	.12	.16	.20	.25	.25	.02	290	.10	.14	.20	.25	.30	.01
270	.04	.14	.18	.20	.20	.02	270	.08	.12	.16	.20	.25	.01
250	.07	.10	.14	.16	.16	.02	250	.06	.09	.12	.14	.20	.01
230	.05	.07	.10	.12	.14	.02	230	.05	.07	.09	.10	.16	.01
210	.04	.06	.08	.10	.12	.02	210	.04	.06	.08	.09	.12	.01
190	.04	.05	.07	.08	.09	.01	190	.04	.05	.06	.08	.09	.01

JANUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40°N							35°N						
N=60							N=20						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.3	2.8	3.3	2.7	.60	590	1.4	1.9	2.3	2.7	2.4	.45
570	1.5	2.0	2.4	2.9	2.5	.50	570	1.2	1.6	2.0	2.3	2.2	.35
550	1.2	1.6	2.0	2.4	2.3	.35	550	1.0	1.3	1.6	1.9	1.9	.25
530	.9	1.3	1.6	1.9	2.0	.18	530	.7	1.0	1.2	1.5	1.7	.14
510	.8	1.1	1.4	1.7	1.8	.16	510	.65	.9	1.1	1.3	1.8	.12
490	.7	1.0	1.2	1.5	1.5	.14	490	.55	.7	.9	1.1	1.3	.10
470	.60	.8	1.0	1.3	1.3	.12	470	.45	.60	.8	.9	1.0	.08
450	.45	.65	.8	1.0	1.0	.09	450	.35	.45	.60	.7	.8	.06
430	.40	.55	.7	.9	.9	.07	430	.30	.40	.50	.40	.65	.04
410	.30	.45	.60	.8	1.0	.06	410	.25	.35	.45	.45	.60	.03
390	.25	.40	.50	.65	1.1	.04	390	.18	.25	.35	.45	.50	.02
370	.20	.30	.45	.55	1.0	.04	370	.14	.25	.30	.40	.45	.02
350	.18	.25	.35	.45	.8	.03	350	.12	.20	.25	.35	.40	.02
330	.14	.20	.30	.40	.60	.02	330	.10	.16	.20	.30	.30	.01
310	.10	.16	.20	.30	.40	.01	310	.08	.12	.18	.20	.25	.01
290	.08	.12	.16	.20	.30	.01	290	.06	.10	.14	.16	.20	.01
270	.07	.10	.14	.18	.25	.01	270	.06	.09	.12	.14	.18	.01
250	.05	.08	.10	.14	.20	.01	250	.05	.07	.10	.12	.16	.01
230	.05	.06	.08	.10	.16	.01	230	.04	.06	.08	.10	.14	.01
210	.04	.06	.07	.09	.12	.01	210	.04	.05	.07	.09	.10	.01
190	.04	.05	.06	.08	.08	.01	190	.04	.05	.06	.08	.08	.01

30°N							25°N						
N=25							N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.5	1.8	2.1	1.9	.30	590	.9	1.2	1.5	1.8	1.5	.30
570	.9	1.2	1.5	1.8	1.7	.25	570	.8	1.0	1.3	1.5	1.3	.25
550	.7	1.0	1.2	1.5	1.4	.18	550	.60	.8	1.0	1.2	1.0	.16
530	.50	.7	.9	1.1	1.1	.10	530	.40	.55	.7	.9	.7	.08
510	.45	.60	.8	.9	1.0	.09	510	.35	.45	.60	.7	.60	.07
490	.40	.50	.65	.8	.9	.07	490	.30	.40	.50	.40	.50	.06
470	.30	.40	.50	.60	.8	.05	470	.20	.30	.40	.45	.35	.05
450	.20	.30	.35	.40	.65	.03	450	.16	.20	.25	.30	.25	.03
430	.18	.25	.30	.35	.55	.03	430	.12	.16	.20	.25	.18	.03
410	.14	.20	.25	.35	.45	.02	410	.10	.14	.18	.25	.16	.02
390	.10	.16	.25	.30	.30	.02	390	.08	.12	.16	.20	.14	.02
370	.09	.14	.20	.25	.30	.02	370	.07	.10	.14	.18	.14	.02
350	.08	.12	.18	.25	.25	.02	350	.06	.09	.12	.16	.14	.02
330	.07	.10	.16	.20	.25	.01	330	.05	.08	.10	.14	.12	.01
310	.06	.09	.12	.16	.20	.01	310	.05	.07	.09	.10	.12	.01
290	.05	.08	.10	.12	.18	.01	290	.04	.06	.08	.10	.12	.01
270	.05	.07	.09	.12	.16	.01	270	.04	.06	.07	.09	.12	.01
250	.04	.06	.08	.10	.14	.02	250	.04	.05	.07	.08	.10	.01
230	.04	.06	.08	.09	.12	.02	230	.03	.05	.06	.08	.10	.01
210	.04	.05	.07	.08	.10	.02	210	.03	.05	.06	.07	.08	.01
190	.03	.05	.06	.08	.08	.02	190	.03	.04	.06	.07	.07	.01

JANUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20° N							15° N						
N=12							N=7						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	1.0	1.2	1.4	1.2	.25	590	.65	.8	1.0	1.1	.9	.25
570	.45	.7	.9	1.1	.9	.20	570	.45	.60	.7	.8	.7	.18
550	.35	.50	.60	.7	.60	.14	550	.30	.35	.45	.55	.48	.12
530	.14	.20	.25	.30	.28	.08	530	.10	.14	.18	.20	.16	.04
510	.12	.18	.25	.30	.20	.07	510	.09	.12	.16	.20	.14	.04
490	.12	.16	.20	.25	.18	.06	490	.08	.12	.14	.18	.12	.03
470	.10	.14	.16	.20	.14	.05	470	.07	.10	.12	.16	.10	.03
450	.08	.10	.14	.16	.10	.03	450	.06	.08	.10	.12	.08	.02
430	.07	.09	.12	.14	.10	.03	430	.05	.07	.09	.12	.08	.02
410	.06	.08	.10	.12	.09	.02	410	.05	.06	.08	.10	.07	.02
390	.05	.07	.09	.10	.08	.02	390	.04	.06	.07	.09	.06	.02
370	.05	.06	.08	.10	.08	.02	370	.04	.05	.07	.08	.06	.02
350	.04	.06	.07	.09	.07	.02	350	.04	.05	.06	.07	.06	.02
330	.04	.05	.06	.08	.06	.01	330	.03	.05	.06	.07	.05	.01
310	.03	.04	.05	.07	.05	.01	310	.03	.04	.05	.06	.05	.01
290	.03	.04	.05	.06	.05	.01	290	.03	.04	.05	.06	.05	.01
270	.03	.04	.05	.06	.05	.01	270	.03	.04	.05	.06	.05	.01
250	.03	.04	.05	.06	.05	.01	250	.03	.04	.05	.06	.05	.01
230	.03	.04	.05	.06	.05	.01	230	.03	.04	.05	.06	.05	.01
210	.03	.04	.05	.06	.05	.01	210	.03	.04	.05	.06	.05	.01
190	.03	.04	.05	.06	.04	.01	190	.03	.04	.05	.06	.04	.01

10° N						
N=6						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.50	.60	.7	.8	.65	.20
570	.35	.45	.55	.60	.50	.14
550	.20	.25	.35	.40	.30	.08
530	.05	.08	.12	.14	.08	.01
510	.05	.07	.10	.12	.07	.01
490	.04	.06	.08	.10	.06	.01
470	.04	.05	.07	.09	.05	.01
450	.03	.04	.05	.06	.04	.01
430	.03	.04	.05	.06	.04	.01
410	.03	.04	.05	.06	.04	.02
390	.03	.04	.05	.06	.04	.02
370	.03	.04	.05	.06	.04	.02
350	.03	.04	.05	.06	.04	.02
330	.03	.04	.05	.06	.05	.02
310	.03	.04	.05	.06	.05	.02
290	.03	.04	.05	.06	.05	.02
270	.03	.04	.05	.06	.05	.02
250	.03	.04	.05	.06	.05	.01
230	.03	.04	.05	.06	.05	.01
210	.03	.04	.05	.06	.05	.01
190	.02	.03	.04	.05	.04	.01

JANUARY - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N N=38							47°N N=108						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.7	3.4	4.0	3.5	.8	590	1.7	2.2	2.7	3.2	4.2	.18
570	1.8	2.4	3.0	3.6	3.1	.65	570	1.5	1.9	2.4	2.8	3.7	.18
550	1.6	2.1	2.7	3.2	2.7	.55	550	1.2	1.6	2.0	2.4	3.0	.18
530	1.3	1.8	2.3	2.8	2.3	.40	530	.9	1.3	1.6	2.0	2.3	.18
510	1.1	1.6	2.0	2.5	2.1	.35	510	.8	1.2	1.5	1.8	2.3	.18
490	1.0	1.4	1.8	2.2	1.8	.30	490	.7	1.0	1.4	1.7	2.2	.18
470	.8	1.1	1.4	1.8	1.5	.20	470	.65	.9	1.2	1.5	2.2	.18
450	.60	.8	1.1	1.4	1.1	.14	450	.50	.8	1.0	1.3	2.1	.14
430	.50	.7	.9	1.1	1.0	.12	430	.45	.65	.9	1.1	1.7	.10
410	.40	.60	.8	1.0	.8	.10	410	.35	.55	.7	.9	1.3	.07
390	.30	.45	.60	.7	.7	.07	390	.25	.40	.55	.7	.8	.02
370	.25	.35	.50	.60	.60	.06	370	.20	.30	.45	.60	.60	.01
350	.20	.30	.40	.50	.50	.04	350	.16	.25	.35	.50	.55	.01
330	.14	.20	.30	.35	.35	.03	330	.12	.20	.30	.35	.40	.01
310	.08	.12	.18	.25	.25	.01	310	.08	.14	.18	.25	.30	.01
290	.05	.08	.12	.16	.16	.00	290	.05	.09	.12	.16	.20	.01
270	.05	.08	.12	.14	.16	.00	270	.05	.08	.10	.14	.16	.01
250	.05	.07	.10	.14	.14	.00	250	.04	.06	.08	.09	.10	.01
230	.04	.07	.09	.12	.14	.01	230	.04	.05	.06	.07	.06	.01
210	.04	.06	.08	.10	.12	.01	210	.04	.05	.06	.07	.06	.01
190	.04	.06	.07	.09	.12	.01	190	.04	.04	.05	.06	.06	.02

39°N N=6						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.4	1.7	2.0	1.6	.50
570	.9	1.2	1.5	1.8	1.4	.40
550	.8	1.0	1.3	1.6	1.2	.35
530	.65	.9	1.1	1.3	1.0	.25
510	.55	.8	1.0	1.2	.9	.25
490	.50	.65	.8	1.0	.8	.20
470	.40	.50	.65	.8	.8	.16
450	.30	.40	.45	.55	.7	.12
430	.25	.30	.40	.45	.60	.10
410	.20	.25	.30	.35	.45	.08
390	.16	.20	.25	.30	.30	.06
370	.14	.18	.20	.25	.25	.06
350	.12	.14	.18	.20	.20	.05
330	.10	.12	.14	.16	.16	.05
310	.07	.09	.10	.12	.12	.04
290	.06	.07	.08	.10	.09	.04
270	.06	.07	.08	.09	.08	.04
250	.05	.06	.07	.08	.07	.04
230	.05	.06	.06	.07	.06	.04
210	.05	.05	.06	.06	.06	.04
190	.04	.05	.05	.06	.05	.04

FEBRUARY - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43° N N=18							36° N N=18						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.9	3.4	4.0	3.4	1.2	590	1.4	2.0	2.5	3.1	2.7	.8
570	2.1	2.6	3.2	3.7	3.2	1.0	570	1.3	1.8	2.4	2.9	2.5	.60
550	1.8	2.3	2.9	3.5	3.0	.8	550	1.1	1.6	2.2	2.7	2.3	.40
530	1.4	2.0	2.6	3.2	2.8	.60	530	.9	1.4	1.9	2.5	2.0	.20
510	1.3	1.9	2.4	2.9	2.5	.60	510	.8	1.2	1.7	2.2	1.8	.18
490	1.2	1.7	2.1	2.6	2.2	.55	490	.65	1.0	1.4	1.8	1.5	.16
470	1.1	1.4	1.8	2.2	1.9	.50	470	.50	.8	1.1	1.4	1.2	.14
450	.9	1.2	1.5	1.8	1.5	.50	450	.35	.55	.7	.9	.8	.10
430	.8	1.1	1.3	1.6	1.3	.40	430	.30	.45	.65	.8	.7	.09
410	.7	.9	1.2	1.4	1.2	.35	410	.25	.45	.60	.8	.7	.08
390	.60	.8	1.0	1.3	1.1	.25	390	.25	.40	.60	.8	.7	.07
370	.50	.7	.9	1.1	.9	.20	370	.20	.35	.55	.7	.60	.06
350	.40	.55	.7	.9	.7	.16	350	.20	.30	.45	.60	.55	.06
330	.30	.40	.55	.7	.55	.12	330	.16	.25	.35	.45	.45	.05
310	.18	.25	.35	.45	.35	.06	310	.12	.20	.30	.35	.35	.05
290	.12	.18	.25	.30	.25	.04	290	.10	.16	.20	.30	.30	.04
270	.12	.16	.20	.30	.20	.04	270	.09	.14	.20	.25	.25	.04
250	.10	.14	.20	.25	.18	.04	250	.08	.12	.18	.20	.20	.04
230	.08	.12	.16	.20	.16	.03	230	.07	.10	.14	.18	.18	.04
210	.07	.10	.12	.14	.12	.03	210	.06	.09	.12	.14	.14	.04
190	.05	.07	.08	.10	.09	.03	190	.05	.07	.08	.10	.09	.04

32° N N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	1.1	1.5	1.9	1.6	.35
570	.60	.9	1.3	1.6	1.4	.25
550	.45	.7	1.0	1.3	1.1	.18
530	.25	.50	.7	.9	.8	.09
510	.25	.45	.60	.8	.7	.08
490	.20	.35	.55	.7	.60	.07
470	.18	.30	.45	.55	.50	.06
450	.14	.25	.35	.40	.40	.05
430	.12	.20	.25	.35	.30	.04
410	.10	.16	.20	.25	.25	.03
390	.09	.12	.16	.20	.16	.02
370	.08	.12	.16	.18	.16	.02
350	.08	.12	.16	.20	.18	.03
330	.08	.12	.16	.20	.20	.03
310	.08	.12	.16	.20	.20	.04
290	.07	.12	.16	.20	.20	.04
270	.07	.10	.14	.18	.20	.04
250	.07	.10	.12	.16	.16	.04
230	.06	.09	.12	.14	.14	.04
210	.06	.08	.10	.12	.12	.03
190	.05	.07	.08	.10	.09	.03

FEBRUARY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65°N N=3							60°N N=0						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.5	2.9	3.3	3.7	2.4	1.9	590	2.3	2.8	3.2	3.6	2.9	1.7
570	2.3	2.7	3.1	3.5	2.7	1.4	570	2.1	2.6	3.0	3.4	2.7	1.6
550	2.2	2.5	2.9	3.2	2.6	1.8	550	1.9	2.3	2.7	3.1	2.5	1.5
530	2.0	2.3	2.6	3.0	2.4	1.7	530	1.7	2.1	2.5	2.9	2.4	1.3
510	1.8	2.1	2.4	2.8	2.2	1.5	510	1.5	1.9	2.3	2.6	2.1	1.2
490	1.6	1.9	2.2	2.6	2.0	1.3	490	1.4	1.7	2.1	2.4	1.9	1.0
470	1.5	1.7	2.0	2.3	1.8	1.1	470	1.2	1.5	1.8	2.1	1.7	.9
450	1.3	1.5	1.8	2.1	1.6	.9	450	1.0	1.3	1.6	1.8	1.4	.7
430	1.1	1.3	1.6	1.8	1.4	.8	430	.9	1.1	1.3	1.5	1.2	.65
410	1.0	1.2	1.3	1.5	1.2	.8	410	.8	.9	1.1	1.3	1.0	.60
390	.8	.9	1.0	1.1	.9	.7	390	.65	.7	.8	.9	.8	.50
370	.7	.8	.9	1.0	.8	.60	370	.55	.60	.7	.8	.60	.45
350	.55	.64	.7	.8	.65	.45	350	.40	.50	.55	.65	.50	.35
330	.40	.45	.55	.60	.45	.30	330	.30	.35	.40	.50	.35	.20
310	.20	.25	.35	.40	.30	.12	310	.16	.20	.25	.35	.25	.10
290	.10	.18	.25	.30	.20	.05	290	.09	.14	.18	.25	.16	.04
270	.10	.16	.20	.25	.18	.04	270	.08	.12	.16	.20	.14	.03
250	.08	.12	.18	.20	.14	.04	250	.07	.10	.14	.18	.12	.03
230	.07	.10	.14	.16	.12	.04	230	.06	.08	.10	.14	.09	.03
210	.05	.07	.10	.12	.08	.03	210	.05	.06	.08	.10	.07	.03
190	.04	.05	.05	.06	.05	.03	190	.03	.04	.05	.06	.05	.02

55°N N=0							50°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.6	3.1	3.5	2.4	1.5	590	1.9	2.4	2.9	3.4	2.9	1.3
570	1.9	2.4	2.8	3.3	2.7	1.3	570	1.7	2.2	2.7	3.2	2.7	1.1
550	1.7	2.1	2.6	3.0	2.5	1.1	550	1.4	1.9	2.4	2.9	2.4	.8
530	1.4	1.9	2.3	2.8	2.3	.9	530	1.1	1.6	2.2	2.7	2.2	.55
510	1.3	1.7	2.1	2.5	2.0	.8	510	1.0	1.5	1.9	2.4	2.0	.50
490	1.1	1.5	1.9	2.2	1.8	.7	490	.9	1.3	1.7	2.1	1.7	.45
470	1.0	1.3	1.6	1.9	1.5	.65	470	.7	1.1	1.4	1.7	1.4	.35
450	.8	1.1	1.3	1.6	1.2	.50	450	.55	.8	1.1	1.3	1.0	.30
430	.7	.9	1.1	1.3	1.0	.45	430	.45	.65	.9	1.1	.8	.25
410	.55	.7	.9	1.0	.8	.40	410	.35	.50	.65	.8	.60	.20
390	.45	.55	.65	.7	.55	.35	390	.25	.35	.40	.50	.35	.14
370	.35	.45	.50	.60	.45	.25	370	.20	.25	.35	.40	.30	.12
350	.30	.35	.40	.50	.35	.20	350	.16	.20	.25	.30	.20	.09
330	.20	.25	.30	.35	.25	.14	330	.12	.16	.20	.25	.16	.06
310	.12	.16	.20	.25	.16	.06	310	.07	.09	.12	.14	.10	.03
290	.06	.10	.14	.16	.12	.03	290	.04	.06	.08	.10	.07	.02
270	.06	.09	.12	.14	.10	.03	270	.04	.05	.07	.09	.06	.02
250	.05	.08	.10	.12	.09	.02	250	.04	.05	.06	.08	.06	.02
230	.04	.06	.08	.10	.07	.02	230	.03	.05	.06	.07	.05	.02
210	.04	.05	.07	.08	.06	.02	210	.03	.04	.05	.06	.05	.02
190	.03	.04	.05	.05	.04	.02	190	.03	.03	.04	.05	.04	.01

FEBRUARY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

<u>45° N</u> N=31							<u>40° N</u> N=69						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.3	2.9	3.4	3.1	1.0	590	1.8	2.3	2.8	3.4	3.5	.60
570	1.6	2.1	2.6	3.1	2.8	.8	570	1.5	2.0	2.5	3.0	3.1	.45
550	1.3	1.8	2.3	2.8	2.5	.55	550	1.2	1.7	2.2	2.7	2.7	.30
530	1.0	1.5	2.0	2.5	2.2	.25	530	.9	1.4	1.8	2.3	2.2	.10
510	.9	1.3	1.8	2.2	2.0	.25	510	.8	1.2	1.6	2.1	2.1	.09
490	.7	1.1	1.5	1.9	1.7	.20	490	.7	1.1	1.5	1.8	1.9	.09
470	.60	.9	1.3	1.6	1.4	.18	470	.60	.9	1.3	1.6	1.7	.08
450	.45	.7	1.0	1.2	1.1	.16	450	.50	.8	1.0	1.3	1.4	.08
430	.35	.60	.8	1.0	.9	.12	430	.45	.7	.9	1.2	1.2	.06
410	.30	.45	.65	.8	.7	.08	410	.40	.60	.9	1.1	1.0	.05
390	.20	.35	.45	.60	.45	.04	390	.35	.55	.8	1.0	.8	.03
370	.18	.30	.40	.50	.35	.03	370	.30	.50	.65	.9	.7	.03
350	.14	.25	.30	.40	.30	.03	350	.25	.40	.55	.7	.60	.03
330	.10	.18	.25	.30	.25	.02	330	.18	.30	.45	.55	.50	.02
310	.07	.12	.16	.20	.18	.02	310	.12	.20	.30	.40	.40	.02
290	.05	.08	.12	.14	.14	.01	290	.09	.16	.25	.30	.35	.02
270	.05	.07	.10	.12	.12	.01	270	.08	.14	.20	.25	.30	.02
250	.04	.07	.09	.12	.12	.01	250	.07	.12	.18	.25	.25	.02
230	.04	.06	.08	.10	.09	.01	230	.06	.10	.14	.18	.20	.02
210	.04	.05	.07	.08	.07	.01	210	.05	.08	.12	.14	.14	.01
190	.03	.04	.05	.06	.05	.01	190	.04	.06	.08	.09	.09	.01

<u>35° N</u> N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.4	1.8	2.3	2.8	2.5	.65
570	1.2	1.6	2.1	2.5	2.3	.50
550	.9	1.4	1.8	2.3	2.1	.35
530	.60	1.1	1.6	2.0	1.9	.14
510	.45	1.0	1.4	1.8	1.7	.12
490	.45	.8	1.2	1.5	1.4	.10
470	.35	.65	.9	1.2	1.1	.08
450	.25	.50	.7	.9	.8	.05
430	.25	.40	.55	.7	.65	.05
410	.20	.35	.45	.60	.55	.04
390	.16	.25	.35	.45	.45	.04
370	.12	.20	.30	.40	.35	.04
350	.10	.18	.25	.35	.30	.03
330	.08	.14	.20	.25	.25	.02
310	.06	.10	.16	.20	.18	.01
290	.04	.08	.12	.16	.14	.01
270	.04	.08	.12	.14	.14	.01
250	.04	.07	.10	.14	.12	.01
230	.03	.06	.09	.12	.12	.01
210	.03	.06	.08	.10	.10	.01
190	.03	.05	.07	.09	.09	.01

FEBRUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	80° N						N=17	FLIGHT LEVEL	75° N						N=40
	MEAN	16%	2%	.1%	MAX	MIN			MEAN	16%	2%	.1%	MAX	MIN	
590	3.4	4.0	4.7	5.4	4.8	1.3	590	3.2	3.9	4.6	5.3	4.8	1.3		
570	3.1	3.7	4.4	5.0	4.5	1.3	570	3.0	3.6	4.3	4.9	4.5	1.2		
550	2.8	3.4	4.0	4.6	4.2	1.2	550	2.7	3.3	3.9	4.5	4.2	1.1		
530	2.5	3.0	3.6	4.1	3.9	1.1	530	2.4	2.9	3.5	4.1	3.9	1.0		
510	2.3	2.8	3.3	3.8	3.5	1.0	510	2.2	2.7	3.2	3.7	3.5	.9		
490	2.0	2.5	2.9	3.4	3.2	.8	490	1.9	2.4	2.9	3.4	3.2	.8		
470	1.7	2.1	2.5	2.9	2.7	.7	470	1.7	2.1	2.5	2.9	2.7	.65		
450	1.4	1.8	2.1	2.5	2.3	.55	450	1.4	1.8	2.1	2.5	2.3	.55		
430	1.2	1.5	1.8	2.1	1.9	.40	430	1.2	1.5	1.8	2.1	1.9	.40		
410	1.1	1.3	1.6	1.8	1.6	.30	410	1.0	1.3	1.5	1.8	1.6	.30		
390	.8	1.0	1.2	1.4	1.2	.18	390	.8	1.0	1.2	1.4	1.2	.18		
370	.7	.9	1.0	1.2	1.0	.14	370	.7	.9	1.0	1.2	1.0	.14		
350	.55	.7	.9	1.0	.8	.12	350	.55	.7	.9	1.0	.8	.12		
330	.45	.55	.65	.8	.65	.08	330	.45	.55	.65	.8	.65	.08		
310	.30	.35	.45	.55	.45	.05	310	.30	.35	.45	.55	.45	.05		
290	.20	.25	.30	.40	.35	.03	290	.20	.25	.30	.35	.35	.03		
270	.18	.25	.30	.35	.30	.03	270	.18	.20	.25	.30	.30	.03		
250	.16	.20	.25	.30	.25	.02	250	.16	.20	.25	.25	.25	.02		
230	.14	.16	.20	.25	.18	.02	230	.12	.16	.18	.20	.18	.02		
210	.10	.12	.14	.18	.14	.02	210	.09	.12	.14	.16	.14	.02		
190	.06	.08	.09	.12	.09	.02	190	.06	.07	.09	.10	.09	.02		

FLIGHT LEVEL	70° N						N=24	FLIGHT LEVEL	65° N						N=5
	MEAN	16%	2%	.1%	MAX	MIN			MEAN	16%	2%	.1%	MAX	MIN	
590	3.1	3.8	4.4	5.1	4.7	1.5	590	2.4	3.0	4.3	4.9	4.6	1.5		
570	2.8	3.5	4.1	4.8	4.4	1.3	570	2.6	3.3	3.9	4.6	4.2	1.3		
550	2.5	3.2	3.8	4.4	4.1	1.2	550	2.4	3.0	3.6	4.2	3.9	1.2		
530	2.2	2.8	3.4	4.1	3.7	1.0	530	2.0	2.6	3.2	3.8	3.5	1.0		
510	2.0	2.6	3.2	3.7	3.3	.9	510	1.9	2.4	2.9	3.5	3.2	.9		
490	1.8	2.3	2.8	3.3	3.0	.8	490	1.7	2.1	2.6	3.1	2.8	.8		
470	1.6	2.0	2.5	2.9	2.5	.65	470	1.4	1.9	2.3	2.7	2.4	.65		
450	1.4	1.7	2.1	2.5	2.1	.55	450	1.2	1.6	1.9	2.3	2.0	.50		
430	1.2	1.5	1.8	2.1	1.8	.40	430	1.0	1.3	1.7	2.0	1.7	.35		
410	1.0	1.3	1.5	1.8	1.4	.30	410	.9	1.1	1.4	1.7	1.3	.25		
390	.8	1.0	1.2	1.4	1.1	.18	390	.7	.9	1.1	1.3	1.0	.16		
370	.7	.9	1.0	1.2	.9	.14	370	.60	.8	1.0	1.1	.8	.12		
350	.55	.7	.9	1.0	.8	.12	350	.50	.65	.8	.9	.7	.10		
330	.45	.55	.65	.8	.60	.08	330	.40	.50	.65	.7	.45	.08		
310	.30	.35	.45	.50	.45	.05	310	.30	.40	.45	.55	.40	.05		
290	.20	.25	.30	.35	.35	.03	290	.20	.30	.35	.40	.35	.04		
270	.18	.20	.25	.30	.30	.03	270	.18	.25	.30	.35	.30	.03		
250	.16	.18	.20	.25	.25	.02	250	.14	.18	.20	.25	.25	.03		
230	.12	.16	.18	.20	.18	.02	230	.10	.12	.16	.18	.18	.02		
210	.09	.12	.14	.16	.14	.02	210	.08	.10	.12	.14	.14	.02		
190	.05	.07	.08	.10	.08	.02	190	.05	.06	.08	.09	.08	.02		

FEBRUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60° N							55° N						
N=4							N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.7	3.4	4.1	4.7	4.4	1.5	590	2.5	3.2	3.8	4.5	4.0	1.4
570	2.5	3.1	3.7	4.4	4.0	1.3	570	2.3	2.9	3.5	4.1	3.7	1.1
550	2.2	2.8	3.4	4.0	3.7	1.0	550	2.0	2.6	3.2	3.7	3.4	.8
530	1.9	2.4	3.0	3.5	3.3	.8	530	1.7	2.2	2.8	3.3	3.1	.50
510	1.7	2.2	2.7	3.2	3.0	.7	510	1.5	2.0	2.5	3.0	2.8	.45
490	1.5	2.0	2.4	2.9	2.7	.65	490	1.4	1.8	2.2	2.7	2.5	.40
470	1.3	1.7	2.1	2.5	2.3	.55	470	1.1	1.5	1.9	2.3	2.1	.35
450	1.0	1.4	1.7	2.1	1.9	.45	450	.9	1.3	1.6	1.9	1.7	.30
430	.9	1.2	1.5	1.8	1.6	.35	430	.8	1.1	1.4	1.6	1.4	.25
410	.7	1.0	1.3	1.6	1.3	.25	410	.65	.9	1.1	1.4	1.2	.18
390	.60	.8	1.0	1.2	1.0	.14	390	.50	.7	.9	1.1	.9	.09
370	.50	.65	.8	1.0	.6	.10	370	.45	.60	.8	.9	.8	.07
350	.40	.55	.7	.9	.7	.09	350	.35	.50	.65	.8	.65	.07
330	.30	.45	.55	.65	.55	.07	330	.30	.40	.50	.60	.55	.06
310	.25	.30	.40	.45	.40	.05	310	.20	.30	.35	.45	.40	.05
290	.16	.25	.30	.35	.35	.04	290	.14	.20	.25	.30	.30	.04
270	.14	.18	.25	.30	.30	.03	270	.12	.16	.20	.25	.25	.03
250	.10	.14	.18	.20	.25	.03	250	.09	.12	.16	.20	.20	.03
230	.07	.10	.14	.16	.18	.02	230	.06	.09	.12	.14	.16	.02
210	.06	.08	.10	.12	.14	.02	210	.05	.07	.09	.12	.12	.02
190	.04	.06	.07	.09	.08	.01	190	.04	.06	.07	.09	.08	.02

50° N							45° N						
N=10							N=20						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	3.0	3.6	4.2	4.0	1.4	590	2.2	2.8	3.4	4.0	3.8	1.1
570	2.1	2.7	3.3	3.9	3.8	1.1	570	1.9	2.5	3.1	3.6	3.8	.9
550	1.8	2.4	3.0	3.5	3.5	.8	550	1.6	2.2	2.7	3.3	3.7	.65
530	1.5	2.1	2.6	3.1	3.3	.40	530	1.3	1.8	2.3	2.8	3.6	.40
510	1.4	1.9	2.3	2.8	3.0	.40	510	1.2	1.6	2.1	2.6	3.2	.35
490	1.2	1.6	2.1	2.5	2.6	.35	490	1.0	1.4	1.9	2.3	2.8	.30
470	1.0	1.4	1.8	2.1	2.2	.35	470	.9	1.2	1.6	1.9	2.3	.25
450	.8	1.1	1.4	1.7	1.8	.30	450	.7	1.0	1.3	1.6	1.8	.20
430	.7	.9	1.2	1.5	1.5	.25	430	.60	.8	1.1	1.3	1.6	.16
410	.60	.8	1.0	1.2	1.3	.16	410	.50	.7	.9	1.1	1.4	.10
390	.45	.60	.8	.9	1.0	.07	390	.40	.55	.7	.9	1.2	.03
370	.40	.50	.65	.8	.9	.05	370	.30	.45	.60	.8	1.1	.02
350	.30	.45	.55	.65	.7	.04	350	.25	.40	.50	.65	.9	.02
330	.25	.35	.45	.55	.55	.03	330	.20	.30	.40	.50	.7	.01
310	.16	.25	.30	.40	.40	.02	310	.14	.20	.30	.35	.50	.01
290	.12	.18	.25	.30	.30	.02	290	.10	.16	.20	.25	.40	.01
270	.09	.14	.18	.25	.25	.02	270	.08	.12	.18	.20	.35	.01
250	.07	.10	.14	.18	.20	.02	250	.06	.10	.14	.16	.30	.01
230	.05	.07	.10	.12	.16	.02	230	.05	.07	.10	.12	.25	.01
210	.04	.06	.08	.10	.12	.02	210	.04	.06	.08	.10	.20	.01
190	.04	.05	.07	.08	.09	.01	190	.04	.06	.07	.09	.16	.01

FEBRUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40°N N=40							35°N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.9	2.6	3.2	3.8	3.8	.9	590	1.6	2.1	2.6	3.1	2.9	.8
570	1.7	2.3	2.8	3.4	3.8	.65	570	1.3	1.8	2.3	2.8	2.6	.60
550	1.4	1.9	2.5	3.0	3.7	.45	550	1.1	1.5	1.9	2.3	2.3	.40
530	1.1	1.6	2.1	2.6	3.6	.20	530	.8	1.2	1.5	1.9	2.0	.16
510	1.0	1.4	1.9	2.3	3.1	.18	510	.7	1.0	1.4	1.7	1.7	.14
490	.8	1.2	1.6	2.0	2.6	.16	490	.60	.9	1.2	1.5	1.4	.12
470	.7	1.1	1.4	1.8	2.0	.14	470	.50	.7	1.0	1.2	1.1	.10
450	.55	.8	1.1	1.4	1.3	.10	450	.35	.55	.7	.9	.8	.08
430	.45	.7	1.0	1.2	1.2	.08	430	.30	.45	.60	.8	.7	.06
410	.40	.60	.8	1.0	1.1	.05	410	.25	.40	.50	.45	.65	.05
390	.30	.50	.65	.8	1.1	.03	390	.20	.30	.40	.40	.60	.03
370	.25	.40	.55	.7	1.0	.02	370	.18	.25	.35	.45	.55	.03
350	.20	.35	.45	.60	.8	.02	350	.14	.20	.30	.40	.45	.02
330	.16	.25	.35	.45	.65	.01	330	.12	.18	.25	.30	.35	.02
310	.10	.18	.25	.35	.50	.01	310	.08	.14	.18	.25	.25	.01
290	.08	.12	.18	.25	.40	.01	290	.06	.10	.14	.18	.20	.01
270	.07	.12	.16	.20	.35	.01	270	.06	.09	.12	.16	.20	.01
250	.06	.09	.12	.16	.30	.01	250	.05	.08	.10	.14	.18	.01
230	.05	.07	.10	.12	.25	.01	230	.04	.07	.09	.10	.18	.01
210	.05	.07	.09	.10	.20	.01	210	.04	.06	.08	.10	.14	.01
190	.04	.06	.08	.09	.18	.01	190	.04	.05	.07	.08	.10	.01

30°N N=10							25°N N=6						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.6	2.1	2.5	2.0	.40	590	.65	.8	1.0	1.2	1.2	.25
570	1.0	1.4	1.7	2.1	1.7	.30	570	.55	.7	.9	1.1	1.0	.20
550	.7	1.1	1.4	1.7	1.2	.18	550	.40	.60	.8	.9	.7	.14
530	.45	.7	1.0	1.2	.8	.08	530	.30	.45	.60	.8	.50	.07
510	.40	.60	.8	1.0	.65	.07	510	.25	.40	.50	.45	.40	.06
490	.30	.50	.65	.8	.55	.06	490	.20	.30	.40	.50	.35	.05
470	.25	.35	.45	.60	.40	.05	470	.14	.20	.25	.35	.25	.04
450	.14	.20	.25	.30	.25	.04	450	.08	.10	.14	.16	.16	.03
430	.12	.16	.20	.25	.20	.04	430	.07	.09	.12	.14	.14	.03
410	.10	.14	.18	.25	.18	.03	410	.07	.09	.12	.14	.12	.03
390	.09	.12	.16	.20	.16	.03	390	.07	.09	.12	.16	.12	.03
370	.08	.12	.16	.18	.16	.03	370	.06	.09	.12	.14	.12	.03
350	.07	.10	.14	.18	.16	.02	350	.06	.08	.10	.12	.12	.02
330	.06	.09	.12	.16	.18	.02	330	.05	.07	.09	.12	.12	.02
310	.05	.08	.10	.14	.18	.01	310	.04	.06	.08	.10	.12	.01
290	.05	.07	.10	.12	.18	.01	290	.04	.06	.07	.09	.12	.01
270	.04	.07	.09	.12	.16	.01	270	.04	.05	.07	.09	.10	.01
250	.04	.06	.08	.10	.10	.01	250	.04	.05	.07	.08	.10	.01
230	.04	.06	.08	.09	.14	.01	230	.03	.05	.06	.08	.09	.01
210	.04	.05	.07	.08	.10	.01	210	.03	.05	.06	.07	.08	.01
190	.03	.05	.06	.08	.08	.01	190	.03	.04	.06	.07	.06	.01

FEBRUARY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	20°N						N=8	FLIGHT LEVEL	15°N						N=5
	MEAN	16%	2%	.1%	MAX	MIN			MEAN	16%	2%	.1%	MAX	MIN	
590	.35	.45	.60	.7	.55	.18	590	.35	.45	.55	.45	.50	.14		
570	.25	.35	.45	.55	.45	.14	570	.25	.35	.45	.45	.40	.12		
550	.18	.25	.30	.35	.30	.10	550	.18	.25	.30	.35	.30	.08		
530	.09	.12	.16	.18	.14	.06	530	.09	.12	.16	.20	.14	.05		
510	.08	.10	.14	.16	.12	.05	510	.08	.12	.16	.18	.12	.04		
490	.07	.10	.12	.16	.12	.05	490	.07	.10	.14	.16	.12	.04		
470	.06	.09	.10	.14	.09	.04	470	.06	.08	.10	.14	.09	.03		
450	.05	.07	.09	.12	.07	.03	450	.04	.06	.09	.10	.07	.02		
430	.05	.07	.09	.10	.07	.03	430	.04	.06	.08	.10	.07	.02		
410	.05	.07	.09	.10	.08	.04	410	.04	.06	.08	.10	.07	.02		
390	.05	.07	.09	.10	.08	.04	390	.04	.06	.08	.10	.07	.02		
370	.05	.06	.08	.10	.08	.04	370	.04	.06	.08	.10	.07	.02		
350	.04	.06	.07	.09	.07	.03	350	.04	.05	.07	.09	.06	.02		
330	.04	.05	.06	.08	.06	.03	330	.04	.05	.06	.08	.05	.01		
310	.03	.04	.05	.07	.05	.02	310	.03	.04	.05	.07	.04	.01		
290	.03	.04	.05	.06	.05	.02	290	.03	.04	.05	.06	.04	.01		
270	.03	.04	.05	.06	.05	.02	270	.03	.04	.05	.06	.04	.01		
250	.03	.04	.05	.06	.04	.01	250	.03	.04	.05	.06	.04	.01		
230	.03	.04	.05	.06	.04	.01	230	.03	.04	.05	.06	.04	.01		
210	.03	.04	.05	.06	.04	.01	210	.03	.04	.05	.06	.04	.01		
190	.03	.04	.05	.06	.04	.01	190	.03	.04	.05	.06	.04	.01		

FLIGHT LEVEL	10°N						N=8
	MEAN	16%	2%	.1%	MAX	MIN	
590	.35	.45	.55	.65	.50	.12	
570	.25	.35	.45	.55	.40	.10	
550	.18	.25	.30	.35	.25	.07	
530	.09	.14	.16	.20	.14	.04	
510	.08	.12	.16	.20	.12	.04	
490	.07	.10	.14	.18	.12	.03	
470	.07	.10	.12	.16	.10	.03	
450	.06	.08	.10	.14	.08	.02	
430	.05	.07	.10	.12	.08	.02	
410	.05	.07	.09	.12	.07	.01	
390	.04	.06	.08	.10	.06	.01	
370	.04	.06	.07	.09	.06	.01	
350	.04	.05	.07	.08	.05	.01	
330	.03	.05	.06	.08	.05	.01	
310	.03	.04	.05	.07	.04	.01	
290	.03	.04	.05	.06	.04	.01	
270	.03	.04	.05	.06	.04	.01	
250	.03	.04	.05	.06	.04	.01	
230	.03	.04	.05	.06	.04	.01	
210	.03	.04	.05	.06	.05	.01	
190	.03	.04	.05	.06	.05	.01	

FEBRUARY - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N							47°N						
N=38							N=128						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.8	3.5	4.1	3.8	1.1	590	1.8	2.4	3.1	3.7	3.8	.20
570	1.9	2.5	3.1	3.7	3.5	.8	570	1.6	2.2	2.8	3.4	3.4	.20
550	1.5	2.1	2.6	3.2	3.1	.60	550	1.3	1.8	2.4	2.9	3.1	.18
530	1.1	1.7	2.2	2.7	2.8	.30	530	1.0	1.5	2.0	2.5	2.7	.16
510	1.1	1.5	2.0	2.5	2.5	.25	510	.9	1.4	1.8	2.3	2.5	.14
490	1.0	1.4	1.8	2.3	2.2	.20	490	.8	1.2	1.6	2.1	2.2	.10
470	.9	1.3	1.7	2.1	1.9	.16	470	.7	1.1	1.4	1.8	2.0	.07
450	.7	1.1	1.4	1.8	1.5	.09	450	.60	.9	1.2	1.5	1.6	.03
430	.65	.9	1.3	1.6	1.3	.07	430	.50	.8	1.1	1.3	1.5	.02
410	.55	.8	1.1	1.3	1.0	.05	410	.45	.65	.9	1.1	1.3	.02
390	.40	.65	.9	1.1	.8	.04	390	.35	.55	.7	.9	1.2	.02
370	.35	.55	.7	.9	.7	.03	370	.30	.45	.60	.8	1.0	.02
350	.30	.45	.60	.7	.55	.03	350	.20	.35	.50	.65	.8	.02
330	.20	.30	.45	.55	.45	.02	330	.16	.25	.35	.45	.60	.02
310	.12	.20	.30	.35	.35	.02	310	.10	.16	.20	.30	.35	.02
290	.08	.14	.20	.25	.25	.02	290	.06	.10	.14	.18	.25	.02
270	.07	.12	.18	.25	.25	.02	270	.05	.08	.12	.14	.18	.02
250	.07	.10	.16	.20	.20	.02	250	.05	.07	.09	.12	.14	.01
230	.06	.09	.12	.16	.16	.01	230	.04	.06	.07	.08	.09	.01
210	.05	.08	.10	.14	.12	.01	210	.04	.05	.07	.08	.09	.01
190	.04	.06	.08	.09	.09	.01	190	.04	.05	.06	.07	.08	.01

39°N						
N=6						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.6	2.2	2.9	3.5	2.4	.7
570	1.4	2.0	2.5	3.1	2.1	.65
550	1.3	1.7	2.2	2.6	1.9	.55
530	1.1	1.4	1.8	2.1	1.6	.45
510	.9	1.2	1.5	1.8	1.4	.35
490	.8	1.0	1.3	1.5	1.1	.30
470	.55	.8	1.0	1.2	.9	.18
450	.35	.50	.7	.9	.60	.08
430	.30	.45	.55	.7	.50	.07
410	.30	.40	.50	.60	.45	.08
390	.25	.35	.40	.50	.40	.09
370	.25	.30	.35	.40	.35	.08
350	.18	.20	.25	.30	.30	.06
330	.12	.16	.20	.25	.20	.04
310	.06	.09	.12	.14	.12	.02
290	.04	.06	.08	.10	.08	.01
270	.04	.06	.08	.10	.08	.01
250	.04	.06	.08	.10	.08	.01
230	.04	.06	.08	.10	.09	.02
210	.04	.06	.08	.10	.09	.02
190	.04	.06	.08	.09	.08	.02

MARCH - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43°N							36°N						
N=19							N=27						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.6	3.2	3.7	4.3	3.6	1.6	590	1.6	2.1	2.6	3.1	2.9	.8
570	2.3	2.9	3.5	4.1	3.4	1.3	570	1.3	1.8	2.3	2.8	2.6	.65
550	2.0	2.7	3.3	4.0	3.1	1.0	550	1.0	1.5	2.0	2.5	2.4	.45
530	1.7	2.4	3.1	3.8	2.8	.65	530	.7	1.2	1.7	2.1	2.1	.20
510	1.5	2.2	2.9	3.5	2.7	.55	510	.7	1.1	1.5	2.0	1.9	.20
490	1.4	2.0	2.6	3.2	2.5	.45	490	.60	1.0	1.4	1.8	1.6	.16
470	1.2	1.8	2.3	2.8	2.3	.35	470	.55	.9	1.2	1.6	1.4	.12
450	1.0	1.5	2.0	2.5	2.0	.25	450	.45	.8	1.0	1.3	1.1	.09
430	.9	1.3	1.7	2.1	1.7	.20	430	.40	.65	.9	1.2	1.0	.07
410	.8	1.1	1.4	1.7	1.4	.20	410	.35	.60	.8	1.1	.9	.05
390	.65	.9	1.1	1.3	1.1	.20	390	.30	.50	.7	1.0	.8	.03
370	.55	.7	.9	1.1	.9	.18	370	.25	.45	.65	.8	.65	.03
350	.45	.55	.7	.9	.7	.16	350	.20	.40	.55	.7	.55	.03
330	.30	.40	.55	.65	.60	.12	330	.18	.30	.45	.55	.45	.03
310	.18	.25	.35	.40	.40	.07	310	.14	.20	.30	.40	.35	.03
290	.10	.16	.20	.30	.30	.05	290	.12	.18	.25	.30	.25	.03
270	.09	.14	.20	.25	.30	.05	270	.10	.16	.20	.30	.25	.03
250	.09	.12	.18	.20	.25	.05	250	.09	.14	.20	.25	.20	.03
230	.08	.12	.14	.18	.18	.05	230	.08	.12	.16	.20	.20	.03
210	.07	.09	.12	.14	.14	.05	210	.07	.10	.14	.16	.16	.03
190	.06	.07	.08	.09	.09	.04	190	.06	.08	.10	.12	.14	.03

32°N						
N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.0	1.4	1.8	2.2	2.0	.50
570	.9	1.2	1.6	2.0	1.7	.40
550	.65	1.0	1.4	1.7	1.5	.25
530	.45	.8	1.1	1.4	1.2	.10
510	.40	.7	1.0	1.3	1.1	.09
490	.35	.60	.9	1.2	1.1	.07
470	.30	.55	.8	1.0	1.0	.06
450	.20	.45	.65	.9	.9	.04
430	.18	.35	.55	.7	.8	.03
410	.16	.30	.40	.55	.55	.03
390	.12	.20	.28	.35	.30	.02
370	.12	.16	.25	.30	.25	.02
350	.10	.16	.20	.25	.20	.02
330	.09	.14	.18	.20	.20	.02
310	.07	.10	.14	.18	.16	.03
290	.07	.09	.12	.16	.14	.03
270	.06	.09	.12	.14	.14	.03
250	.06	.08	.10	.14	.12	.03
230	.06	.08	.10	.12	.10	.03
210	.05	.07	.09	.10	.09	.03
190	.05	.06	.08	.09	.08	.03

MARCH - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65°N							60°N						
N=8							N=0						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.6	3.4	4.2	5.1	3.5	1.2	590	2.3	3.2	3.9	4.6	3.4	1.2
570	2.3	3.0	3.7	4.5	3.1	1.0	570	2.1	2.8	3.4	4.1	3.0	1.0
550	1.9	2.5	3.2	3.8	2.7	.9	550	1.8	2.3	2.9	3.5	2.6	.8
530	1.5	2.0	2.6	3.1	2.2	.7	530	1.4	1.9	2.4	2.9	2.2	.60
510	1.4	1.9	2.4	2.9	2.0	.60	510	1.2	1.7	2.2	2.7	2.0	.50
490	1.2	1.7	2.2	2.7	1.4	.50	490	1.1	1.5	2.0	2.4	1.8	.40
470	1.1	1.5	2.0	2.4	1.6	.35	470	1.0	1.4	1.8	2.2	1.6	.30
450	.9	1.3	1.7	2.1	1.4	.20	450	.8	1.2	1.5	1.9	1.3	.20
430	.8	1.2	1.6	2.0	1.4	.20	430	.7	1.1	1.4	1.8	1.3	.18
410	.7	1.1	1.5	1.9	1.4	.20	410	.60	1.0	1.3	1.7	1.3	.18
390	.60	1.0	1.4	1.8	1.4	.25	390	.55	.9	1.2	1.6	1.3	.18
370	.50	.9	1.2	1.6	1.2	.20	370	.45	.7	1.1	1.4	1.1	.16
350	.40	.7	1.0	1.2	1.0	.16	350	.35	.60	.8	1.1	.9	.12
330	.30	.50	.65	.9	.7	.10	330	.25	.40	.60	.8	.65	.09
310	.16	.25	.35	.45	.35	.06	310	.14	.25	.35	.45	.35	.05
290	.10	.16	.20	.25	.20	.03	290	.09	.14	.20	.25	.20	.03
270	.09	.14	.18	.25	.18	.03	270	.08	.12	.18	.25	.20	.02
250	.08	.12	.16	.20	.14	.03	250	.07	.12	.16	.20	.16	.02
230	.07	.10	.14	.16	.12	.03	230	.06	.09	.12	.16	.14	.02
210	.05	.08	.10	.12	.10	.02	210	.05	.08	.10	.12	.10	.02
190	.04	.06	.07	.09	.07	.02	190	.04	.06	.07	.09	.07	.02

55°N							50°N						
N=0							N=16						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.9	3.5	4.1	3.2	1.2	590	2.1	2.6	3.1	3.6	3.0	1.2
570	2.0	2.5	3.1	3.7	2.8	1.0	570	1.8	2.3	2.8	3.3	2.7	1.0
550	1.6	2.1	2.7	3.2	2.5	.7	550	1.5	1.9	2.4	2.9	2.4	.7
530	1.2	1.7	2.2	2.7	2.1	.50	530	1.1	1.6	2.0	2.4	2.1	.35
510	1.1	1.6	2.0	2.4	2.0	.40	510	1.0	1.4	1.8	2.2	1.9	.30
490	1.0	1.4	1.8	2.2	1.7	.35	490	.9	1.2	1.6	2.0	1.7	.25
470	.8	1.2	1.6	1.9	1.4	.25	470	.7	1.1	1.4	1.7	1.4	.20
450	.65	1.0	1.3	1.7	1.3	.16	450	.55	.8	1.1	1.4	1.2	.14
430	.60	.9	1.2	1.5	1.2	.14	430	.50	.8	1.0	1.3	1.1	.12
410	.50	.8	1.1	1.5	1.2	.14	410	.40	.7	.9	1.2	1.1	.10
390	.45	.7	1.1	1.4	1.2	.14	390	.35	.60	.9	1.1	1.1	.09
370	.35	.65	.9	1.2	1.0	.12	370	.30	.50	.7	1.0	.9	.08
350	.30	.50	.7	.9	.8	.09	350	.20	.40	.60	.8	.8	.06
330	.20	.35	.50	.65	.60	.07	330	.16	.30	.45	.60	.55	.05
310	.12	.20	.30	.40	.35	.04	310	.09	.18	.25	.35	.40	.03
290	.07	.14	.20	.25	.25	.02	290	.06	.12	.18	.25	.25	.02
270	.07	.12	.18	.20	.20	.02	270	.06	.10	.16	.20	.25	.02
250	.06	.10	.14	.20	.18	.02	250	.05	.10	.14	.18	.20	.02
230	.05	.09	.12	.16	.16	.02	230	.05	.08	.12	.16	.16	.02
210	.05	.07	.10	.12	.12	.02	210	.04	.07	.10	.12	.12	.01
190	.04	.06	.07	.09	.08	.02	190	.04	.06	.07	.09	.09	.01

MARCH - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45° N							40° N						
N=37							N=77						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.9	2.4	2.9	3.3	2.9	1.2	590	1.9	2.3	2.8	3.2	3.1	1.0
570	1.7	2.1	2.6	3.0	2.7	.9	570	1.6	2.0	2.5	3.0	2.8	.8
550	1.4	1.8	2.2	2.7	2.4	.60	550	1.3	1.8	2.2	2.7	2.5	.50
530	1.0	1.5	1.9	2.3	2.1	.30	530	1.0	1.4	1.9	2.3	2.1	.25
510	.9	1.3	1.7	2.1	1.9	.25	510	.9	1.3	1.7	2.1	2.0	.20
490	.8	1.2	1.5	1.9	1.7	.20	490	.8	1.2	1.6	1.9	1.8	.18
470	.65	1.0	1.3	1.6	1.5	.16	470	.7	1.0	1.4	1.7	1.6	.14
450	.50	.8	1.1	1.3	1.2	.12	450	.55	.8	1.1	1.4	1.4	.10
430	.45	.7	1.0	1.2	1.1	.09	430	.50	.7	1.0	1.3	1.3	.08
410	.40	.60	.9	1.1	1.1	.07	410	.40	.65	.9	1.1	1.1	.05
390	.30	.55	.8	1.0	1.0	.05	390	.35	.55	.7	.9	.9	.03
370	.25	.45	.65	.8	.8	.04	370	.30	.45	.65	.8	.8	.02
350	.20	.35	.55	.7	.7	.04	350	.25	.40	.55	.7	.65	.02
330	.14	.30	.40	.55	.55	.03	330	.18	.30	.40	.45	.55	.01
310	.09	.18	.25	.35	.40	.02	310	.12	.20	.30	.35	.40	.01
290	.06	.12	.18	.25	.30	.01	290	.08	.14	.20	.25	.30	.00
270	.06	.12	.16	.20	.25	.01	270	.07	.12	.18	.25	.25	.01
250	.05	.10	.14	.20	.20	.01	250	.07	.12	.16	.20	.25	.01
230	.05	.09	.12	.16	.18	.01	230	.06	.10	.14	.18	.18	.01
210	.04	.07	.10	.14	.14	.01	210	.05	.08	.10	.14	.14	.01
190	.04	.06	.08	.10	.09	.01	190	.05	.06	.08	.10	.10	.02

35° N						
N=21						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.4	1.9	2.4	2.9	2.5	.35
570	1.2	1.6	2.1	2.5	2.2	.30
550	.9	1.3	1.7	2.1	1.8	.25
530	.65	1.0	1.3	1.6	1.4	.20
510	.60	.9	1.2	1.4	1.3	.18
490	.50	.8	1.0	1.3	1.2	.16
470	.45	.65	.9	1.1	1.1	.14
450	.35	.55	.8	1.0	1.0	.10
430	.30	.50	.7	.9	.8	.08
410	.25	.45	.60	.8	.7	.06
390	.20	.40	.55	.7	.55	.03
370	.18	.35	.45	.60	.45	.03
350	.14	.25	.35	.50	.35	.02
330	.10	.18	.25	.35	.25	.02
310	.07	.12	.16	.20	.18	.02
290	.04	.07	.10	.12	.12	.01
270	.04	.07	.09	.12	.12	.01
250	.04	.06	.08	.10	.10	.01
230	.03	.05	.07	.09	.08	.01
210	.03	.05	.06	.08	.06	.01
190	.03	.04	.05	.06	.05	.01

MARCH - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N							75°N						
N=15							N=45						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	3.1	3.7	4.3	4.9	4.6	2.0	590	3.0	3.7	4.3	4.9	4.6	1.9
570	2.8	3.4	4.0	4.6	4.4	1.7	570	2.8	3.4	3.9	4.5	4.4	1.6
550	2.5	3.1	3.6	4.2	4.2	1.4	550	2.5	3.0	3.6	4.2	4.2	1.3
530	2.2	2.7	3.3	3.8	3.9	1.0	530	2.2	2.7	3.2	3.7	3.9	1.0
510	2.0	2.5	3.0	3.5	3.5	.9	510	2.0	2.4	2.9	3.4	3.5	.9
490	1.8	2.2	2.7	3.1	3.1	.8	490	1.7	2.2	2.6	3.1	3.1	.8
470	1.5	2.0	2.4	2.8	2.6	.7	470	1.5	1.9	2.3	2.7	2.6	.65
450	1.3	1.6	2.0	2.4	2.1	.55	450	1.2	1.6	1.9	2.3	2.1	.55
430	1.1	1.4	1.8	2.1	1.8	.50	430	1.1	1.4	1.7	2.0	1.8	.45
410	1.0	1.2	1.5	1.8	1.5	.45	410	.9	1.2	1.5	1.7	1.5	.40
390	.8	1.0	1.3	1.5	1.3	.35	390	.7	1.0	1.2	1.4	1.3	.30
370	.7	.9	1.1	1.3	1.1	.30	370	.65	.8	1.0	1.2	1.1	.25
350	.60	.8	.9	1.1	1.0	.20	350	.55	.7	.9	1.0	1.0	.20
330	.45	.60	.8	.9	.9	.14	330	.45	.55	.7	.8	.9	.12
310	.35	.45	.60	.7	.8	.06	310	.30	.40	.55	.65	.8	.06
290	.25	.35	.45	.55	.65	.02	290	.25	.30	.40	.40	.65	.02
270	.20	.30	.35	.45	.50	.02	270	.18	.25	.30	.40	.50	.02
250	.14	.20	.25	.35	.40	.02	250	.12	.18	.25	.30	.40	.02
230	.08	.14	.18	.25	.30	.02	230	.08	.12	.16	.20	.30	.02
210	.07	.10	.14	.18	.20	.02	210	.07	.10	.14	.16	.20	.02
190	.06	.08	.10	.12	.14	.02	190	.06	.08	.09	.12	.14	.02

70°N							65°N						
N=25							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	3.0	3.6	4.2	4.8	4.4	2.0	590	2.4	3.5	4.1	4.7	4.4	2.1
570	2.7	3.3	3.9	4.5	4.3	1.7	570	2.6	3.2	3.8	4.4	4.1	1.7
550	2.4	3.0	3.6	4.1	4.0	1.4	550	2.3	2.9	3.5	4.0	3.8	1.4
530	2.1	2.6	3.2	3.7	3.7	1.0	530	2.0	2.5	3.1	3.6	3.4	1.0
510	1.9	2.4	2.9	3.4	3.3	.9	510	1.8	2.3	2.8	3.3	3.1	.9
490	1.7	2.1	2.6	3.0	2.9	.8	490	1.6	2.1	2.6	3.0	2.7	.8
470	1.4	1.9	2.3	2.7	2.5	.65	470	1.4	1.8	2.2	2.6	2.3	.65
450	1.2	1.5	1.9	2.3	2.0	.55	450	1.1	1.5	1.9	2.2	1.9	.55
430	1.0	1.3	1.6	2.0	1.7	.45	430	1.0	1.3	1.6	1.9	1.6	.45
410	.9	1.1	1.4	1.7	1.4	.40	410	.8	1.1	1.4	1.6	1.4	.40
390	.7	.9	1.1	1.3	1.2	.30	390	.65	.9	1.1	1.3	1.1	.35
370	.60	.8	1.0	1.1	1.0	.25	370	.55	.7	.9	1.1	1.0	.30
350	.50	.65	.8	1.0	.9	.20	350	.45	.60	.8	.9	.9	.25
330	.40	.50	.65	.8	.8	.12	330	.35	.50	.60	.7	.7	.16
310	.30	.40	.45	.55	.65	.06	310	.25	.35	.45	.50	.60	.08
290	.20	.30	.35	.40	.55	.02	290	.20	.25	.30	.35	.45	.04
270	.16	.25	.30	.35	.45	.02	270	.16	.20	.25	.30	.40	.04
250	.12	.16	.20	.25	.35	.02	250	.10	.14	.18	.20	.30	.03
230	.08	.12	.14	.18	.25	.02	230	.07	.10	.12	.16	.25	.03
210	.07	.09	.12	.14	.18	.02	210	.06	.08	.10	.12	.18	.03
190	.05	.07	.09	.10	.12	.02	190	.05	.07	.08	.10	.12	.02

MARCH - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N							55°N						
N=6							N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.8	3.4	4.0	4.6	4.2	2.1	590	2.6	3.2	3.7	4.3	3.9	1.9
570	2.6	3.1	3.7	4.3	3.8	1.8	570	2.3	2.9	3.4	3.9	3.6	1.5
550	2.2	2.8	3.4	3.9	3.4	1.5	550	2.0	2.5	3.0	3.6	3.1	1.2
530	1.9	2.4	3.0	3.5	3.0	1.1	530	1.7	2.2	2.7	3.2	2.7	.8
510	1.7	2.2	2.7	3.2	2.7	1.0	510	1.5	2.0	2.5	2.9	2.5	.7
490	1.5	2.0	2.5	2.9	2.5	.8	490	1.4	1.8	2.2	2.7	2.2	.65
470	1.3	1.7	2.2	2.6	2.2	.7	470	1.2	1.6	2.0	2.4	2.0	.55
450	1.1	1.5	1.8	2.2	1.9	.55	450	1.0	1.3	1.7	2.0	1.7	.45
430	.9	1.3	1.6	1.9	1.6	.50	430	.8	1.1	1.5	1.8	1.4	.45
410	.8	1.1	1.3	1.6	1.3	.45	410	.7	1.0	1.2	1.5	1.2	.40
390	.60	.8	1.1	1.3	1.1	.40	390	.55	.8	1.0	1.2	.9	.35
370	.45	.7	.9	1.1	.9	.35	370	.45	.65	.9	1.0	.8	.30
350	.45	.60	.7	.9	.7	.25	350	.40	.55	.7	.9	.65	.25
330	.35	.45	.60	.7	.55	.18	330	.30	.40	.55	.65	.55	.16
310	.25	.30	.40	.45	.40	.10	310	.20	.30	.35	.45	.40	.08
290	.18	.20	.30	.35	.30	.06	290	.16	.20	.25	.30	.30	.04
270	.14	.18	.20	.25	.25	.05	270	.12	.16	.20	.25	.25	.04
250	.09	.12	.16	.20	.20	.05	250	.09	.12	.16	.18	.20	.03
230	.06	.08	.10	.14	.18	.04	230	.06	.08	.10	.14	.16	.03
210	.05	.07	.09	.12	.14	.04	210	.05	.07	.09	.12	.12	.03
190	.05	.06	.08	.09	.10	.03	190	.04	.06	.08	.10	.08	.02

50°N							45°N						
N=15							N=30						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.9	3.4	3.9	3.8	1.8	590	2.1	2.7	3.2	3.7	3.7	1.2
570	2.1	2.6	3.1	3.6	3.4	1.4	570	1.9	2.4	2.8	3.3	3.3	1.0
550	1.8	2.3	2.7	3.2	3.1	1.0	550	1.6	2.0	2.5	2.9	3.0	.7
530	1.5	1.9	2.4	2.8	2.7	.60	530	1.3	1.7	2.1	2.5	2.6	.40
510	1.3	1.8	2.2	2.6	2.4	.55	510	1.1	1.5	1.9	2.3	2.4	.35
490	1.2	1.6	2.0	2.4	2.2	.50	490	1.0	1.4	1.7	2.1	2.1	.30
470	1.0	1.4	1.8	2.1	1.9	.45	470	.8	1.2	1.5	1.8	1.9	.25
450	.8	1.2	1.5	1.9	1.6	.40	450	.65	1.0	1.3	1.6	1.6	.20
430	.7	1.0	1.3	1.6	1.4	.35	430	.55	.8	1.1	1.4	1.4	.16
410	.60	.9	1.2	1.4	1.2	.30	410	.50	.7	1.0	1.2	1.3	.12
390	.50	.7	1.0	1.2	.9	.20	390	.40	.60	.8	1.0	1.1	.06
370	.40	.60	.8	1.0	.8	.18	370	.30	.50	.65	.8	1.0	.05
350	.35	.50	.65	.8	.7	.14	350	.25	.40	.55	.7	.8	.04
330	.25	.40	.50	.65	.55	.10	330	.20	.30	.45	.65	.65	.04
310	.18	.25	.35	.45	.40	.05	310	.14	.20	.30	.35	.50	.03
290	.14	.18	.25	.30	.35	.03	290	.10	.16	.20	.25	.40	.03
270	.10	.16	.20	.25	.30	.03	270	.09	.14	.18	.20	.35	.03
250	.09	.12	.14	.18	.25	.02	250	.07	.10	.14	.16	.30	.02
230	.05	.08	.10	.14	.18	.02	230	.06	.08	.10	.12	.25	.02
210	.05	.07	.10	.12	.14	.02	210	.05	.07	.10	.12	.20	.02
190	.04	.06	.08	.10	.09	.01	190	.05	.07	.09	.12	.16	.02

MARCH - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40°N N=55							35°N N=17						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.9	2.4	2.9	3.4	3.6	.8	590	1.5	2.0	2.4	2.8	2.4	.40
570	1.6	2.1	2.6	3.1	3.2	.65	570	1.3	1.7	2.1	2.5	2.2	.35
550	1.3	1.8	2.2	2.7	2.9	.50	550	1.0	1.4	1.8	2.1	2.0	.25
530	1.0	1.4	1.8	2.2	2.5	.35	530	.8	1.1	1.4	1.7	1.8	.16
510	.9	1.3	1.7	2.0	2.3	.30	510	.65	1.0	1.3	1.6	1.7	.14
490	.8	1.1	1.5	1.8	2.1	.25	490	.60	.9	1.1	1.4	1.5	.12
470	.65	1.0	1.3	1.6	1.8	.18	470	.50	.7	1.0	1.2	1.4	.10
450	.50	.8	1.0	1.3	1.6	.12	450	.35	.60	.8	1.0	1.2	.08
430	.45	.65	.9	1.1	1.4	.08	430	.30	.50	.65	.8	1.1	.06
410	.35	.55	.8	1.0	1.3	.05	410	.25	.40	.55	.7	1.0	.04
390	.25	.45	.60	.8	1.2	.03	390	.18	.30	.45	.55	.8	.02
370	.25	.35	.50	.65	1.1	.02	370	.16	.25	.35	.45	.7	.02
350	.18	.30	.45	.55	.9	.02	350	.14	.20	.30	.40	.60	.02
330	.16	.25	.35	.45	.8	.02	330	.10	.18	.25	.30	.50	.01
310	.10	.18	.25	.30	.60	.02	310	.08	.12	.18	.20	.35	.01
290	.08	.14	.18	.25	.45	.02	290	.07	.10	.14	.16	.30	.01
270	.08	.12	.16	.20	.40	.02	270	.06	.09	.12	.14	.25	.01
250	.07	.09	.12	.16	.35	.02	250	.05	.08	.10	.12	.20	.01
230	.06	.08	.10	.12	.30	.02	230	.05	.07	.09	.10	.20	.01
210	.06	.08	.10	.12	.25	.02	210	.05	.07	.08	.10	.16	.01
190	.05	.07	.09	.12	.16	.02	190	.05	.06	.08	.10	.12	.01

30°N N=20							25°N N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.5	1.9	2.2	1.6	.35	590	.8	1.1	1.4	1.8	1.3	.40
570	.9	1.3	1.6	1.9	1.5	.25	570	.65	.9	1.2	1.5	1.1	.30
550	.7	1.0	1.3	1.6	1.4	.16	550	.50	.7	1.0	1.2	.9	.18
530	.45	.7	1.0	1.2	1.3	.06	530	.35	.50	.7	.9	.7	.08
510	.40	.65	.9	1.1	1.2	.05	510	.30	.45	.60	.8	.65	.07
490	.35	.55	.8	1.0	1.1	.04	490	.25	.40	.55	.7	.60	.05
470	.30	.50	.65	.8	1.0	.03	470	.20	.35	.45	.55	.55	.04
450	.25	.40	.55	.7	.9	.02	450	.16	.25	.35	.45	.50	.02
430	.18	.30	.45	.55	.8	.02	430	.14	.20	.30	.35	.45	.02
410	.14	.25	.35	.45	.60	.03	410	.10	.18	.25	.30	.35	.03
390	.10	.18	.25	.35	.40	.03	390	.08	.12	.18	.20	.20	.03
370	.09	.14	.20	.30	.30	.03	370	.07	.12	.16	.20	.18	.03
350	.08	.12	.18	.25	.25	.02	350	.06	.10	.14	.16	.16	.03
330	.07	.10	.14	.18	.18	.02	330	.06	.08	.10	.14	.12	.02
310	.05	.08	.10	.14	.12	.01	310	.05	.07	.09	.10	.09	.02
290	.05	.07	.09	.10	.09	.01	290	.04	.06	.07	.09	.07	.02
270	.04	.06	.08	.10	.09	.01	270	.04	.06	.07	.09	.07	.02
250	.04	.06	.08	.10	.09	.01	250	.04	.06	.07	.09	.07	.02
230	.04	.06	.08	.10	.09	.01	230	.04	.05	.07	.08	.07	.02
210	.04	.06	.07	.09	.09	.01	210	.04	.05	.07	.08	.07	.02
190	.04	.05	.07	.08	.08	.01	190	.04	.05	.06	.08	.07	.02

MARCH - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	20°N N=7						FLIGHT LEVEL	15°N N=5					
	MEAN	16%	2%	.1%	MAX	MIN		MEAN	16%	2%	.1%	MAX	MIN
590	.7	.9	1.0	1.2	.9	.40	590	.45	.55	.7	.8	.60	.25
570	.50	.65	.8	.9	.65	.30	570	.35	.45	.50	.60	.45	.20
550	.35	.40	.50	.60	.40	.20	550	.20	.30	.35	.45	.30	.14
530	.14	.18	.20	.25	.18	.09	530	.10	.14	.18	.20	.14	.06
510	.12	.16	.20	.25	.16	.08	510	.09	.12	.16	.20	.12	.05
490	.12	.14	.18	.20	.14	.06	490	.08	.12	.14	.18	.12	.04
470	.09	.12	.14	.18	.12	.04	470	.07	.10	.12	.16	.10	.03
450	.07	.10	.12	.14	.10	.02	450	.06	.08	.10	.12	.09	.02
430	.07	.09	.10	.12	.10	.03	430	.06	.08	.10	.12	.09	.02
410	.06	.08	.10	.12	.09	.03	410	.05	.07	.09	.12	.08	.02
390	.06	.08	.10	.12	.08	.04	390	.05	.07	.09	.10	.07	.02
370	.06	.07	.09	.10	.08	.04	370	.05	.07	.08	.10	.07	.02
350	.05	.07	.08	.10	.07	.04	350	.05	.06	.08	.09	.06	.02
330	.05	.06	.07	.09	.06	.03	330	.04	.06	.07	.08	.06	.02
310	.04	.05	.07	.08	.05	.03	310	.04	.05	.06	.08	.05	.02
290	.04	.05	.06	.07	.05	.03	290	.04	.05	.06	.07	.05	.02
270	.04	.05	.06	.07	.05	.03	270	.04	.05	.06	.07	.05	.02
250	.04	.05	.06	.07	.05	.02	250	.04	.05	.06	.07	.05	.02
230	.04	.05	.06	.07	.05	.02	230	.04	.05	.06	.07	.05	.02
210	.04	.05	.06	.07	.06	.02	210	.04	.05	.06	.07	.05	.02
190	.04	.05	.06	.07	.06	.02	190	.04	.05	.06	.07	.05	.02

FLIGHT LEVEL	10°N N=14					
	MEAN	16%	2%	.1%	MAX	MIN
590	.30	.35	.45	.50	.45	.16
570	.25	.30	.35	.40	.35	.12
550	.16	.20	.25	.30	.20	.07
530	.07	.10	.14	.16	.10	.01
510	.07	.09	.12	.16	.10	.01
490	.06	.09	.12	.14	.09	.01
470	.06	.08	.10	.12	.09	.01
450	.05	.07	.10	.12	.08	.01
430	.05	.07	.09	.10	.08	.01
410	.05	.07	.09	.10	.07	.01
390	.04	.06	.08	.10	.06	.01
370	.04	.06	.08	.09	.06	.01
350	.04	.06	.07	.09	.06	.01
330	.04	.05	.07	.08	.06	.01
310	.04	.05	.06	.07	.06	.01
290	.04	.05	.06	.07	.06	.01
270	.04	.05	.06	.07	.06	.01
250	.04	.05	.06	.07	.05	.01
230	.04	.05	.06	.07	.05	.01
210	.04	.05	.06	.07	.05	.01
190	.03	.04	.05	.06	.05	.01

MARCH - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N N=43							47°N N=131						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.7	3.3	3.8	3.6	1.0	590	2.0	2.6	3.3	4.0	3.9	.30
570	1.9	2.4	2.9	3.4	3.4	.9	570	1.7	2.3	2.9	3.6	3.5	.30
550	1.5	2.0	2.5	3.0	3.1	.7	550	1.4	2.0	2.6	3.1	3.2	.25
530	1.2	1.7	2.1	2.6	2.9	.55	530	1.1	1.6	2.2	2.7	2.7	.25
510	1.1	1.5	2.0	2.4	2.6	.45	510	1.0	1.5	2.0	2.4	2.5	.20
490	1.0	1.4	1.8	2.2	2.3	.35	490	.9	1.3	1.7	2.2	2.2	.18
470	.8	1.2	1.6	2.0	2.0	.25	470	.8	1.1	1.5	1.9	1.8	.14
450	.7	1.0	1.4	1.7	1.6	.14	450	.65	.9	1.3	1.6	1.5	.09
430	.65	.9	1.2	1.5	1.4	.09	430	.55	.8	1.1	1.4	1.3	.07
410	.45	.8	1.1	1.3	1.1	.07	410	.50	.7	1.0	1.2	1.2	.06
390	.45	.7	.9	1.1	.8	.04	390	.40	.60	.8	1.0	1.1	.04
370	.40	.60	.8	1.0	.7	.03	370	.35	.50	.7	.9	.9	.04
350	.30	.45	.65	.8	.60	.02	350	.25	.40	.55	.7	.8	.03
330	.25	.35	.45	.60	.50	.02	330	.20	.30	.40	.55	.60	.02
310	.14	.20	.30	.40	.35	.01	310	.12	.20	.25	.35	.45	.01
290	.09	.14	.20	.25	.25	.01	290	.07	.12	.18	.25	.30	.01
270	.08	.14	.18	.25	.25	.01	270	.06	.10	.14	.20	.25	.01
250	.07	.12	.16	.20	.20	.01	250	.05	.08	.12	.14	.20	.02
230	.06	.10	.14	.18	.18	.00	230	.05	.07	.09	.10	.14	.02
210	.06	.08	.12	.14	.14	.00	210	.05	.06	.08	.10	.14	.01
190	.05	.06	.08	.10	.12	.00	190	.04	.06	.07	.09	.12	.01

39°N N=12						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.4	1.8	2.1	2.5	2.1	.9
570	1.2	1.6	1.9	2.3	2.0	.7
550	1.0	1.4	1.7	2.1	1.8	.55
530	.8	1.1	1.5	1.9	1.6	.30
510	.7	1.1	1.4	1.8	1.4	.30
490	.65	1.0	1.3	1.6	1.3	.25
470	.60	.9	1.1	1.4	1.1	.20
450	.45	.8	1.0	1.2	.9	.14
430	.45	.65	.9	1.1	.8	.12
410	.40	.55	.7	.9	.65	.08
390	.30	.45	.60	.8	.55	.05
370	.25	.40	.50	.60	.50	.04
350	.20	.30	.40	.50	.40	.03
330	.14	.20	.30	.35	.30	.03
310	.08	.12	.16	.20	.20	.02
290	.05	.07	.10	.12	.14	.02
270	.05	.07	.09	.12	.12	.02
250	.05	.07	.08	.10	.10	.02
230	.04	.06	.08	.09	.08	.02
210	.04	.05	.07	.08	.07	.02
190	.04	.05	.06	.07	.05	.02

APRIL - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43°N N=17							36°N N=23						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.4	2.9	3.5	3.0	.9	590	1.3	1.9	2.4	3.0	3.1	.50
570	1.6	2.2	2.7	3.3	2.7	.7	570	1.1	1.6	2.1	2.6	2.6	.40
550	1.4	1.9	2.5	3.1	2.5	.50	550	.9	1.3	1.7	2.1	2.0	.30
530	1.1	1.7	2.3	2.9	2.2	.30	530	.65	1.0	1.3	1.6	1.4	.18
510	1.0	1.5	2.1	2.6	1.9	.30	510	.60	.9	1.2	1.5	1.3	.18
490	.9	1.4	1.8	2.2	1.7	.25	490	.55	.8	1.2	1.5	1.2	.16
470	.8	1.1	1.5	1.9	1.4	.25	470	.50	.8	1.1	1.4	1.1	.12
450	.65	.9	1.2	1.4	1.1	.25	450	.40	.7	1.0	1.3	1.0	.10
430	.60	.8	1.0	1.3	1.0	.20	430	.35	.65	.9	1.2	.9	.09
410	.50	.7	.9	1.2	.9	.14	410	.30	.55	.8	1.0	.9	.08
390	.45	.65	.8	1.0	.8	.10	390	.25	.45	.65	.9	.8	.07
370	.40	.55	.7	.9	.7	.08	370	.20	.40	.55	.7	.7	.06
350	.30	.45	.55	.7	.60	.07	350	.18	.30	.45	.60	.55	.06
330	.25	.30	.40	.50	.45	.06	330	.14	.25	.35	.45	.40	.06
310	.14	.20	.25	.30	.25	.05	310	.10	.16	.20	.25	.25	.05
290	.09	.12	.16	.20	.18	.04	290	.08	.10	.14	.16	.18	.05
270	.09	.12	.16	.18	.16	.04	270	.08	.10	.12	.16	.16	.05
250	.08	.12	.14	.16	.16	.04	250	.07	.10	.12	.14	.14	.04
230	.08	.10	.12	.16	.14	.04	230	.07	.09	.12	.14	.12	.04
210	.07	.09	.12	.14	.12	.04	210	.07	.08	.10	.12	.12	.04
190	.06	.08	.10	.12	.10	.04	190	.06	.08	.09	.10	.09	.04

32°N N=16						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	1.1	1.4	1.7	1.4	.30
570	.65	.9	1.2	1.5	1.2	.25
550	.50	.8	1.0	1.3	1.1	.20
530	.35	.60	.8	1.0	.9	.14
510	.35	.55	.8	1.0	.9	.12
490	.30	.50	.7	1.0	.9	.10
470	.25	.50	.7	.9	.9	.08
450	.25	.45	.65	.9	.9	.06
430	.20	.40	.55	.8	.8	.05
410	.16	.30	.45	.60	.60	.04
390	.14	.25	.35	.45	.40	.03
370	.12	.20	.30	.35	.35	.03
350	.10	.18	.25	.30	.30	.03
330	.09	.14	.20	.25	.25	.03
310	.08	.12	.14	.18	.18	.03
290	.07	.10	.12	.14	.14	.03
270	.07	.09	.12	.14	.14	.03
250	.07	.09	.12	.14	.14	.03
230	.06	.08	.10	.12	.12	.03
210	.06	.08	.10	.12	.12	.03
190	.06	.08	.09	.12	.10	.02

APRIL - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65° N							60° N						
N=11							N=0						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.8	3.1	3.5	3.8	3.7	2.3	590	2.6	2.9	3.3	3.7	3.4	2.0
570	2.5	2.9	3.3	3.7	3.5	2.0	570	2.3	2.7	3.1	3.5	3.2	1.8
550	2.3	2.7	3.1	3.5	3.2	1.7	550	2.0	2.4	2.9	3.3	3.0	1.5
530	2.0	2.4	2.8	3.3	3.0	1.4	530	1.7	2.2	2.6	3.0	2.8	1.2
510	1.8	2.2	2.7	3.1	2.7	1.2	510	1.6	2.0	2.4	2.9	2.6	1.0
490	1.6	2.0	2.5	2.9	2.5	1.0	490	1.4	1.9	2.3	2.7	2.3	.8
470	1.4	1.8	2.2	2.7	2.2	.8	470	1.3	1.7	2.1	2.5	2.1	.65
450	1.2	1.6	2.0	2.4	1.9	.55	450	1.1	1.5	1.9	2.3	1.8	.40
430	1.0	1.4	1.8	2.1	1.7	.50	430	.9	1.3	1.7	2.0	1.6	.40
410	.9	1.2	1.5	1.8	1.4	.40	410	.8	1.1	1.4	1.7	1.3	.35
390	.8	1.0	1.2	1.4	1.1	.35	390	.7	.9	1.2	1.4	1.1	.30
370	.65	.8	1.0	1.2	.9	.30	370	.55	.8	1.0	1.2	.9	.25
350	.50	.65	.8	1.0	.7	.20	350	.45	.65	.8	1.0	.8	.18
330	.35	.50	.60	.7	.55	.14	330	.35	.50	.65	.8	.60	.12
310	.20	.30	.40	.50	.35	.06	310	.20	.35	.45	.55	.45	.06
290	.14	.20	.30	.35	.25	.02	290	.14	.25	.35	.45	.35	.03
270	.12	.18	.25	.30	.20	.02	270	.12	.20	.30	.40	.30	.02
250	.10	.16	.20	.25	.18	.02	250	.10	.18	.25	.30	.25	.02
230	.08	.12	.16	.20	.14	.02	230	.09	.14	.20	.25	.20	.02
210	.06	.09	.12	.16	.10	.02	210	.07	.10	.14	.18	.14	.02
190	.04	.06	.07	.09	.06	.02	190	.05	.07	.09	.12	.09	.02

55° N							50° N						
N=0							N=13						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.8	3.1	3.5	3.2	1.8	590	2.2	2.6	3.0	3.4	2.9	1.6
570	2.1	2.5	2.9	3.3	3.0	1.5	570	1.9	2.3	2.7	3.1	2.8	1.3
550	1.8	2.2	2.6	3.0	2.8	1.2	550	1.6	2.0	2.4	2.8	2.6	1.0
530	1.5	1.9	2.3	2.8	2.6	.9	530	1.2	1.6	2.1	2.5	2.5	.65
510	1.4	1.8	2.2	2.7	2.4	.8	510	1.1	1.6	2.0	2.4	2.3	.55
490	1.2	1.7	2.1	2.5	2.2	.65	490	1.1	1.5	1.9	2.3	2.0	.45
470	1.1	1.5	1.9	2.4	1.9	.55	470	1.0	1.4	1.8	2.2	1.8	.40
450	1.0	1.4	1.8	2.2	1.7	.40	450	.9	1.3	1.7	2.1	1.5	.30
430	.9	1.2	1.6	2.0	1.5	.30	430	.8	1.1	1.5	1.9	1.4	.25
410	.7	1.1	1.4	1.7	1.3	.30	410	.65	1.0	1.3	1.6	1.2	.20
390	.60	.9	1.1	1.4	1.0	.25	390	.55	.8	1.1	1.4	1.0	.18
370	.50	.7	1.0	1.2	.9	.20	370	.45	.7	1.0	1.2	.9	.14
350	.40	.60	.8	1.0	.8	.16	350	.35	.60	.8	1.1	.9	.12
330	.30	.50	.65	.8	.7	.10	330	.30	.50	.7	.9	.8	.09
310	.20	.35	.50	.65	.55	.06	310	.18	.35	.55	.7	.65	.05
290	.14	.25	.40	.50	.45	.03	290	.14	.30	.45	.60	.60	.03
270	.12	.25	.35	.45	.40	.03	270	.12	.25	.40	.50	.50	.03
250	.10	.20	.30	.40	.35	.03	250	.10	.20	.35	.45	.40	.03
230	.09	.16	.25	.30	.25	.03	230	.09	.18	.25	.35	.35	.03
210	.07	.12	.18	.20	.18	.02	210	.08	.14	.20	.25	.25	.02
190	.05	.08	.10	.14	.10	.02	190	.06	.09	.12	.16	.12	.02

APRIL - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45° N							40° N						
N=33							N=71						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.9	2.3	2.6	3.0	2.8	1.2	590	1.4	1.8	2.1	2.4	2.7	.9
570	1.6	2.0	2.4	2.7	2.6	1.0	570	1.2	1.6	1.9	2.2	2.4	.65
550	1.3	1.7	2.1	2.5	2.4	.7	550	1.0	1.4	1.7	2.1	2.1	.45
530	1.0	1.4	1.8	2.2	2.2	.40	530	.8	1.1	1.5	1.9	1.8	.20
510	.9	1.3	1.7	2.1	2.0	.35	510	.7	1.0	1.4	1.7	1.6	.18
490	.8	1.2	1.6	2.0	1.8	.30	490	.65	.9	1.2	1.5	1.5	.16
470	.8	1.1	1.5	1.9	1.6	.25	470	.55	.8	1.1	1.4	1.4	.14
450	.7	1.1	1.4	1.7	1.4	.20	450	.45	.7	.9	1.2	1.2	.10
430	.65	.9	1.3	1.6	1.2	.16	430	.40	.65	.9	1.1	1.1	.08
410	.55	.8	1.1	1.4	1.1	.14	410	.35	.60	.8	1.0	1.0	.06
390	.45	.7	1.0	1.2	1.0	.10	390	.30	.50	.7	.9	.9	.04
370	.35	.60	.8	1.1	.9	.09	370	.25	.45	.65	.8	.8	.03
350	.30	.50	.7	.9	.8	.08	350	.20	.40	.55	.7	.65	.03
330	.25	.40	.60	.8	.7	.06	330	.18	.30	.40	.55	.55	.03
310	.16	.30	.45	.65	.65	.04	310	.12	.20	.30	.40	.45	.03
290	.12	.25	.40	.50	.55	.03	290	.09	.16	.20	.30	.35	.03
270	.10	.20	.35	.45	.50	.03	270	.08	.14	.20	.25	.30	.02
250	.10	.20	.30	.40	.40	.03	250	.08	.12	.18	.25	.25	.02
230	.08	.16	.25	.30	.30	.03	230	.07	.10	.16	.20	.25	.02
210	.07	.12	.18	.25	.25	.02	210	.06	.09	.12	.16	.18	.02
190	.06	.09	.12	.14	.14	.02	190	.05	.07	.09	.12	.12	.02

35° N						
N=18						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.5	1.8	2.2	1.8	.60
570	1.0	1.3	1.7	2.0	1.7	.45
550	.8	1.1	1.5	1.9	1.5	.25
530	.55	.9	1.3	1.7	1.4	.09
510	.50	.8	1.2	1.5	1.3	.08
490	.45	.7	1.0	1.3	1.1	.08
470	.35	.60	.9	1.1	1.0	.07
450	.25	.50	.7	.9	.8	.07
430	.25	.40	.60	.8	.7	.06
410	.20	.35	.50	.65	.60	.04
390	.16	.25	.40	.50	.50	.03
370	.14	.25	.35	.45	.40	.03
350	.12	.20	.30	.35	.35	.03
330	.10	.16	.25	.30	.30	.02
310	.08	.12	.18	.20	.20	.02
290	.07	.10	.14	.18	.16	.02
270	.06	.10	.14	.16	.14	.02
250	.06	.09	.12	.16	.14	.02
230	.05	.08	.12	.14	.12	.02
210	.05	.08	.10	.12	.12	.02
190	.04	.07	.09	.12	.10	.02

APRIL - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80° N							75° N						
N=15							N=45						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	3.3	3.8	4.3	4.8	4.2	1.8	590	3.1	3.6	4.1	4.6	4.2	1.8
570	3.0	3.5	4.0	4.5	4.0	1.6	570	2.9	3.3	3.8	4.3	4.0	1.6
550	2.8	3.2	3.7	4.1	3.8	1.3	550	2.6	3.1	3.5	4.0	3.8	1.3
530	2.5	2.9	3.3	3.8	3.5	1.0	530	2.3	2.7	3.2	3.6	3.5	1.0
510	2.2	2.7	3.1	3.5	3.2	.9	510	2.1	2.5	2.9	3.3	3.2	.9
490	2.0	2.4	2.8	3.2	2.9	.7	490	1.9	2.3	2.6	3.0	2.9	.7
470	1.7	2.1	2.5	2.8	2.5	.60	470	1.6	2.0	2.3	2.7	2.5	.55
450	1.4	1.8	2.1	2.4	2.1	.45	450	1.3	1.7	2.0	2.3	2.1	.40
430	1.2	1.5	1.8	2.1	1.8	.40	430	1.2	1.5	1.8	2.1	1.8	.35
410	1.1	1.3	1.6	1.9	1.5	.40	410	1.0	1.3	1.5	1.8	1.5	.40
390	.8	1.1	1.3	1.6	1.3	.40	390	.8	1.0	1.3	1.5	1.3	.40
370	.7	.9	1.1	1.3	1.1	.35	370	.7	.9	1.1	1.3	1.1	.35
350	.60	.8	1.0	1.2	1.0	.25	350	.55	.7	.9	1.1	1.0	.25
330	.50	.65	.8	.9	.8	.18	330	.45	.60	.8	.9	.8	.18
310	.35	.45	.60	.7	.7	.10	310	.30	.45	.55	.7	.7	.10
290	.25	.35	.45	.55	.55	.06	290	.25	.35	.45	.55	.55	.06
270	.20	.30	.35	.45	.45	.05	270	.18	.25	.35	.45	.45	.05
250	.14	.20	.25	.35	.35	.04	250	.12	.20	.25	.30	.35	.04
230	.08	.14	.18	.25	.30	.03	230	.08	.14	.18	.25	.30	.03
210	.07	.12	.16	.20	.20	.03	210	.07	.10	.14	.18	.20	.02
190	.06	.09	.12	.14	.12	.02	190	.06	.08	.10	.14	.12	.01

70° N							65° N						
N=25							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	3.0	3.4	3.9	4.4	4.1	1.9	590	2.8	3.3	3.8	4.3	3.9	2.0
570	2.7	3.2	3.7	4.1	3.9	1.7	570	2.6	3.0	3.5	4.0	3.8	1.8
550	2.4	2.9	3.3	3.8	3.7	1.4	550	2.3	2.8	3.2	3.7	3.6	1.5
530	2.1	2.6	3.0	3.4	3.5	1.1	530	2.0	2.4	2.9	3.3	3.5	1.2
510	1.9	2.4	2.8	3.2	3.2	.9	510	1.8	2.2	2.7	3.1	3.2	1.0
490	1.7	2.1	2.5	2.9	2.9	.8	490	1.6	2.0	2.4	2.8	2.8	.8
470	1.5	1.9	2.2	2.6	2.5	.55	470	1.4	1.8	2.1	2.5	2.4	.60
450	1.3	1.6	1.9	2.3	2.1	.35	450	1.2	1.5	1.8	2.2	2.0	.35
430	1.1	1.4	1.7	2.0	1.8	.30	430	1.0	1.3	1.6	1.9	1.7	.30
410	.9	1.2	1.5	1.7	1.5	.30	410	.9	1.1	1.4	1.7	1.4	.25
390	.7	1.0	1.2	1.4	1.2	.30	390	.7	.9	1.2	1.4	1.2	.25
370	.65	.8	1.0	1.3	1.0	.25	370	.60	.8	1.0	1.2	1.0	.20
350	.55	.7	.9	1.1	.9	.20	350	.50	.65	.9	1.0	.9	.16
330	.40	.55	.7	.9	.8	.14	330	.40	.55	.7	.9	.7	.12
310	.30	.40	.55	.65	.60	.08	310	.30	.40	.55	.65	.60	.06
290	.20	.30	.40	.50	.50	.05	290	.20	.30	.40	.50	.45	.03
270	.16	.25	.35	.40	.40	.04	270	.16	.25	.35	.40	.35	.03
250	.12	.18	.25	.30	.30	.04	250	.12	.18	.25	.30	.25	.02
230	.08	.12	.18	.20	.25	.03	230	.08	.12	.18	.25	.18	.02
210	.07	.10	.14	.18	.18	.02	210	.06	.10	.14	.18	.14	.02
190	.05	.07	.09	.12	.10	.01	190	.05	.07	.09	.12	.09	.01

APRIL - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60° N							55° N						
N=8							N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.7	3.2	3.7	4.1	3.6	2.0	590	2.5	3.0	3.4	3.9	3.5	1.7
570	2.4	2.9	3.4	3.9	3.6	1.8	570	2.2	2.7	3.2	3.6	3.5	1.5
550	2.2	2.6	3.1	3.5	3.6	1.5	550	1.9	2.4	2.9	3.3	3.4	1.4
530	1.9	2.3	2.7	3.2	3.6	1.2	530	1.6	2.1	2.5	3.0	3.3	1.2
510	1.7	2.1	2.5	2.9	3.2	1.0	510	1.5	1.9	2.3	2.7	2.9	1.0
490	1.5	1.9	2.3	2.7	2.8	.8	490	1.3	1.7	2.1	2.5	2.4	.9
470	1.3	1.7	2.0	2.4	2.3	.60	470	1.1	1.5	1.9	2.2	1.9	.65
450	1.1	1.4	1.8	2.1	1.8	.40	450	.9	1.3	1.6	2.0	1.4	.45
430	.9	1.2	1.5	1.9	1.6	.30	430	.8	1.1	1.4	1.7	1.2	.35
410	.8	1.1	1.3	1.6	1.4	.25	410	.7	1.0	1.3	1.5	1.1	.25
390	.60	.9	1.1	1.4	1.1	.16	390	.55	.8	1.1	1.3	1.0	.14
370	.55	.7	1.0	1.2	1.0	.12	370	.45	.7	.9	1.1	.9	.10
350	.45	.65	.8	1.0	.9	.09	350	.40	.60	.8	1.0	.8	.08
330	.35	.50	.65	.8	.7	.07	330	.30	.45	.65	.8	.65	.06
310	.25	.40	.50	.65	.55	.04	310	.20	.35	.50	.60	.50	.03
290	.18	.30	.40	.50	.40	.02	290	.16	.25	.35	.45	.40	.02
270	.16	.25	.35	.40	.35	.02	270	.14	.20	.30	.40	.35	.02
250	.12	.18	.25	.30	.25	.02	250	.10	.16	.25	.30	.25	.02
230	.08	.12	.18	.25	.18	.02	230	.08	.12	.16	.20	.18	.02
210	.06	.10	.14	.18	.14	.02	210	.06	.10	.14	.18	.14	.02
190	.05	.07	.09	.12	.08	.01	190	.05	.08	.10	.14	.09	.01

50° N							45° N						
N=15							N=20						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.7	3.2	3.7	3.4	1.3	590	2.0	2.4	2.9	3.3	3.2	.7
570	2.0	2.5	2.9	3.4	3.3	1.1	570	1.7	2.2	2.6	3.0	3.0	.60
550	1.7	2.2	2.6	3.1	3.1	.9	550	1.5	1.9	2.3	2.7	2.8	.45
530	1.4	1.9	2.3	2.7	3.0	.7	530	1.2	1.6	2.0	2.4	2.5	.30
510	1.3	1.7	2.1	2.5	2.7	.65	510	1.1	1.5	1.8	2.2	2.4	.30
490	1.1	1.5	1.9	2.3	2.4	.55	490	1.0	1.3	1.7	2.1	2.2	.25
470	1.0	1.3	1.7	2.1	2.0	.50	470	.8	1.2	1.5	1.9	2.0	.25
450	.8	1.1	1.5	1.8	1.6	.40	450	.7	1.0	1.3	1.6	1.8	.20
430	.7	1.0	1.3	1.6	1.4	.35	430	.60	.9	1.2	1.5	1.7	.16
410	.60	.9	1.2	1.5	1.3	.25	410	.50	.8	1.1	1.3	1.6	.12
390	.50	.7	1.0	1.2	1.2	.12	390	.40	.65	.9	1.2	1.5	.08
370	.40	.65	.9	1.1	1.1	.09	370	.35	.60	.8	1.0	1.3	.06
350	.35	.55	.7	.9	.9	.07	350	.30	.50	.65	.9	1.1	.05
330	.25	.45	.60	.8	.8	.05	330	.25	.40	.55	.7	.9	.04
310	.20	.30	.45	.55	.60	.03	310	.16	.25	.40	.50	.65	.03
290	.14	.25	.35	.45	.45	.02	290	.12	.20	.30	.35	.50	.02
270	.12	.20	.30	.35	.40	.02	270	.10	.16	.25	.30	.45	.02
250	.09	.16	.20	.25	.30	.02	250	.08	.14	.18	.25	.35	.02
230	.07	.12	.16	.20	.25	.02	230	.07	.10	.14	.18	.30	.02
210	.07	.10	.14	.16	.18	.02	210	.07	.10	.12	.16	.20	.02
190	.06	.09	.10	.14	.10	.01	190	.06	.09	.12	.14	.14	.02

APRIL - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40° N							35° N						
N=50							N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.1	2.5	2.9	3.0	.60	590	1.4	1.8	2.1	2.5	2.3	.55
570	1.5	1.9	2.3	2.7	2.7	.50	570	1.2	1.5	1.9	2.2	2.0	.45
550	1.2	1.6	2.0	2.4	2.4	.40	550	1.0	1.3	1.6	1.9	1.7	.30
530	1.0	1.3	1.7	2.0	2.0	.25	530	.7	1.0	1.3	1.6	1.4	.20
510	.9	1.2	1.6	1.9	2.0	.20	510	.65	.9	1.2	1.5	1.3	.18
490	.8	1.1	1.5	1.8	1.9	.18	490	.60	.8	1.1	1.3	1.2	.14
470	.7	1.0	1.3	1.6	1.9	.14	470	.50	.7	1.0	1.2	1.1	.10
450	.55	.9	1.2	1.5	1.8	.09	450	.40	.60	.8	1.0	.9	.07
430	.50	.8	1.1	1.4	1.7	.07	430	.35	.55	.7	.9	.9	.05
410	.40	.7	1.0	1.2	1.6	.06	410	.30	.45	.65	.8	.8	.04
390	.35	.60	.9	1.1	1.5	.04	390	.20	.40	.55	.7	.7	.03
370	.30	.50	.7	1.0	1.3	.04	370	.18	.30	.45	.60	.65	.03
350	.25	.40	.60	.8	1.1	.04	350	.16	.25	.40	.50	.55	.03
330	.18	.35	.45	.60	.9	.03	330	.12	.20	.30	.40	.40	.02
310	.12	.20	.30	.40	.65	.03	310	.09	.16	.20	.30	.30	.02
290	.09	.16	.25	.30	.50	.03	290	.07	.12	.18	.20	.25	.02
270	.08	.14	.20	.25	.40	.03	270	.07	.10	.14	.18	.20	.02
250	.07	.12	.16	.20	.30	.02	250	.06	.09	.12	.16	.16	.02
230	.07	.10	.12	.16	.20	.02	230	.06	.08	.10	.12	.14	.02
210	.07	.09	.12	.14	.16	.02	210	.06	.08	.10	.12	.12	.02
190	.06	.09	.12	.14	.12	.02	190	.06	.08	.09	.12	.10	.02

30° N							25° N						
N=20							N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.4	1.7	2.0	1.6	.35	590	.9	1.2	1.4	1.6	1.3	.30
570	.8	1.1	1.4	1.6	1.3	.30	570	.7	.9	1.1	1.3	1.1	.25
550	.55	.8	1.0	1.3	1.0	.20	550	.50	.65	.8	.9	.8	.16
530	.30	.50	.65	.8	.7	.12	530	.25	.35	.45	.55	.55	.09
510	.25	.45	.60	.7	.60	.10	510	.20	.30	.40	.50	.50	.08
490	.25	.40	.50	.65	.55	.09	490	.20	.25	.35	.45	.40	.07
470	.20	.30	.45	.55	.45	.07	470	.16	.25	.30	.35	.35	.06
450	.16	.25	.35	.40	.30	.05	450	.12	.18	.25	.30	.25	.04
430	.14	.20	.30	.35	.30	.04	430	.12	.16	.20	.25	.25	.04
410	.12	.18	.25	.30	.25	.03	410	.10	.14	.18	.25	.20	.03
390	.10	.14	.20	.25	.20	.02	390	.08	.12	.16	.20	.16	.02
370	.09	.14	.18	.20	.18	.02	370	.08	.12	.14	.18	.14	.02
350	.08	.12	.16	.20	.16	.02	350	.07	.10	.14	.16	.12	.02
330	.07	.10	.14	.18	.14	.02	330	.06	.09	.12	.16	.12	.02
310	.06	.09	.12	.16	.10	.02	310	.06	.08	.10	.14	.09	.02
290	.06	.08	.12	.14	.09	.02	290	.05	.08	.10	.12	.08	.02
270	.05	.08	.10	.12	.09	.02	270	.05	.07	.09	.12	.08	.02
250	.05	.07	.10	.12	.08	.02	250	.05	.07	.09	.10	.08	.02
230	.05	.07	.09	.10	.08	.02	230	.05	.06	.08	.10	.08	.02
210	.05	.07	.08	.10	.08	.02	210	.05	.06	.08	.10	.08	.02
190	.05	.06	.08	.09	.07	.02	190	.05	.06	.08	.10	.08	.02

APRIL - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20°N							15°N						
N=14							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.7	.9	1.1	1.2	1.0	.30	590	.50	.65	.8	.9	.8	.18
570	.55	.7	.8	1.0	.8	.25	570	.40	.50	.60	.7	.60	.14
550	.40	.50	.60	.7	.60	.14	550	.25	.35	.45	.50	.45	.09
530	.20	.30	.35	.45	.40	.06	530	.12	.18	.25	.30	.25	.05
510	.18	.25	.30	.40	.35	.06	510	.12	.16	.20	.25	.25	.05
490	.16	.20	.30	.35	.30	.05	490	.10	.14	.20	.25	.20	.04
470	.12	.18	.25	.30	.25	.05	470	.09	.14	.18	.20	.18	.04
450	.09	.14	.18	.25	.20	.04	450	.08	.12	.14	.18	.16	.03
430	.08	.12	.16	.20	.18	.04	430	.07	.10	.14	.16	.14	.03
410	.08	.12	.14	.18	.14	.03	410	.06	.09	.12	.14	.12	.02
390	.07	.10	.12	.16	.10	.03	390	.06	.08	.10	.14	.10	.02
370	.07	.09	.12	.14	.10	.03	370	.05	.08	.10	.12	.10	.02
350	.06	.09	.12	.14	.09	.03	350	.05	.07	.10	.12	.09	.02
330	.06	.08	.10	.12	.08	.02	330	.05	.07	.09	.12	.09	.01
310	.05	.07	.09	.12	.07	.02	310	.05	.07	.09	.10	.08	.01
290	.05	.07	.09	.10	.07	.02	290	.04	.06	.08	.10	.08	.01
270	.05	.07	.09	.10	.07	.02	270	.04	.06	.08	.10	.08	.01
250	.04	.06	.08	.10	.08	.02	250	.04	.06	.08	.10	.08	.01
230	.04	.06	.08	.10	.08	.02	230	.04	.06	.08	.10	.08	.01
210	.04	.06	.08	.10	.09	.02	210	.04	.06	.08	.10	.09	.01
190	.04	.06	.08	.10	.10	.02	190	.04	.06	.08	.10	.09	.01

10°N						
N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.35	.45	.55	.65	.60	.12
570	.25	.35	.45	.50	.45	.10
550	.18	.25	.30	.35	.30	.07
530	.09	.12	.16	.18	.12	.04
510	.08	.12	.14	.18	.12	.04
490	.08	.10	.14	.16	.12	.03
470	.07	.10	.12	.16	.12	.03
450	.06	.09	.12	.14	.12	.02
430	.06	.08	.10	.12	.12	.02
410	.05	.07	.09	.12	.10	.01
390	.04	.06	.08	.10	.10	.01
370	.04	.06	.08	.10	.10	.01
350	.04	.06	.08	.10	.10	.01
330	.04	.06	.08	.10	.09	.01
310	.04	.06	.08	.10	.09	.01
290	.04	.06	.08	.10	.09	.01
270	.04	.06	.08	.10	.09	.01
250	.04	.06	.08	.10	.08	.00
230	.04	.06	.08	.10	.08	.00
210	.04	.06	.08	.10	.08	.00
190	.04	.06	.08	.10	.08	.00

APRIL - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52° N							47° N						
N=47							N=123						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.6	3.0	3.4	3.0	1.1	590	2.1	2.7	3.3	3.9	6.7	.8
570	1.9	2.3	2.7	3.1	2.7	.9	570	1.8	2.4	2.9	3.5	5.7	.65
550	1.6	1.9	2.3	2.7	2.4	.8	550	1.5	2.1	2.6	3.1	4.6	.45
530	1.2	1.6	1.9	2.2	2.1	.65	530	1.2	1.7	2.2	2.7	3.4	.25
510	1.1	1.4	1.8	2.1	1.9	.55	510	1.1	1.6	2.0	2.5	3.1	.25
490	1.0	1.3	1.6	1.9	1.8	.45	490	1.0	1.4	1.8	2.2	2.8	.18
470	.8	1.1	1.4	1.7	1.7	.35	470	.9	1.2	1.6	1.9	2.5	.14
450	.65	.9	1.2	1.5	1.5	.25	450	.7	1.0	1.3	1.6	2.2	.08
430	.60	.9	1.1	1.4	1.4	.20	430	.60	.9	1.2	1.5	1.8	.06
410	.55	.8	1.0	1.3	1.2	.16	410	.55	.8	1.0	1.3	1.4	.04
390	.50	.7	.9	1.1	1.0	.10	390	.45	.65	.9	1.1	1.0	.02
370	.45	.65	.8	1.0	.8	.07	370	.35	.55	.8	.9	.9	.01
350	.35	.55	.7	.9	.7	.06	350	.30	.45	.60	.8	.7	.01
330	.30	.45	.60	.7	.60	.04	330	.20	.35	.45	.40	.60	.01
310	.18	.30	.45	.60	.50	.02	310	.14	.20	.30	.40	.45	.01
290	.14	.25	.35	.45	.40	.01	290	.09	.16	.20	.30	.30	.00
270	.12	.20	.30	.40	.35	.01	270	.07	.12	.16	.20	.25	.01
250	.10	.18	.25	.35	.30	.01	250	.06	.09	.12	.14	.14	.01
230	.09	.16	.20	.25	.25	.01	230	.05	.06	.08	.09	.08	.01
210	.07	.12	.16	.20	.16	.01	210	.05	.06	.08	.09	.10	.01
190	.06	.07	.09	.12	.10	.01	190	.05	.06	.08	.09	.12	.01

39° N						
N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.0	2.4	2.8	2.9	1.1
570	1.5	1.8	2.2	2.6	2.5	.8
550	1.2	1.6	1.9	2.3	2.0	.55
530	1.0	1.3	1.7	2.0	1.5	.25
510	.9	1.2	1.6	1.9	1.4	.20
490	.8	1.2	1.5	1.8	1.3	.20
470	.7	1.0	1.4	1.7	1.2	.16
450	.60	.9	1.2	1.5	1.1	.14
430	.55	.8	1.1	1.4	1.0	.10
410	.50	.7	1.0	1.3	1.0	.07
390	.40	.65	.9	1.1	.9	.03
370	.35	.55	.7	.9	.7	.02
350	.30	.45	.60	.8	.60	.02
330	.20	.35	.45	.60	.45	.02
310	.14	.20	.30	.40	.30	.02
290	.09	.16	.20	.25	.25	.02
270	.08	.12	.18	.20	.18	.02
250	.07	.10	.14	.16	.14	.02
230	.06	.08	.10	.12	.12	.03
210	.06	.07	.09	.10	.12	.03
190	.06	.07	.09	.10	.12	.03

MAY - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43° N							36° N						
N=14							N=20						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.8	2.0	2.3	2.0	1.2	590	1.2	1.5	1.9	2.3	2.1	.8
570	1.4	1.6	1.9	2.2	1.9	1.0	570	1.0	1.3	1.6	2.0	1.8	.60
550	1.1	1.5	1.8	2.1	1.7	.7	550	.8	1.1	1.4	1.7	1.5	.40
530	.9	1.3	1.6	1.9	1.5	.40	530	.50	.8	1.0	1.3	1.2	.20
510	.9	1.1	1.4	1.7	1.4	.40	510	.50	.7	1.0	1.2	1.1	.20
490	.8	1.0	1.3	1.5	1.3	.35	490	.45	.65	.9	1.1	.9	.16
470	.65	.9	1.1	1.3	1.1	.35	470	.40	.60	.8	1.0	.8	.14
450	.55	.7	.9	1.0	1.0	.35	450	.35	.50	.65	.8	.65	.10
430	.45	.7	.8	1.0	.9	.30	430	.30	.45	.60	.8	.60	.08
410	.50	.7	.9	1.0	.8	.25	410	.25	.40	.55	.7	.60	.07
390	.45	.65	.9	1.1	.8	.16	390	.20	.35	.50	.60	.55	.06
370	.40	.60	.8	1.0	.7	.14	370	.18	.30	.40	.55	.50	.05
350	.35	.50	.7	.9	.65	.12	350	.16	.25	.35	.45	.40	.05
330	.25	.40	.55	.7	.55	.09	330	.14	.20	.30	.35	.30	.04
310	.18	.30	.40	.55	.45	.06	310	.10	.16	.20	.25	.25	.04
290	.14	.25	.35	.45	.40	.05	290	.09	.12	.16	.20	.18	.03
270	.12	.20	.30	.40	.35	.05	270	.09	.12	.16	.18	.18	.03
250	.12	.18	.25	.35	.30	.05	250	.08	.12	.16	.18	.18	.03
230	.10	.16	.20	.25	.25	.05	230	.08	.12	.14	.18	.18	.03
210	.09	.12	.16	.20	.18	.05	210	.08	.12	.14	.18	.18	.03
190	.08	.10	.12	.14	.12	.05	190	.08	.10	.14	.16	.16	.03

32° N						
N=16						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.2	1.4	1.6	1.3	.50
570	.7	.9	1.1	1.3	1.1	.40
550	.50	.65	.8	1.0	.9	.30
530	.25	.40	.50	.65	.65	.14
510	.25	.35	.50	.60	.60	.12
490	.20	.35	.45	.60	.60	.10
470	.20	.30	.45	.55	.55	.09
450	.18	.30	.40	.50	.50	.07
430	.16	.25	.35	.45	.45	.06
410	.14	.20	.30	.35	.30	.05
390	.10	.16	.20	.25	.20	.03
370	.10	.14	.18	.20	.18	.03
350	.09	.14	.16	.20	.16	.04
330	.09	.12	.16	.18	.14	.04
310	.08	.10	.14	.16	.14	.04
290	.08	.10	.12	.16	.12	.04
270	.07	.10	.12	.14	.12	.04
250	.07	.10	.12	.14	.12	.04
230	.07	.09	.12	.14	.10	.04
210	.07	.09	.10	.12	.10	.04
190	.07	.08	.10	.12	.09	.04

MAY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65°N N=12							60°N N=0						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.7	3.0	3.4	3.8	3.4	2.0	590	2.5	2.9	3.3	3.8	3.4	1.8
570	2.4	2.8	3.2	3.6	3.2	1.7	570	2.2	2.7	3.1	3.6	3.1	1.5
550	2.0	2.5	2.9	3.4	3.0	1.3	550	1.9	2.4	2.9	3.3	2.9	1.2
530	1.7	2.2	2.7	3.1	2.7	.9	530	1.6	2.1	2.6	3.1	2.6	.8
510	1.5	1.9	2.4	2.8	2.4	.8	510	1.4	1.9	2.3	2.8	2.3	.7
490	1.3	1.6	2.0	2.4	2.0	.7	490	1.2	1.6	2.0	2.4	2.0	.65
470	1.1	1.4	1.7	2.0	1.7	.65	470	1.0	1.4	1.7	2.0	1.7	.55
450	.8	1.0	1.3	1.5	1.3	.55	450	.8	1.1	1.3	1.5	1.3	.40
430	.7	.9	1.2	1.4	1.1	.40	430	.7	1.0	1.2	1.4	1.2	.35
410	.65	.9	1.1	1.4	1.1	.30	410	.65	.9	1.1	1.4	1.1	.25
390	.55	.8	1.1	1.4	1.0	.16	390	.55	.8	1.1	1.4	1.0	.18
370	.50	.7	1.0	1.2	.9	.12	370	.50	.7	1.0	1.2	.9	.09
350	.40	.65	.9	1.1	.8	.09	350	.40	.60	.8	1.0	.8	.08
330	.30	.50	.7	.9	.65	.07	330	.30	.50	.65	.9	.65	.06
310	.20	.40	.55	.7	.50	.04	310	.20	.35	.50	.65	.50	.03
290	.16	.30	.40	.55	.40	.02	290	.16	.30	.40	.50	.40	.02
270	.14	.25	.35	.50	.35	.02	270	.14	.25	.35	.45	.35	.02
250	.12	.20	.30	.40	.30	.02	250	.12	.20	.30	.40	.30	.02
230	.10	.18	.25	.35	.25	.02	230	.10	.18	.25	.30	.25	.02
210	.08	.14	.20	.25	.18	.02	210	.08	.12	.18	.25	.18	.02
190	.06	.09	.12	.16	.12	.02	190	.06	.09	.12	.14	.12	.02

55°N N=0							50°N N=21						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.8	3.2	3.7	3.3	1.6	590	2.2	2.6	3.1	3.6	3.3	1.4
570	2.1	2.5	3.0	3.5	3.1	1.3	570	1.9	2.4	2.9	3.4	3.0	1.2
550	1.8	2.3	2.8	3.3	2.8	1.0	550	1.7	2.2	2.7	3.2	2.8	.9
530	1.5	2.0	2.5	3.0	2.6	.7	530	1.4	2.0	2.5	3.0	2.5	.60
510	1.4	1.8	2.3	2.7	2.3	.65	510	1.3	1.8	2.2	2.7	2.3	.55
490	1.2	1.6	2.0	2.4	2.0	.55	490	1.2	1.6	2.0	2.4	2.0	.45
470	1.0	1.3	1.7	2.0	1.7	.45	470	1.0	1.3	1.7	2.0	1.7	.35
450	.8	1.1	1.3	1.6	1.3	.30	450	.8	1.1	1.4	1.7	1.4	.20
430	.7	1.0	1.2	1.5	1.2	.25	430	.7	1.0	1.3	1.5	1.2	.16
410	.65	.9	1.2	1.4	1.1	.18	410	.65	.9	1.2	1.4	1.1	.10
390	.55	.8	1.1	1.4	1.0	.09	390	.60	.8	1.1	1.3	1.0	.06
370	.50	.7	1.0	1.2	.9	.07	370	.50	.7	1.0	1.2	.9	.05
350	.40	.60	.8	1.0	.7	.06	350	.40	.60	.8	1.0	.7	.04
330	.30	.50	.65	.8	.60	.04	330	.30	.45	.65	.8	.60	.03
310	.20	.35	.45	.60	.45	.03	310	.20	.30	.45	.55	.45	.03
290	.14	.25	.35	.45	.35	.02	290	.14	.25	.35	.45	.35	.02
270	.14	.25	.30	.40	.35	.02	270	.12	.20	.30	.40	.30	.02
250	.12	.20	.25	.35	.30	.02	250	.10	.18	.25	.30	.25	.02
230	.10	.16	.20	.30	.25	.02	230	.09	.14	.20	.25	.20	.02
210	.08	.12	.16	.20	.18	.02	210	.07	.12	.16	.20	.18	.02
190	.05	.08	.10	.14	.12	.02	190	.05	.08	.10	.12	.12	.02

MAY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	45°N N=40						FLIGHT LEVEL	40°N N=75					
	MEAN	16%	2%	.1%	MAX	MIN		MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.3	2.7	3.2	3.0	1.1	590	1.3	1.7	2.1	2.5	2.5	.60
570	1.6	2.1	2.5	3.0	2.8	.9	570	1.1	1.5	1.9	2.3	2.4	.50
550	1.4	1.8	2.3	2.8	2.6	.65	550	.9	1.2	1.6	2.0	2.4	.35
530	1.1	1.6	2.1	2.5	2.4	.45	530	.7	1.0	1.3	1.7	2.3	.25
510	1.0	1.5	1.9	2.3	2.2	.40	510	.65	.9	1.2	1.5	2.0	.20
490	.9	1.3	1.7	2.1	1.9	.30	490	.55	.9	1.1	1.4	1.8	.16
470	.8	1.1	1.5	1.8	1.7	.20	470	.50	.8	1.0	1.3	1.5	.12
450	.7	1.0	1.2	1.5	1.4	.12	450	.45	.65	.9	1.1	1.2	.09
430	.60	.9	1.1	1.4	1.2	.09	430	.40	.60	.8	1.0	1.1	.07
410	.55	.8	1.0	1.3	1.0	.07	410	.30	.50	.7	.9	.9	.05
390	.45	.7	.9	1.2	.9	.04	390	.25	.45	.60	.8	.7	.03
370	.40	.60	.8	1.0	.8	.03	370	.20	.40	.55	.7	.65	.03
350	.30	.50	.7	.9	.7	.03	350	.18	.30	.45	.60	.60	.02
330	.25	.40	.55	.7	.55	.02	330	.14	.25	.35	.50	.55	.02
310	.16	.25	.40	.50	.45	.02	310	.10	.18	.30	.45	.45	.02
290	.12	.20	.30	.35	.35	.02	290	.08	.14	.20	.30	.40	.01
270	.10	.18	.25	.35	.30	.02	270	.08	.14	.20	.25	.35	.01
250	.09	.16	.20	.30	.25	.02	250	.07	.12	.18	.20	.30	.01
230	.08	.12	.18	.25	.20	.02	230	.07	.10	.14	.18	.25	.01
210	.07	.10	.14	.18	.18	.01	210	.06	.09	.12	.14	.18	.01
190	.05	.07	.10	.12	.12	.01	190	.05	.07	.09	.10	.10	.01

FLIGHT LEVEL	35°N N=19					
	MEAN	16%	2%	.1%	MAX	MIN
590	1.0	1.3	1.6	1.9	1.5	.45
570	.8	1.1	1.4	1.7	1.3	.40
550	.60	.9	1.1	1.3	1.1	.30
530	.45	.60	.8	1.0	.9	.18
510	.40	.60	.8	1.0	.9	.14
490	.35	.60	.8	1.0	1.0	.12
470	.35	.55	.8	1.0	1.0	.09
450	.30	.55	.8	1.1	1.1	.05
430	.25	.50	.7	.9	.9	.04
410	.20	.40	.55	.7	.65	.04
390	.16	.25	.35	.45	.40	.04
370	.14	.20	.30	.40	.30	.04
350	.12	.18	.25	.35	.25	.03
330	.10	.16	.20	.25	.20	.03
310	.07	.12	.16	.20	.18	.02
290	.06	.09	.12	.16	.14	.02
270	.06	.09	.12	.14	.14	.02
250	.05	.08	.10	.14	.12	.02
230	.05	.07	.10	.12	.10	.02
210	.04	.06	.08	.10	.09	.02
190	.04	.05	.07	.08	.08	.02

MAY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80° N							75° N						
N=20							N=40						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.8	3.3	3.8	4.3	3.6	1.9	590	2.6	3.1	3.6	4.1	3.6	1.9
570	2.6	3.1	3.5	4.0	3.4	1.5	570	2.4	2.9	3.4	3.8	3.4	1.5
550	2.3	2.8	3.2	3.7	3.2	1.1	550	2.2	2.6	3.1	3.5	3.2	1.1
530	2.1	2.5	2.9	3.4	3.0	.60	530	1.9	2.4	2.8	3.2	3.0	.60
510	1.9	2.3	2.7	3.1	2.7	.55	510	1.7	2.2	2.6	3.0	2.7	.55
490	1.7	2.1	2.5	2.9	2.4	.50	490	1.6	2.0	2.3	2.7	2.4	.50
470	1.5	1.8	2.2	2.6	2.0	.45	470	1.4	1.7	2.1	2.4	2.0	.45
450	1.2	1.6	1.9	2.2	1.7	.40	450	1.1	1.5	1.8	2.1	1.7	.40
430	1.1	1.4	1.7	2.0	1.5	.40	430	1.0	1.3	1.6	1.9	1.5	.40
410	.9	1.2	1.5	1.8	1.3	.35	410	.9	1.1	1.4	1.7	1.3	.35
390	.8	1.0	1.3	1.5	1.1	.30	390	.7	1.0	1.2	1.4	1.1	.30
370	.7	.9	1.1	1.3	1.0	.25	370	.65	.8	1.1	1.3	1.0	.25
350	.60	.8	1.0	1.1	.9	.20	350	.55	.7	.9	1.1	.9	.20
330	.45	.65	.8	1.0	.8	.14	330	.45	.60	.8	.9	.8	.14
310	.35	.50	.60	.8	.60	.07	310	.35	.45	.60	.7	.60	.07
290	.25	.35	.50	.60	.50	.04	290	.25	.35	.50	.60	.50	.04
270	.20	.30	.40	.50	.40	.04	270	.20	.30	.40	.50	.40	.04
250	.14	.20	.30	.40	.30	.03	250	.14	.20	.30	.35	.30	.03
230	.08	.16	.20	.30	.25	.03	230	.08	.14	.20	.25	.25	.03
210	.07	.12	.18	.20	.18	.03	210	.07	.12	.16	.20	.18	.03
190	.06	.09	.12	.14	.12	.02	190	.06	.09	.12	.14	.12	.02

70° N							65° N						
N=20							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.9	3.4	3.9	3.6	1.9	590	2.3	2.8	3.3	3.8	3.6	1.9
570	2.2	2.7	3.2	3.7	3.4	1.5	570	2.1	2.6	3.1	3.6	3.4	1.5
550	2.0	2.5	2.9	3.4	3.1	1.1	550	1.9	2.4	2.8	3.3	3.2	1.1
530	1.8	2.2	2.6	3.1	2.9	.65	530	1.7	2.1	2.5	3.0	2.9	.7
510	1.6	2.0	2.4	2.8	2.6	.60	510	1.5	1.9	2.4	2.8	2.6	.60
490	1.4	1.8	2.2	2.6	2.3	.50	490	1.4	1.8	2.2	2.5	2.3	.50
470	1.2	1.6	2.0	2.3	2.0	.40	470	1.2	1.6	1.9	2.3	1.9	.35
450	1.0	1.4	1.7	2.0	1.7	.30	450	1.0	1.4	1.7	2.0	1.6	.25
430	.9	1.2	1.5	1.8	1.5	.30	430	.9	1.2	1.5	1.8	1.4	.20
410	.8	1.1	1.3	1.6	1.3	.25	410	.8	1.1	1.3	1.6	1.3	.20
390	.7	.9	1.1	1.4	1.1	.25	390	.65	.9	1.1	1.4	1.1	.20
370	.60	.8	1.0	1.2	1.0	.20	370	.55	.8	1.0	1.2	1.0	.18
350	.50	.7	.9	1.1	.9	.16	350	.50	.65	.9	1.0	.9	.14
330	.45	.60	.7	.9	.7	.12	330	.40	.55	.7	.9	.7	.10
310	.35	.45	.60	.7	.60	.07	310	.30	.40	.55	.7	.60	.06
290	.25	.35	.45	.55	.45	.04	290	.20	.35	.45	.55	.45	.04
270	.20	.30	.40	.45	.40	.04	270	.18	.25	.35	.45	.40	.04
250	.14	.20	.30	.35	.30	.03	250	.12	.20	.25	.35	.30	.03
230	.08	.14	.20	.25	.25	.03	230	.08	.14	.20	.25	.25	.03
210	.07	.12	.16	.20	.18	.03	210	.07	.12	.16	.20	.16	.03
190	.06	.09	.12	.14	.10	.02	190	.06	.08	.10	.14	.10	.02

MAY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60° N							55° N						
N=12							N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.7	3.2	3.7	3.7	1.9	590	2.2	2.6	3.1	3.5	3.6	1.4
570	2.0	2.5	3.0	3.5	3.5	1.5	570	1.9	2.4	2.8	3.2	3.4	1.2
550	1.8	2.3	2.7	3.2	3.2	1.1	550	1.7	2.1	2.5	2.9	3.2	1.0
530	1.6	2.0	2.4	2.9	2.9	.7	530	1.4	1.8	2.2	2.6	2.9	.7
510	1.4	1.9	2.3	2.7	2.6	.60	510	1.3	1.7	2.1	2.5	2.6	.60
490	1.3	1.7	2.1	2.5	2.3	.45	490	1.2	1.6	1.9	2.3	2.3	.45
470	1.2	1.5	1.9	2.3	1.9	.30	470	1.1	1.4	1.7	2.1	1.9	.30
450	1.0	1.3	1.7	2.0	1.6	.14	450	.9	1.2	1.5	1.9	1.6	.14
430	.9	1.2	1.5	1.8	1.4	.14	430	.8	1.1	1.4	1.7	1.4	.12
410	.8	1.0	1.3	1.6	1.3	.16	410	.65	.9	1.2	1.5	1.3	.10
390	.60	.9	1.1	1.4	1.1	.20	390	.55	.8	1.0	1.3	1.1	.08
370	.55	.7	1.0	1.2	1.0	.18	370	.45	.7	.9	1.1	1.0	.07
350	.45	.65	.8	1.0	.9	.14	350	.40	.60	.8	1.0	.9	.06
330	.35	.50	.7	.8	.7	.10	330	.30	.50	.65	.8	.7	.04
310	.25	.40	.50	.65	.60	.05	310	.25	.35	.50	.60	.55	.03
290	.18	.30	.40	.50	.45	.03	290	.16	.25	.40	.50	.40	.02
270	.16	.25	.35	.45	.40	.03	270	.14	.25	.30	.40	.35	.02
250	.12	.20	.25	.35	.30	.03	250	.10	.18	.25	.30	.25	.01
230	.08	.14	.20	.25	.25	.03	230	.08	.14	.18	.25	.20	.01
210	.07	.12	.16	.20	.16	.03	210	.07	.10	.14	.20	.16	.01
190	.06	.08	.10	.14	.10	.02	190	.06	.08	.10	.14	.12	.01

50° N							45° N						
N=15							N=20						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.5	2.9	3.3	3.3	1.1	590	1.9	2.3	2.7	3.1	2.9	.9
570	1.8	2.2	2.6	3.0	3.2	.9	570	1.6	2.0	2.4	2.8	2.8	.7
550	1.6	2.0	2.3	2.7	3.0	.7	550	1.4	1.8	2.1	2.5	2.6	.50
530	1.3	1.7	2.0	2.4	2.9	.50	530	1.1	1.5	1.8	2.2	2.5	.30
510	1.2	1.5	1.9	2.2	2.6	.40	510	1.0	1.4	1.7	2.0	2.2	.25
490	1.1	1.4	1.7	2.1	2.3	.35	490	.9	1.2	1.5	1.8	2.0	.20
470	.9	1.3	1.6	1.9	1.9	.25	470	.8	1.1	1.4	1.7	1.7	.16
450	.8	1.1	1.4	1.7	1.5	.14	450	.65	.9	1.2	1.5	1.4	.12
430	.7	1.0	1.3	1.5	1.3	.10	430	.55	.8	1.1	1.3	1.2	.09
410	.60	.9	1.1	1.4	1.2	.08	410	.45	.7	.9	1.2	1.1	.07
390	.50	.7	1.0	1.2	1.0	.06	390	.35	.60	.8	1.0	1.0	.04
370	.40	.65	.9	1.1	.9	.05	370	.30	.50	.7	.9	.9	.04
350	.35	.55	.7	.9	.8	.04	350	.25	.45	.60	.8	.8	.04
330	.25	.45	.60	.8	.65	.03	330	.20	.35	.50	.60	.65	.03
310	.20	.35	.45	.60	.50	.02	310	.16	.25	.35	.45	.50	.03
290	.14	.25	.35	.45	.40	.02	290	.12	.20	.30	.35	.40	.03
270	.12	.20	.30	.40	.35	.02	270	.10	.18	.25	.30	.35	.03
250	.10	.16	.25	.30	.25	.02	250	.09	.14	.20	.25	.25	.02
230	.08	.12	.18	.25	.20	.02	230	.07	.12	.16	.20	.18	.02
210	.07	.10	.14	.18	.16	.02	210	.07	.10	.14	.16	.14	.02
190	.06	.09	.12	.14	.12	.01	190	.06	.09	.12	.14	.10	.02

MAY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	40°N N=50						FLIGHT LEVEL	35°N N=18					
	MEAN	16%	2%	.1%	MAX	MIN		MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.1	2.4	2.8	2.7	.8	590	1.4	1.8	2.1	2.4	2.3	.40
570	1.4	1.8	2.2	2.6	2.6	.80	570	1.2	1.5	1.9	2.2	2.1	.50
550	1.2	1.6	1.9	2.3	2.4	.45	550	1.0	1.3	1.6	1.9	1.9	.35
530	.9	1.3	1.6	2.0	2.3	.25	530	.7	1.0	1.3	1.6	1.6	.20
510	.8	1.2	1.5	1.8	2.1	.20	510	.65	.9	1.2	1.5	1.5	.18
490	.7	1.0	1.3	1.6	1.8	.18	490	.65	.8	1.1	1.3	1.3	.14
470	.60	.9	1.2	1.4	1.6	.14	470	.45	.7	.9	1.1	1.2	.12
450	.45	.7	1.0	1.2	1.3	.10	450	.35	.55	.7	.9	1.0	.09
430	.40	.65	.9	1.1	1.1	.08	430	.30	.50	.65	.8	.9	.07
410	.35	.55	.7	.9	1.0	.06	410	.25	.40	.55	.7	.8	.05
390	.25	.45	.60	.8	.9	.03	390	.25	.35	.45	.60	.65	.03
370	.25	.40	.55	.7	.8	.03	370	.20	.30	.40	.50	.55	.03
350	.20	.30	.45	.60	.7	.02	350	.16	.25	.35	.45	.45	.03
330	.16	.25	.35	.45	.55	.02	330	.14	.20	.30	.35	.40	.02
310	.12	.18	.25	.35	.40	.01	310	.10	.16	.20	.25	.30	.02
290	.09	.14	.20	.25	.35	.01	290	.08	.12	.16	.20	.25	.02
270	.08	.14	.18	.25	.30	.01	270	.07	.10	.14	.18	.20	.02
250	.07	.12	.14	.18	.20	.01	250	.07	.10	.12	.16	.18	.02
230	.07	.10	.12	.16	.18	.01	230	.06	.09	.12	.14	.16	.02
210	.07	.09	.12	.14	.14	.01	210	.06	.08	.10	.12	.14	.02
190	.06	.09	.12	.14	.12	.01	190	.06	.08	.10	.12	.10	.02

FLIGHT LEVEL	30°N N=23						FLIGHT LEVEL	25°N N=10					
	MEAN	16%	2%	.1%	MAX	MIN		MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.5	1.8	2.0	2.0	.40	590	1.0	1.3	1.5	1.8	1.7	.35
570	1.0	1.3	1.5	1.8	1.7	.30	570	.8	1.1	1.3	1.5	1.4	.30
550	.8	1.0	1.3	1.5	1.4	.25	550	.65	.8	1.1	1.3	1.1	.20
530	.50	.8	1.0	1.2	1.1	.14	530	.40	.60	.8	1.0	.8	.12
510	.45	.7	.9	1.1	1.0	.12	510	.40	.55	.7	.9	.7	.10
490	.40	.60	.8	1.0	.9	.10	490	.35	.45	.60	.8	.60	.09
470	.35	.50	.65	.8	.8	.09	470	.25	.40	.50	.45	.45	.08
450	.25	.40	.50	.65	.65	.06	450	.20	.30	.40	.40	.35	.06
430	.25	.35	.45	.55	.55	.05	430	.18	.25	.35	.40	.30	.05
410	.20	.30	.40	.45	.45	.04	410	.16	.25	.30	.35	.25	.04
390	.18	.25	.30	.40	.30	.03	390	.14	.18	.25	.40	.25	.03
370	.16	.20	.30	.35	.25	.03	370	.12	.16	.20	.25	.25	.03
350	.14	.18	.25	.30	.25	.03	350	.10	.14	.18	.25	.20	.03
330	.12	.16	.20	.25	.20	.03	330	.09	.12	.16	.20	.16	.03
310	.08	.12	.14	.18	.16	.03	310	.07	.10	.12	.16	.14	.03
290	.07	.09	.12	.14	.14	.03	290	.06	.09	.12	.14	.12	.03
270	.06	.09	.12	.14	.14	.03	270	.06	.08	.10	.12	.12	.03
250	.06	.08	.10	.12	.12	.03	250	.06	.08	.10	.12	.10	.03
230	.06	.08	.10	.12	.12	.03	230	.06	.08	.10	.12	.10	.03
210	.06	.07	.09	.10	.10	.03	210	.06	.08	.09	.12	.09	.03
190	.05	.07	.08	.10	.09	.03	190	.05	.07	.09	.10	.08	.03

MAY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20°N N=12							15°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	1.0	1.3	1.5	1.4	.35	590	.7	.9	1.1	1.3	1.1	.20
570	.65	.9	1.1	1.3	1.2	.25	570	.60	.7	.8	1.0	.9	.16
550	.50	.65	.8	1.0	.9	.18	550	.35	.45	.60	.7	.60	.10
530	.30	.45	.60	.7	.55	.10	530	.14	.20	.30	.40	.30	.05
510	.25	.40	.50	.65	.45	.09	510	.12	.20	.25	.35	.25	.05
490	.20	.30	.40	.50	.40	.08	490	.12	.10	.25	.30	.25	.04
470	.18	.25	.30	.40	.30	.07	470	.09	.14	.18	.25	.20	.04
450	.12	.16	.20	.25	.18	.05	450	.07	.10	.14	.18	.14	.03
430	.10	.14	.18	.20	.16	.05	430	.07	.10	.12	.16	.14	.03
410	.09	.12	.16	.20	.18	.04	410	.07	.10	.12	.16	.14	.02
390	.08	.12	.16	.20	.18	.03	390	.06	.09	.12	.16	.14	.02
370	.08	.12	.14	.18	.16	.03	370	.06	.09	.12	.14	.14	.02
350	.07	.10	.14	.16	.14	.03	350	.06	.08	.10	.12	.12	.02
330	.07	.09	.12	.14	.14	.03	330	.05	.07	.09	.12	.10	.02
310	.06	.09	.10	.12	.12	.03	310	.05	.07	.08	.10	.09	.02
290	.06	.08	.10	.12	.10	.03	290	.05	.06	.08	.09	.08	.02
270	.06	.08	.10	.12	.10	.03	270	.05	.06	.08	.10	.08	.02
250	.06	.08	.10	.12	.09	.03	250	.05	.06	.08	.10	.08	.02
230	.06	.08	.10	.12	.09	.03	230	.05	.07	.08	.10	.08	.02
210	.06	.08	.10	.12	.09	.03	210	.04	.06	.08	.10	.09	.02
190	.05	.07	.09	.12	.08	.03	190	.04	.06	.08	.10	.09	.02

10°N N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.60	.8	.9	1.1	.8	.16
570	.45	.55	.7	.8	.60	.12
550	.25	.35	.45	.55	.35	.07
530	.09	.14	.18	.25	.14	.01
510	.08	.12	.18	.20	.14	.01
490	.08	.12	.16	.20	.12	.01
470	.07	.10	.14	.18	.12	.01
450	.06	.09	.12	.14	.10	.01
430	.06	.08	.10	.14	.10	.01
410	.06	.08	.10	.12	.09	.01
390	.05	.07	.09	.12	.09	.01
370	.05	.06	.08	.10	.09	.01
350	.04	.06	.08	.09	.08	.01
330	.04	.05	.07	.08	.07	.01
310	.03	.05	.06	.07	.06	.01
290	.03	.04	.06	.07	.06	.01
270	.03	.05	.06	.08	.07	.01
250	.03	.05	.07	.08	.08	.01
230	.03	.05	.07	.09	.08	.01
210	.03	.05	.07	.09	.09	.01
190	.03	.05	.07	.09	.10	.01

MAY - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N N=47							47°N N=113						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.3	2.8	3.3	3.4	.8	590	1.6	2.0	2.4	2.9	4.7	.8
570	1.6	2.0	2.5	2.9	3.1	.7	570	1.4	1.8	2.2	2.6	4.3	.65
550	1.3	1.8	2.2	2.6	2.8	.50	550	1.2	1.6	1.9	2.3	3.9	.50
530	1.1	1.4	1.8	2.2	2.5	.35	530	1.0	1.3	1.7	2.0	3.5	.35
510	1.0	1.3	1.7	2.0	2.2	.35	510	.9	1.2	1.5	1.8	3.0	.30
490	.9	1.2	1.5	1.8	1.9	.30	490	.8	1.1	1.4	1.7	2.5	.25
470	.8	1.1	1.3	1.6	1.6	.30	470	.7	1.0	1.2	1.5	2.0	.20
450	.7	.9	1.1	1.3	1.3	.30	450	.60	.8	1.1	1.3	1.4	.14
430	.60	.8	1.0	1.2	1.1	.25	430	.55	.7	.9	1.2	1.1	.12
410	.55	.7	.9	1.1	1.0	.16	410	.45	.65	.8	1.0	1.0	.09
390	.45	.65	.8	1.0	.9	.08	390	.40	.55	.7	.9	.8	.07
370	.40	.55	.7	.9	.8	.06	370	.30	.45	.60	.7	.65	.05
350	.30	.45	.60	.8	.7	.05	350	.25	.35	.50	.60	.55	.05
330	.25	.35	.50	.60	.60	.05	330	.18	.30	.35	.45	.45	.04
310	.14	.25	.35	.45	.50	.04	310	.12	.18	.25	.30	.35	.03
290	.10	.18	.25	.35	.45	.03	290	.07	.12	.16	.20	.25	.02
270	.09	.16	.25	.30	.40	.03	270	.07	.10	.14	.16	.20	.03
250	.04	.14	.20	.25	.35	.03	250	.06	.09	.12	.14	.16	.03
230	.08	.12	.18	.20	.25	.03	230	.06	.08	.09	.10	.12	.03
210	.07	.10	.14	.16	.18	.03	210	.06	.07	.09	.10	.12	.03
190	.06	.07	.09	.10	.12	.03	190	.05	.07	.08	.09	.12	.03

39°N N=11						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.9	2.3	2.7	2.1	.9
570	1.2	1.6	2.0	2.4	1.9	.65
550	1.0	1.4	1.7	2.1	1.6	.45
530	.7	1.1	1.4	1.8	1.3	.16
510	.7	1.0	1.3	1.6	1.1	.16
490	.60	.9	1.2	1.4	1.0	.14
470	.55	.8	1.0	1.2	.9	.12
450	.45	.65	.8	1.0	.7	.09
430	.45	.60	.8	1.0	.7	.09
410	.40	.60	.8	1.0	.8	.08
390	.40	.60	.8	1.0	.8	.08
370	.35	.55	.7	.9	.7	.07
350	.30	.40	.55	.7	.55	.06
330	.20	.30	.40	.55	.40	.05
310	.12	.20	.25	.30	.25	.03
290	.09	.12	.16	.20	.16	.03
270	.08	.12	.14	.18	.14	.03
250	.07	.10	.12	.16	.14	.03
230	.06	.09	.12	.14	.12	.03
210	.06	.08	.10	.12	.10	.03
190	.06	.07	.09	.10	.08	.03

JUNE - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43° N							36° N						
N=14							N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.8	2.1	2.3	2.0	.9	590	1.1	1.5	1.9	2.3	1.9	.30
570	1.3	1.6	1.8	2.1	1.7	.7	570	.9	1.2	1.6	2.0	1.6	.20
550	1.0	1.3	1.6	1.9	1.5	.50	550	.65	1.0	1.3	1.6	1.3	.14
530	.7	1.0	1.3	1.7	1.2	.25	530	.40	.7	.9	1.2	.9	.05
510	.65	1.0	1.2	1.5	1.1	.20	510	.35	.60	.8	1.1	.8	.05
490	.60	.9	1.1	1.4	1.0	.18	490	.30	.50	.7	.9	.7	.04
470	.55	.8	1.0	1.3	.9	.16	470	.25	.45	.60	.8	.65	.03
450	.50	.7	.9	1.1	.8	.12	450	.18	.35	.45	.60	.55	.03
430	.45	.60	.8	1.0	.7	.10	430	.16	.30	.40	.55	.50	.03
410	.35	.55	.7	.9	.65	.09	410	.12	.25	.35	.45	.45	.02
390	.25	.40	.55	.7	.55	.08	390	.10	.18	.30	.35	.35	.02
370	.25	.35	.50	.60	.50	.08	370	.09	.18	.25	.35	.30	.02
350	.20	.30	.40	.55	.40	.07	350	.08	.16	.25	.30	.30	.02
330	.16	.25	.35	.40	.35	.06	330	.08	.14	.20	.25	.25	.02
310	.14	.20	.25	.30	.25	.05	310	.08	.12	.18	.25	.20	.01
290	.12	.16	.20	.25	.20	.05	290	.07	.12	.16	.20	.18	.01
270	.10	.14	.18	.20	.18	.05	270	.07	.12	.16	.20	.18	.01
250	.10	.14	.16	.20	.16	.05	250	.07	.12	.16	.20	.18	.01
230	.09	.12	.16	.18	.14	.05	230	.07	.12	.16	.20	.18	.02
210	.09	.10	.14	.16	.12	.05	210	.07	.12	.16	.20	.18	.02
190	.08	.10	.12	.12	.10	.06	190	.07	.12	.16	.20	.18	.02

32° N						
N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	1.1	1.3	1.6	1.4	.35
570	.65	.8	1.0	1.2	1.1	.30
550	.40	.55	.7	.9	.8	.20
530	.20	.30	.40	.50	.45	.12
510	.20	.30	.35	.45	.45	.10
490	.16	.25	.35	.40	.40	.09
470	.14	.20	.30	.40	.40	.08
450	.12	.20	.25	.35	.35	.06
430	.10	.18	.25	.30	.30	.05
410	.09	.14	.20	.25	.25	.04
390	.08	.12	.18	.20	.20	.04
370	.07	.12	.16	.20	.20	.03
350	.07	.10	.14	.18	.16	.03
330	.06	.09	.12	.16	.14	.03
310	.06	.08	.10	.14	.12	.03
290	.05	.08	.10	.12	.10	.03
270	.05	.07	.10	.12	.10	.03
250	.05	.07	.09	.12	.09	.02
230	.05	.07	.09	.12	.09	.02
210	.05	.07	.09	.12	.08	.02
190	.05	.07	.09	.12	.08	.02

JUNE - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65°N N=12							60°N N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.6	2.8	3.0	2.7	2.0	590	2.2	2.5	2.7	2.9	2.6	1.8
570	2.1	2.3	2.5	2.7	2.4	1.8	570	2.0	2.2	2.5	2.7	2.3	1.5
550	1.8	2.0	2.2	2.4	2.1	1.5	550	1.7	1.9	2.2	2.4	2.1	1.3
530	1.5	1.7	1.9	2.1	1.7	1.2	530	1.4	1.7	1.9	2.2	1.8	1.0
510	1.3	1.6	1.8	2.0	1.7	1.0	510	1.3	1.5	1.8	2.1	1.7	.8
490	1.2	1.4	1.7	1.9	1.6	.8	490	1.1	1.4	1.7	2.0	1.5	.65
470	1.0	1.3	1.6	1.9	1.5	.55	470	.9	1.2	1.5	1.8	1.4	.45
450	.9	1.2	1.5	1.8	1.4	.30	450	.8	1.1	1.4	1.7	1.3	.25
430	.8	1.1	1.4	1.7	1.3	.25	430	.7	1.0	1.3	1.6	1.2	.20
410	.7	1.0	1.3	1.5	1.1	.20	410	.60	.9	1.2	1.5	1.1	.18
390	.65	.9	1.1	1.4	1.0	.20	390	.55	.8	1.1	1.3	.9	.16
370	.55	.7	1.0	1.2	.9	.16	370	.45	.7	.9	1.1	.8	.14
350	.40	.60	.8	.9	.7	.14	350	.35	.55	.7	.9	.65	.10
330	.30	.40	.55	.65	.50	.04	330	.25	.40	.50	.65	.50	.08
310	.16	.25	.30	.40	.30	.05	310	.14	.20	.30	.35	.30	.04
290	.08	.14	.18	.25	.20	.03	290	.08	.12	.18	.25	.20	.03
270	.07	.12	.16	.20	.18	.03	270	.07	.12	.16	.20	.18	.02
250	.06	.10	.14	.18	.16	.02	250	.06	.10	.14	.18	.16	.02
230	.06	.09	.12	.16	.14	.02	230	.06	.09	.12	.16	.12	.02
210	.05	.07	.10	.12	.10	.01	210	.05	.07	.10	.12	.10	.01
190	.04	.05	.07	.09	.07	.01	190	.04	.06	.08	.10	.07	.01

55°N N=8							50°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.0	2.3	2.6	2.9	2.5	1.8	590	1.9	2.2	2.6	2.9	2.4	1.3
570	1.8	2.1	2.4	2.7	2.3	1.3	570	1.7	2.0	2.4	2.7	2.2	1.1
550	1.6	1.9	2.2	2.5	2.0	1.1	550	1.5	1.8	2.2	2.6	2.0	.8
530	1.3	1.6	2.0	2.3	1.8	.8	530	1.3	1.6	2.0	2.4	1.8	.60
510	1.2	1.5	1.8	2.1	1.7	.65	510	1.1	1.5	1.8	2.2	1.7	.50
490	1.0	1.4	1.7	2.0	1.5	.50	490	1.0	1.3	1.7	2.0	1.5	.40
470	.9	1.2	1.5	1.8	1.4	.35	470	.8	1.1	1.5	1.8	1.3	.25
450	.7	1.0	1.3	1.6	1.2	.20	450	.60	.9	1.2	1.6	1.1	.14
430	.60	.9	1.2	1.5	1.1	.16	430	.50	.8	1.1	1.4	1.0	.10
410	.55	.8	1.1	1.4	1.0	.14	410	.45	.8	1.0	1.3	.9	.09
390	.50	.7	1.0	1.3	.9	.12	390	.40	.65	.9	1.2	.8	.07
370	.40	.65	.9	1.1	.8	.09	370	.35	.55	.8	1.0	.7	.06
350	.30	.50	.7	.9	.60	.08	350	.25	.45	.65	.8	.55	.05
330	.25	.35	.50	.60	.45	.06	330	.20	.35	.45	.60	.40	.04
310	.12	.20	.30	.35	.25	.04	310	.12	.20	.25	.35	.25	.03
290	.07	.12	.18	.20	.18	.02	290	.07	.12	.16	.20	.16	.02
270	.07	.12	.16	.20	.16	.02	270	.07	.12	.16	.20	.16	.02
250	.06	.10	.14	.18	.14	.02	250	.06	.10	.14	.18	.14	.02
230	.06	.09	.12	.16	.12	.02	230	.06	.09	.12	.16	.12	.02
210	.05	.08	.10	.12	.10	.01	210	.05	.08	.10	.14	.10	.02
190	.04	.06	.08	.10	.08	.01	190	.04	.07	.09	.10	.08	.02

JUNE - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45° N							40° N						
N=28							N=62						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.6	1.9	2.3	2.6	2.2	1.0	590	1.3	1.5	1.8	2.0	1.9	.8
570	1.4	1.8	2.1	2.4	2.0	.8	570	1.1	1.3	1.6	1.8	1.6	.65
550	1.2	1.6	1.9	2.2	1.8	.65	550	.8	1.1	1.3	1.6	1.4	.45
530	1.0	1.4	1.7	2.0	1.6	.40	530	.60	.8	1.1	1.3	1.2	.25
510	.9	1.2	1.6	1.9	1.5	.35	510	.50	.7	1.0	1.2	1.1	.20
490	.8	1.1	1.4	1.7	1.3	.25	490	.45	.65	.9	1.1	1.1	.16
470	.60	.9	1.2	1.5	1.2	.18	470	.40	.60	.8	1.0	1.0	.10
450	.45	.7	1.0	1.3	1.0	.09	450	.30	.50	.7	.9	1.0	.04
430	.40	.65	.9	1.2	1.0	.06	430	.25	.45	.60	.8	.9	.03
410	.35	.60	.9	1.1	.9	.05	410	.25	.40	.55	.7	.9	.02
390	.30	.55	.8	1.0	.8	.04	390	.18	.35	.50	.65	.9	.01
370	.25	.45	.65	.9	.7	.03	370	.16	.30	.45	.55	.8	.01
350	.20	.35	.55	.7	.60	.02	350	.14	.25	.35	.50	.65	.01
330	.16	.25	.40	.50	.45	.02	330	.10	.20	.30	.40	.55	.00
310	.10	.18	.25	.30	.30	.01	310	.08	.14	.20	.25	.45	.00
290	.07	.12	.16	.20	.25	.01	290	.06	.12	.16	.20	.35	.00
270	.06	.10	.16	.20	.20	.01	270	.06	.10	.14	.20	.30	.00
250	.06	.10	.14	.18	.18	.01	250	.06	.10	.14	.18	.25	.00
230	.06	.09	.12	.16	.16	.01	230	.05	.09	.12	.16	.20	.01
210	.05	.08	.10	.14	.12	.01	210	.05	.08	.10	.12	.16	.01
190	.05	.07	.09	.10	.09	.01	190	.05	.07	.09	.10	.10	.01

35° N						
N=16						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.5	1.7	2.0	1.9	.8
570	.9	1.2	1.4	1.7	1.6	.60
550	.65	.9	1.1	1.3	1.3	.40
530	.40	.55	.7	.9	.9	.25
510	.35	.55	.7	.9	.8	.20
490	.35	.50	.7	.9	.8	.16
470	.30	.50	.65	.9	.8	.10
450	.25	.45	.65	.8	.7	.06
430	.20	.40	.55	.7	.60	.04
410	.16	.30	.40	.55	.45	.04
390	.12	.20	.30	.35	.30	.03
370	.10	.16	.25	.30	.25	.02
350	.09	.14	.20	.25	.20	.02
330	.07	.12	.16	.20	.18	.02
310	.06	.09	.12	.16	.14	.01
290	.05	.07	.10	.12	.12	.01
270	.05	.07	.09	.12	.10	.02
250	.04	.07	.09	.10	.10	.02
230	.04	.06	.08	.10	.09	.02
210	.04	.06	.07	.08	.08	.02
190	.04	.05	.06	.07	.07	.02

JUNE - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N N=10							75°N N=30						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.7	3.0	3.3	2.8	1.8	590	2.4	2.6	2.9	3.2	2.8	1.7
570	2.1	2.4	2.7	3.0	2.6	1.6	570	2.1	2.4	2.7	3.0	2.6	1.5
550	1.9	2.2	2.4	2.7	2.3	1.3	550	1.9	2.1	2.4	2.7	2.3	1.3
530	1.6	1.9	2.1	2.4	2.0	1.0	530	1.6	1.8	2.1	2.4	2.0	1.0
510	1.5	1.7	2.0	2.2	1.8	.9	510	1.4	1.7	1.9	2.2	1.8	.9
490	1.3	1.5	1.8	2.0	1.6	.7	490	1.3	1.5	1.7	2.0	1.6	.7
470	1.1	1.3	1.5	1.7	1.4	.60	470	1.1	1.3	1.5	1.8	1.4	.55
450	.9	1.1	1.3	1.5	1.1	.45	450	.9	1.1	1.3	1.5	1.1	.40
430	.8	1.0	1.2	1.3	1.1	.35	430	.8	1.0	1.2	1.4	1.1	.30
410	.7	.9	1.0	1.2	1.0	.25	410	.7	.9	1.1	1.2	1.0	.20
390	.60	.8	.9	1.1	1.0	.16	390	.60	.8	.9	1.1	1.0	.14
370	.55	.7	.8	1.0	.9	.12	370	.50	.7	.8	1.0	.9	.10
350	.45	.60	.7	.9	.8	.09	350	.45	.60	.7	.9	.8	.08
330	.35	.50	.65	.8	.7	.07	330	.35	.50	.60	.8	.7	.06
310	.30	.40	.50	.65	.60	.04	310	.25	.35	.50	.60	.60	.03
290	.20	.30	.40	.55	.50	.02	290	.18	.30	.40	.50	.50	.02
270	.18	.25	.35	.40	.45	.02	270	.16	.25	.30	.40	.45	.02
250	.12	.18	.25	.30	.35	.02	250	.12	.18	.25	.30	.35	.02
230	.09	.14	.18	.20	.30	.02	230	.09	.14	.18	.20	.30	.02
210	.08	.12	.16	.18	.25	.02	210	.08	.12	.14	.18	.25	.02
190	.07	.10	.12	.16	.20	.02	190	.06	.09	.12	.16	.20	.02

70°N N=15							65°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.6	2.9	3.2	2.8	1.7	590	2.3	2.6	2.9	3.2	2.8	1.7
570	2.1	2.4	2.7	2.9	2.6	1.5	570	2.1	2.3	2.6	2.9	2.6	1.5
550	1.8	2.1	2.4	2.6	2.3	1.3	550	1.8	2.1	2.4	2.6	2.4	1.3
530	1.6	1.8	2.1	2.3	2.0	1.0	530	1.5	1.8	2.1	2.3	2.1	1.0
510	1.4	1.6	1.9	2.1	1.8	.9	510	1.4	1.6	1.9	2.2	1.9	.9
490	1.2	1.5	1.7	1.9	1.6	.7	490	1.2	1.5	1.7	2.0	1.7	.7
470	1.0	1.3	1.5	1.7	1.4	.55	470	1.0	1.3	1.5	1.8	1.5	.55
450	.8	1.0	1.2	1.4	1.1	.40	450	.9	1.1	1.3	1.6	1.2	.40
430	.7	.9	1.1	1.3	1.1	.30	430	.8	1.0	1.2	1.4	1.1	.30
410	.65	.9	1.1	1.2	1.0	.20	410	.65	.9	1.1	1.3	1.0	.20
390	.60	.8	1.0	1.1	.9	.14	390	.55	.8	.9	1.1	.9	.14
370	.50	.7	.9	1.0	.8	.10	370	.50	.65	.8	1.0	.8	.10
350	.40	.60	.7	.9	.8	.08	350	.40	.55	.7	.9	.8	.09
330	.30	.45	.60	.7	.7	.06	330	.30	.45	.60	.7	.7	.06
310	.20	.35	.45	.60	.60	.03	310	.20	.35	.45	.60	.60	.04
290	.16	.25	.35	.45	.50	.02	290	.16	.25	.35	.45	.50	.03
270	.14	.20	.30	.40	.45	.02	270	.12	.20	.30	.40	.40	.03
250	.10	.18	.25	.30	.35	.02	250	.10	.16	.20	.30	.30	.02
230	.09	.14	.18	.20	.30	.02	230	.08	.12	.16	.20	.25	.02
210	.07	.12	.14	.18	.25	.02	210	.07	.10	.14	.18	.20	.02
190	.06	.09	.12	.14	.18	.02	190	.06	.09	.12	.14	.16	.02

JUNE - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N N=8							55°N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.6	2.9	3.2	2.9	1.7	590	2.2	2.5	2.8	3.1	3.0	1.5
570	2.0	2.3	2.6	2.9	2.7	1.5	570	1.9	2.2	2.5	2.8	2.8	1.3
550	1.7	2.0	2.3	2.6	2.5	1.3	550	1.6	1.9	2.2	2.5	2.6	1.0
530	1.4	1.7	2.0	2.3	2.2	1.0	530	1.3	1.6	1.9	2.2	2.4	.8
510	1.3	1.6	1.9	2.2	2.0	.9	510	1.2	1.5	1.8	2.1	2.2	.7
490	1.1	1.4	1.7	2.0	1.9	.7	490	1.0	1.3	1.6	1.9	1.9	.60
470	1.0	1.2	1.5	1.8	1.7	.55	470	.9	1.1	1.4	1.7	1.7	.50
450	.8	1.1	1.3	1.6	1.4	.40	450	.7	1.0	1.2	1.5	1.4	.35
430	.7	.9	1.2	1.4	1.3	.30	430	.60	.8	1.1	1.3	1.2	.30
410	.60	.8	1.1	1.3	1.1	.20	410	.55	.8	1.0	1.2	1.1	.20
390	.55	.7	.9	1.1	.9	.14	390	.45	.65	.8	1.0	.9	.12
370	.45	.65	.8	1.0	.8	.10	370	.40	.55	.7	.9	.8	.09
350	.40	.55	.7	.9	.8	.09	350	.30	.45	.60	.8	.7	.07
330	.30	.45	.60	.7	.7	.06	330	.25	.40	.50	.65	.65	.05
310	.20	.35	.45	.60	.60	.04	310	.16	.30	.40	.50	.55	.03
290	.14	.25	.35	.45	.50	.03	290	.12	.20	.30	.40	.45	.02
270	.12	.20	.30	.35	.40	.03	270	.10	.16	.25	.30	.40	.02
250	.09	.14	.20	.25	.30	.03	250	.08	.12	.18	.25	.30	.02
230	.07	.10	.14	.18	.25	.03	230	.06	.09	.12	.16	.25	.02
210	.06	.09	.12	.16	.18	.03	210	.06	.09	.12	.14	.16	.02
190	.06	.08	.12	.14	.10	.02	190	.06	.08	.10	.12	.10	.02

50°N N=18							45°N N=20						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.0	2.4	2.7	3.1	2.9	1.2	590	1.8	2.2	2.5	2.8	2.6	1.0
570	1.8	2.1	2.4	2.8	2.7	1.0	570	1.6	1.9	2.2	2.5	2.4	.8
550	1.5	1.8	2.1	2.4	2.5	.7	550	1.3	1.6	1.9	2.2	2.1	.55
530	1.2	1.5	1.8	2.1	2.3	.50	530	1.0	1.3	1.6	1.8	1.8	.30
510	1.1	1.4	1.6	1.9	2.1	.45	510	.9	1.1	1.4	1.7	1.7	.25
490	.9	1.2	1.5	1.8	1.9	.35	490	.8	1.0	1.3	1.5	1.5	.20
470	.8	1.0	1.3	1.6	1.6	.30	470	.60	.9	1.1	1.3	1.4	.18
450	.60	.9	1.1	1.4	1.4	.20	450	.50	.7	.9	1.1	1.2	.12
430	.50	.8	1.0	1.2	1.2	.16	430	.40	.60	.8	1.0	1.1	.10
410	.45	.65	.9	1.1	1.1	.12	410	.35	.55	.7	.9	1.0	.08
390	.35	.55	.7	.9	.9	.07	390	.30	.45	.60	.8	.9	.06
370	.30	.50	.65	.8	.8	.05	370	.25	.40	.55	.7	.8	.05
350	.25	.40	.55	.7	.7	.05	350	.20	.30	.45	.65	.65	.04
330	.20	.30	.45	.55	.60	.04	330	.16	.25	.35	.45	.55	.03
310	.12	.20	.30	.40	.45	.03	310	.10	.18	.25	.35	.40	.02
290	.09	.16	.25	.30	.35	.02	290	.08	.14	.20	.25	.30	.02
270	.08	.14	.20	.25	.30	.02	270	.08	.12	.16	.20	.25	.02
250	.07	.10	.16	.20	.25	.02	250	.07	.10	.14	.18	.20	.02
230	.06	.09	.12	.14	.18	.02	230	.06	.09	.12	.14	.18	.02
210	.06	.08	.10	.12	.14	.02	210	.06	.09	.12	.14	.14	.02
190	.05	.07	.09	.10	.10	.02	190	.06	.08	.10	.12	.10	.02

JUNE - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40°N N=40							35°N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.6	1.9	2.3	2.6	2.4	.7	590	1.4	1.7	2.0	2.3	2.4	.7
570	1.3	1.7	2.0	2.3	2.1	.50	570	1.2	1.5	1.7	2.0	2.0	.50
550	1.1	1.4	1.7	1.9	1.6	.35	550	.9	1.2	1.4	1.7	1.6	.30
530	.8	1.1	1.3	1.6	1.2	.14	530	.7	.9	1.1	1.4	1.2	.12
510	.7	.9	1.2	1.4	1.2	.12	510	.60	.8	1.0	1.2	1.1	.10
490	.60	.8	1.0	1.3	1.2	.09	490	.50	.7	.9	1.1	1.1	.08
470	.50	.7	.9	1.1	1.1	.07	470	.40	.60	.8	.9	1.0	.06
450	.35	.55	.7	.9	1.1	.04	450	.30	.45	.60	.8	.9	.04
430	.30	.45	.65	.8	1.0	.03	430	.25	.40	.50	.65	.8	.03
410	.25	.40	.55	.7	.9	.02	410	.20	.30	.45	.55	.7	.02
390	.20	.35	.50	.65	.8	.01	390	.14	.25	.35	.45	.60	.02
370	.18	.30	.40	.55	.7	.01	370	.12	.20	.30	.40	.55	.02
350	.14	.25	.35	.45	.55	.01	350	.12	.18	.25	.35	.45	.02
330	.12	.20	.25	.35	.45	.01	330	.10	.16	.20	.25	.35	.02
310	.09	.14	.20	.25	.30	.01	310	.08	.12	.16	.20	.20	.02
290	.08	.12	.16	.18	.20	.01	290	.07	.10	.14	.16	.16	.02
270	.07	.10	.14	.18	.18	.01	270	.07	.10	.12	.16	.14	.02
250	.07	.10	.14	.16	.16	.01	250	.07	.09	.12	.14	.14	.02
230	.07	.10	.12	.16	.14	.01	230	.07	.09	.12	.14	.12	.02
210	.07	.09	.12	.14	.12	.01	210	.06	.09	.12	.14	.10	.02
190	.06	.09	.12	.14	.10	.01	190	.06	.08	.10	.12	.09	.02

30°N N=12							25°N N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.5	1.7	2.0	2.3	.60	590	1.1	1.3	1.5	1.7	1.7	.60
570	1.0	1.3	1.5	1.7	1.9	.45	570	.9	1.1	1.3	1.5	1.5	.45
550	.8	1.0	1.2	1.4	1.6	.30	550	.7	.9	1.0	1.2	1.2	.25
530	.55	.8	.9	1.1	1.2	.10	530	.50	.65	.8	1.0	.9	.09
510	.50	.65	.8	1.0	1.1	.09	510	.40	.55	.7	.9	.8	.08
490	.45	.60	.7	.9	1.0	.07	490	.35	.50	.60	.8	.7	.06
470	.35	.50	.60	.8	.9	.05	470	.30	.40	.50	.65	.65	.04
450	.25	.35	.50	.60	.7	.03	450	.20	.30	.40	.40	.50	.02
430	.20	.30	.40	.50	.60	.03	430	.16	.25	.35	.40	.40	.02
410	.16	.25	.30	.40	.40	.02	410	.14	.20	.25	.35	.30	.02
390	.10	.16	.20	.25	.25	.02	390	.09	.14	.18	.20	.20	.02
370	.09	.14	.18	.25	.18	.02	370	.08	.12	.16	.20	.18	.02
350	.08	.12	.16	.20	.16	.02	350	.08	.12	.16	.18	.16	.02
330	.08	.12	.16	.18	.16	.02	330	.08	.10	.14	.18	.16	.02
310	.07	.10	.14	.16	.14	.02	310	.07	.10	.14	.16	.14	.02
290	.07	.10	.12	.16	.12	.02	290	.07	.10	.12	.16	.14	.02
270	.07	.09	.12	.14	.12	.02	270	.07	.09	.12	.14	.14	.02
250	.06	.08	.10	.12	.10	.03	250	.06	.09	.12	.14	.12	.02
230	.06	.08	.10	.12	.10	.03	230	.06	.09	.10	.14	.12	.02
210	.06	.08	.10	.12	.10	.03	210	.06	.08	.10	.12	.12	.02
190	.06	.08	.10	.12	.09	.03	190	.06	.08	.10	.12	.10	.02

JUNE - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20°N							15°N						
N=11							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.1	1.3	1.4	1.2	.60	590	.8	.9	1.1	1.2	1.1	.45
570	.8	.9	1.1	1.2	1.0	.45	570	.65	.8	.9	1.0	.9	.30
550	.60	.7	.9	1.0	.8	.25	550	.45	.60	.7	.8	.65	.20
530	.40	.55	.65	.8	.65	.09	530	.30	.40	.50	.60	.45	.08
510	.35	.45	.60	.7	.60	.07	510	.25	.35	.45	.55	.40	.07
490	.30	.40	.50	.60	.50	.06	490	.25	.30	.40	.45	.35	.05
470	.25	.35	.45	.50	.45	.04	470	.18	.25	.30	.40	.30	.03
450	.18	.25	.35	.40	.35	.01	450	.12	.18	.25	.30	.20	.01
430	.14	.20	.25	.35	.30	.01	430	.10	.16	.20	.25	.18	.01
410	.12	.16	.20	.25	.25	.02	410	.09	.12	.16	.20	.16	.01
390	.09	.12	.16	.18	.20	.02	390	.06	.09	.12	.14	.12	.01
370	.08	.10	.14	.16	.18	.02	370	.06	.08	.10	.14	.12	.01
350	.08	.10	.14	.16	.18	.02	350	.06	.08	.10	.12	.12	.01
330	.07	.10	.14	.16	.16	.02	330	.05	.08	.10	.12	.10	.01
310	.07	.10	.14	.16	.16	.02	310	.05	.07	.09	.12	.10	.01
290	.07	.10	.12	.16	.16	.02	290	.05	.07	.09	.10	.10	.01
270	.07	.10	.12	.16	.14	.02	270	.05	.07	.09	.10	.09	.01
250	.06	.09	.12	.16	.14	.02	250	.05	.07	.09	.10	.09	.01
230	.06	.09	.12	.14	.12	.02	230	.05	.06	.08	.10	.08	.01
210	.06	.08	.12	.14	.12	.02	210	.04	.06	.08	.10	.07	.01
190	.05	.08	.10	.12	.10	.02	190	.04	.06	.08	.09	.06	.01

10°N						
N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.60	.7	.9	1.0	1.0	.35
570	.45	.55	.7	.8	.7	.25
550	.30	.40	.45	.55	.50	.18
530	.16	.20	.25	.30	.25	.08
510	.14	.18	.20	.25	.20	.07
490	.12	.14	.18	.20	.18	.05
470	.09	.12	.14	.18	.14	.03
450	.06	.08	.10	.12	.09	.01
430	.05	.07	.09	.10	.08	.01
410	.04	.06	.08	.10	.07	.01
390	.04	.06	.08	.10	.07	.00
370	.04	.06	.07	.09	.07	.00
350	.04	.05	.07	.08	.07	.00
330	.03	.05	.06	.08	.06	.00
310	.03	.04	.05	.07	.06	.00
290	.03	.04	.05	.06	.06	.00
270	.03	.04	.05	.06	.06	.00
250	.03	.04	.05	.06	.05	.00
230	.03	.04	.05	.06	.05	.00
210	.03	.04	.05	.06	.05	.01
190	.03	.04	.05	.06	.04	.01

JUNE - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52° N							47° N						
N=39							N=104						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.3	2.7	3.2	3.2	1.1	590	1.5	1.8	2.1	2.5	3.1	.9
570	1.5	1.9	2.3	2.7	2.7	.9	570	1.3	1.6	1.9	2.2	2.7	.7
550	1.2	1.6	1.9	2.2	2.2	.7	550	1.1	1.4	1.7	2.0	2.2	.50
530	.9	1.2	1.4	1.6	1.7	.50	530	.9	1.1	1.4	1.7	1.7	.30
510	.8	1.1	1.3	1.5	1.5	.45	510	.8	1.0	1.3	1.5	1.6	.25
490	.8	1.0	1.2	1.3	1.3	.40	490	.7	.9	1.2	1.4	1.5	.25
470	.65	.8	1.0	1.2	1.1	.35	470	.60	.8	1.0	1.2	1.4	.20
450	.55	.7	.9	1.0	.9	.25	450	.50	.7	.9	1.0	1.3	.16
430	.50	.65	.8	.9	.8	.20	430	.45	.65	.8	1.0	1.2	.12
410	.45	.60	.7	.9	.7	.14	410	.40	.60	.8	1.0	1.0	.07
390	.35	.50	.7	.8	.65	.07	390	.35	.55	.7	.9	.9	.02
370	.30	.45	.60	.7	.60	.05	370	.30	.45	.65	.8	.7	.02
350	.25	.35	.50	.60	.55	.04	350	.25	.40	.50	.65	.60	.01
330	.18	.30	.40	.45	.50	.03	330	.18	.30	.40	.50	.50	.01
310	.12	.18	.25	.35	.40	.02	310	.12	.20	.25	.35	.35	.01
290	.07	.14	.20	.25	.35	.01	290	.05	.14	.20	.25	.25	.01
270	.07	.12	.18	.20	.30	.01	270	.05	.12	.16	.20	.20	.01
250	.07	.10	.16	.20	.25	.01	250	.07	.09	.12	.16	.16	.01
230	.06	.10	.14	.16	.20	.01	230	.06	.08	.10	.12	.14	.01
210	.06	.08	.12	.14	.16	.01	210	.06	.08	.09	.12	.14	.01
190	.05	.07	.09	.10	.10	.01	190	.06	.07	.09	.10	.14	.01

39° N						
N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.3	1.5	1.8	1.5	.8
570	.9	1.1	1.4	1.6	1.3	.65
550	.7	.9	1.2	1.4	1.1	.50
530	.55	.7	1.0	1.2	1.0	.30
510	.50	.7	.9	1.1	.9	.30
490	.45	.65	.8	1.0	.8	.25
470	.45	.55	.7	.8	.7	.25
450	.40	.50	.60	.7	.65	.18
430	.35	.45	.55	.65	.60	.16
410	.30	.40	.55	.65	.60	.12
390	.25	.40	.50	.65	.55	.09
370	.20	.35	.45	.55	.45	.08
350	.18	.25	.35	.45	.35	.07
330	.14	.20	.25	.30	.25	.07
310	.10	.14	.16	.20	.16	.06
290	.08	.10	.12	.12	.10	.06
270	.08	.09	.10	.12	.12	.05
250	.07	.08	.10	.12	.12	.05
230	.07	.08	.09	.10	.12	.04
210	.06	.07	.09	.10	.10	.04
190	.06	.07	.08	.10	.09	.03

JULY - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN

43°N							36°N						
N=20							N=4						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.6	1.9	2.3	1.9	.50	590	.9	1.1	1.3	1.5	1.1	.65
570	1.1	1.4	1.7	2.1	1.9	.40	570	.8	.9	1.1	1.2	.9	.55
550	.9	1.2	1.5	1.9	1.9	.25	550	.55	.65	.8	.9	.65	.45
530	.60	1.0	1.3	1.7	2.0	.12	530	.35	.40	.45	.50	.45	.30
510	.55	.9	1.2	1.5	1.7	.10	510	.30	.35	.40	.45	.35	.25
490	.45	.7	1.0	1.3	1.4	.09	490	.25	.30	.30	.35	.30	.20
470	.40	.60	.8	1.1	1.1	.08	470	.18	.20	.25	.25	.20	.16
450	.30	.45	.65	.8	.7	.06	450	.12	.14	.16	.18	.14	.10
430	.25	.40	.55	.7	.65	.06	430	.10	.12	.14	.18	.12	.08
410	.20	.35	.50	.60	.60	.05	410	.10	.12	.16	.20	.14	.06
390	.16	.30	.40	.55	.60	.05	390	.10	.14	.18	.20	.14	.05
370	.14	.25	.35	.45	.55	.05	370	.09	.12	.16	.20	.12	.05
350	.12	.20	.30	.40	.45	.05	350	.09	.12	.16	.18	.12	.04
330	.12	.18	.25	.35	.35	.04	330	.08	.10	.14	.16	.10	.04
310	.10	.16	.20	.25	.25	.04	310	.07	.10	.12	.14	.10	.04
290	.09	.14	.18	.20	.20	.04	290	.07	.09	.12	.14	.09	.04
270	.09	.12	.16	.20	.20	.03	270	.07	.09	.10	.12	.09	.04
250	.09	.12	.16	.18	.18	.03	250	.07	.08	.10	.12	.08	.04
230	.08	.12	.14	.18	.16	.03	230	.06	.08	.10	.12	.08	.04
210	.08	.10	.14	.16	.14	.03	210	.06	.08	.09	.10	.08	.04
190	.07	.09	.12	.14	.12	.02	190	.06	.07	.08	.09	.07	.04

32°N						
N=16						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.1	1.3	1.5	1.4	.65
570	.7	.9	1.1	1.2	1.1	.50
550	.50	.65	.8	.9	.9	.35
530	.25	.35	.50	.60	.60	.14
510	.20	.30	.40	.50	.50	.12
490	.18	.25	.35	.40	.40	.09
470	.14	.20	.25	.30	.30	.07
450	.09	.12	.16	.20	.18	.04
430	.08	.10	.14	.16	.14	.03
410	.08	.10	.12	.16	.14	.03
390	.07	.09	.12	.14	.12	.03
370	.07	.09	.12	.14	.10	.03
350	.07	.09	.10	.12	.10	.03
330	.06	.08	.10	.12	.10	.03
310	.06	.08	.10	.12	.10	.03
290	.06	.08	.09	.12	.10	.03
270	.05	.07	.09	.12	.10	.03
250	.05	.07	.10	.12	.10	.02
230	.05	.07	.10	.12	.10	.02
210	.05	.07	.10	.12	.10	.02
190	.05	.07	.10	.12	.10	.01

JULY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65° N							60° N						
N=14							N=0						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.6	2.9	3.2	2.8	1.8	590	2.1	2.4	2.7	3.0	2.6	1.6
570	2.0	2.3	2.5	2.8	2.5	1.4	570	1.9	2.1	2.4	2.7	2.3	1.4
550	1.7	1.9	2.2	2.4	2.1	1.2	550	1.6	1.8	2.1	2.3	2.0	1.1
530	1.4	1.6	1.8	2.0	1.8	.9	530	1.3	1.5	1.7	1.9	1.7	.8
510	1.2	1.4	1.7	1.9	1.6	.8	510	1.1	1.4	1.6	1.8	1.6	.7
490	1.1	1.3	1.5	1.7	1.5	.7	490	1.0	1.2	1.4	1.6	1.4	.65
470	.9	1.1	1.3	1.6	1.4	.60	470	.9	1.1	1.3	1.5	1.3	.50
450	.7	1.0	1.2	1.4	1.2	.45	450	.7	.9	1.1	1.3	1.1	.40
430	.65	.9	1.1	1.3	1.1	.40	430	.60	.8	1.0	1.2	1.0	.30
410	.60	.8	1.0	1.2	1.0	.35	410	.55	.7	.9	1.1	1.0	.25
390	.55	.7	.9	1.1	.9	.25	390	.50	.65	.9	1.1	.9	.20
370	.45	.60	.8	.9	.8	.20	370	.40	.60	.8	.9	.8	.18
350	.35	.50	.65	.8	.7	.18	350	.35	.50	.65	.8	.7	.14
330	.25	.40	.50	.65	.55	.12	330	.25	.35	.50	.60	.55	.10
310	.16	.25	.35	.45	.45	.06	310	.14	.25	.35	.45	.40	.05
290	.10	.20	.30	.35	.35	.03	290	.10	.18	.25	.35	.30	.03
270	.09	.18	.25	.30	.30	.03	270	.09	.16	.25	.30	.30	.03
250	.08	.14	.20	.30	.25	.03	250	.08	.14	.20	.25	.25	.03
230	.07	.12	.18	.25	.20	.02	230	.07	.12	.16	.20	.20	.03
210	.06	.10	.14	.18	.16	.02	210	.06	.10	.12	.16	.14	.03
190	.05	.07	.10	.12	.10	.02	190	.05	.07	.09	.12	.10	.02

55° N							50° N						
N=0							N=13						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.0	2.2	2.5	2.8	2.4	1.4	590	1.8	2.1	2.3	2.6	2.2	1.3
570	1.7	2.0	2.2	2.5	2.2	1.3	570	1.6	1.8	2.1	2.3	2.0	1.1
550	1.5	1.7	1.9	2.2	1.9	1.0	550	1.3	1.6	1.8	2.1	1.8	.9
530	1.2	1.4	1.6	1.9	1.6	.8	530	1.1	1.3	1.6	1.8	1.5	.7
510	1.1	1.3	1.5	1.7	1.5	.65	510	1.0	1.2	1.4	1.7	1.4	.60
490	.9	1.1	1.4	1.6	1.3	.55	490	.9	1.1	1.3	1.5	1.2	.50
470	.8	1.0	1.2	1.4	1.2	.45	470	.7	.9	1.1	1.3	1.1	.35
450	.65	.8	1.0	1.2	1.0	.30	450	.55	.8	1.0	1.2	.9	.25
430	.55	.8	1.0	1.2	1.0	.25	430	.50	.7	.9	1.1	.9	.18
410	.50	.7	.9	1.1	.9	.20	410	.45	.65	.9	1.1	.9	.12
390	.45	.65	.8	1.1	.9	.14	390	.40	.60	.8	1.0	.9	.08
370	.35	.55	.7	.9	.8	.12	370	.30	.50	.7	.9	.8	.06
350	.30	.45	.60	.8	.7	.10	350	.25	.40	.60	.8	.65	.06
330	.20	.35	.45	.60	.55	.07	330	.20	.30	.45	.55	.50	.05
310	.14	.25	.30	.40	.40	.05	310	.12	.20	.30	.40	.35	.04
290	.10	.16	.25	.30	.30	.03	290	.09	.16	.20	.25	.25	.03
270	.09	.14	.20	.25	.25	.03	270	.09	.14	.18	.25	.25	.03
250	.08	.14	.18	.25	.20	.03	250	.08	.12	.16	.20	.20	.03
230	.07	.12	.16	.20	.18	.03	230	.07	.10	.14	.18	.16	.03
210	.06	.09	.12	.14	.14	.03	210	.06	.09	.12	.14	.12	.03
190	.05	.07	.09	.10	.09	.03	190	.05	.07	.08	.10	.08	.03

JULY - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45°N N=26							40°N N=51						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.8	2.0	2.3	2.0	1.1	590	1.2	1.4	1.7	1.9	1.7	.8
570	1.3	1.6	1.8	2.0	1.8	.9	570	1.0	1.2	1.4	1.6	1.5	.65
550	1.1	1.3	1.5	1.8	1.5	.7	550	.7	.9	1.1	1.2	1.2	.45
530	.8	1.0	1.3	1.5	1.3	.55	530	.45	.60	.7	.9	.9	.25
510	.7	.9	1.1	1.3	1.2	.45	510	.35	.50	.65	.8	.8	.18
490	.65	.8	1.0	1.2	1.0	.35	490	.30	.40	.55	.65	.7	.14
470	.50	.7	.9	1.0	.9	.25	470	.20	.30	.40	.50	.60	.08
450	.40	.55	.7	.9	.7	.14	450	.12	.20	.30	.35	.50	.01
430	.35	.50	.65	.8	.7	.09	430	.10	.16	.25	.30	.40	.00
410	.30	.45	.65	.8	.7	.06	410	.10	.16	.20	.25	.35	.00
390	.25	.45	.60	.8	.7	.03	390	.08	.14	.18	.25	.25	.00
370	.20	.35	.50	.65	.60	.02	370	.08	.12	.16	.20	.20	.00
350	.18	.30	.45	.55	.50	.02	350	.08	.12	.16	.20	.20	.00
330	.14	.25	.35	.45	.40	.02	330	.07	.10	.14	.18	.18	.00
310	.10	.16	.25	.30	.30	.02	310	.07	.10	.12	.16	.18	.00
290	.08	.12	.18	.20	.20	.02	290	.06	.09	.12	.14	.16	.00
270	.08	.12	.16	.20	.20	.03	270	.06	.09	.12	.14	.14	.01
250	.07	.10	.14	.18	.18	.03	250	.06	.08	.10	.14	.14	.01
230	.07	.09	.12	.16	.14	.03	230	.06	.08	.10	.12	.12	.01
210	.06	.08	.10	.12	.12	.03	210	.05	.07	.09	.12	.10	.01
190	.05	.07	.08	.10	.08	.03	190	.05	.07	.09	.10	.10	.02

35°N N=17						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.1	1.3	1.5	1.4	.65
570	.7	.9	1.0	1.2	1.1	.50
550	.50	.60	.7	.9	.8	.35
530	.25	.35	.45	.55	.45	.16
510	.25	.30	.40	.45	.40	.14
490	.18	.25	.30	.40	.30	.10
470	.14	.20	.25	.30	.25	.07
450	.09	.12	.16	.20	.16	.03
430	.08	.10	.14	.16	.14	.03
410	.07	.10	.12	.16	.12	.02
390	.07	.09	.12	.14	.12	.02
370	.06	.09	.12	.14	.10	.02
350	.06	.08	.10	.12	.10	.02
330	.06	.08	.10	.12	.10	.02
310	.06	.07	.09	.10	.10	.03
290	.05	.07	.09	.10	.10	.03
270	.05	.07	.08	.10	.09	.03
250	.05	.06	.08	.09	.08	.03
230	.05	.06	.07	.09	.08	.02
210	.05	.06	.07	.08	.07	.02
190	.04	.05	.07	.08	.06	.02

JULY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N N=10							75°N N=40						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.5	2.8	3.0	2.7	1.6	590	2.2	2.5	2.8	3.0	2.7	1.6
570	2.1	2.3	2.5	2.8	2.5	1.4	570	2.0	2.3	2.5	2.8	2.4	1.4
550	1.9	2.1	2.3	2.5	2.2	1.1	550	1.8	2.0	2.3	2.5	2.1	1.1
530	1.7	1.8	2.0	2.2	1.9	.9	530	1.6	1.8	2.0	2.2	1.4	.9
510	1.5	1.7	1.8	2.0	1.8	.8	510	1.4	1.6	1.8	2.0	1.7	.8
490	1.3	1.5	1.7	1.8	1.6	.60	490	1.3	1.4	1.6	1.8	1.5	.60
470	1.1	1.3	1.5	1.6	1.4	.45	470	1.1	1.3	1.4	1.6	1.4	.45
450	.9	1.1	1.2	1.4	1.2	.25	450	.9	1.1	1.2	1.4	1.2	.25
430	.8	1.0	1.1	1.2	1.2	.16	430	.8	.9	1.1	1.2	1.2	.16
410	.7	.8	1.0	1.1	1.1	.10	410	.65	.8	1.0	1.1	1.1	.10
390	.45	.7	.8	1.0	1.0	.05	390	.55	.65	.8	.9	1.0	.05
370	.45	.60	.7	.9	.9	.04	370	.45	.60	.7	.8	.9	.04
350	.40	.55	.65	.8	.8	.04	350	.40	.50	.65	.7	.8	.04
330	.35	.45	.55	.65	.7	.03	330	.30	.40	.55	.65	.7	.03
310	.25	.35	.45	.55	.55	.03	310	.25	.35	.40	.45	.55	.03
290	.20	.30	.40	.45	.45	.03	290	.18	.25	.35	.45	.45	.03
270	.18	.25	.30	.40	.40	.03	270	.16	.20	.30	.35	.40	.03
250	.12	.20	.25	.35	.30	.02	250	.12	.18	.25	.30	.30	.02
230	.09	.14	.20	.25	.25	.02	230	.09	.14	.18	.25	.25	.02
210	.08	.12	.16	.20	.18	.02	210	.08	.12	.16	.20	.18	.02
190	.07	.09	.12	.16	.12	.02	190	.07	.09	.12	.14	.12	.02

70°N N=20							65°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.4	2.7	3.0	2.7	1.6	590	2.1	2.4	2.7	3.0	2.8	1.6
570	1.9	2.2	2.5	2.8	2.4	1.4	570	1.9	2.2	2.5	2.8	2.5	1.4
550	1.7	2.0	2.2	2.5	2.1	1.1	550	1.6	1.9	2.2	2.5	2.2	1.1
530	1.5	1.7	2.0	2.2	1.8	.9	530	1.4	1.7	1.9	2.2	1.8	.9
510	1.3	1.6	1.8	2.0	1.7	.8	510	1.3	1.5	1.7	2.0	1.7	.8
490	1.2	1.4	1.6	1.8	1.6	.60	490	1.1	1.3	1.6	1.8	1.6	.60
470	1.0	1.2	1.4	1.6	1.5	.45	470	.9	1.2	1.4	1.6	1.5	.45
450	.8	1.0	1.2	1.4	1.3	.25	450	.8	.9	1.1	1.3	1.3	.30
430	.7	.9	1.1	1.2	1.2	.16	430	.65	.8	1.0	1.2	1.2	.20
410	.65	.8	.9	1.1	1.1	.10	410	.55	.7	.9	1.0	1.1	.12
390	.50	.65	.8	.9	1.0	.05	390	.45	.60	.8	.9	.9	.05
370	.45	.55	.7	.8	.9	.04	370	.40	.55	.65	.8	.8	.04
350	.35	.50	.60	.7	.8	.04	350	.35	.45	.55	.7	.7	.04
330	.30	.40	.50	.60	.65	.03	330	.25	.35	.45	.65	.60	.03
310	.20	.30	.40	.50	.50	.03	310	.18	.25	.35	.45	.45	.03
290	.16	.25	.30	.40	.40	.03	290	.12	.20	.25	.35	.35	.03
270	.14	.20	.25	.35	.35	.03	270	.10	.16	.25	.30	.30	.03
250	.12	.16	.20	.25	.25	.02	250	.09	.14	.20	.25	.25	.02
230	.09	.14	.18	.20	.18	.02	230	.08	.12	.16	.20	.18	.02
210	.08	.12	.14	.18	.14	.02	210	.07	.10	.14	.16	.14	.02
190	.07	.09	.12	.14	.10	.02	190	.06	.09	.12	.14	.10	.02

JULY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N N=5							55°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.0	2.4	2.7	3.1	2.8	1.5	590	1.9	2.2	2.5	2.8	2.5	1.4
570	1.8	2.1	2.5	2.8	2.4	1.3	570	1.7	2.0	2.3	2.6	2.3	1.2
550	1.6	1.9	2.2	2.5	2.1	1.1	550	1.4	1.7	2.0	2.3	2.0	.9
530	1.3	1.6	1.9	2.1	1.7	.8	530	1.2	1.4	1.7	2.0	1.7	.60
510	1.2	1.4	1.7	1.9	1.6	.7	510	1.1	1.3	1.5	1.8	1.6	.50
490	1.0	1.3	1.5	1.7	1.6	.55	490	.9	1.1	1.4	1.6	1.6	.45
470	.9	1.1	1.3	1.5	1.5	.45	470	.8	1.0	1.2	1.4	1.5	.35
450	.7	.9	1.1	1.2	1.4	.30	450	.60	.8	1.0	1.1	1.4	.20
430	.60	.8	.9	1.1	1.3	.20	430	.50	.7	.8	1.0	1.3	.16
410	.50	.7	.8	1.0	1.1	.12	410	.45	.60	.7	.9	1.1	.10
390	.45	.55	.7	.9	.8	.05	390	.35	.50	.65	.8	.8	.04
370	.35	.50	.60	.7	.7	.04	370	.30	.45	.55	.7	.7	.03
350	.30	.40	.50	.65	.65	.04	350	.25	.35	.45	.60	.65	.03
330	.20	.30	.40	.50	.50	.03	330	.18	.30	.40	.45	.50	.03
310	.14	.20	.30	.40	.40	.03	310	.12	.20	.30	.35	.40	.03
290	.09	.16	.25	.30	.35	.03	290	.09	.16	.20	.30	.35	.03
270	.08	.14	.20	.25	.30	.03	270	.08	.14	.18	.25	.30	.03
250	.07	.12	.16	.20	.20	.03	250	.07	.12	.16	.20	.20	.02
230	.07	.10	.14	.18	.18	.03	230	.07	.10	.14	.16	.18	.02
210	.06	.09	.12	.16	.14	.03	210	.06	.09	.12	.14	.14	.02
190	.06	.08	.12	.14	.10	.03	190	.06	.08	.10	.14	.10	.02

50°N N=15							45°N N=20						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.0	2.3	2.6	2.3	1.3	590	1.6	1.8	2.1	2.4	2.1	1.1
570	1.5	1.8	2.1	2.4	2.1	1.0	570	1.3	1.6	1.9	2.1	1.9	.8
550	1.3	1.6	1.8	2.1	1.8	.7	550	1.1	1.3	1.6	1.8	1.7	.45
530	1.0	1.3	1.6	1.8	1.5	.35	530	.8	1.0	1.3	1.5	1.4	.10
510	.9	1.2	1.4	1.7	1.4	.30	510	.7	.9	1.1	1.4	1.3	.10
490	.8	1.0	1.2	1.5	1.4	.25	490	.65	.8	1.0	1.2	1.2	.09
470	.65	.9	1.1	1.3	1.3	.20	470	.50	.7	.9	1.0	1.1	.09
450	.50	.7	.9	1.1	1.2	.18	450	.40	.55	.7	.9	.9	.08
430	.40	.60	.8	.9	1.1	.12	430	.35	.45	.60	.7	.9	.07
410	.35	.50	.65	.8	.9	.09	410	.30	.40	.55	.65	.8	.05
390	.30	.40	.55	.7	.7	.04	390	.25	.35	.45	.55	.7	.02
370	.25	.35	.50	.60	.65	.01	370	.20	.30	.40	.40	.65	.02
350	.20	.30	.40	.50	.55	.03	350	.18	.25	.35	.40	.55	.02
330	.16	.25	.35	.45	.45	.03	330	.14	.20	.30	.35	.45	.02
310	.12	.18	.25	.35	.35	.03	310	.10	.16	.20	.25	.35	.02
290	.09	.14	.20	.25	.30	.03	290	.08	.12	.18	.20	.30	.02
270	.08	.12	.18	.20	.25	.03	270	.08	.12	.16	.20	.25	.02
250	.07	.12	.14	.18	.20	.02	250	.07	.10	.14	.18	.20	.02
230	.07	.10	.12	.16	.16	.02	230	.07	.10	.12	.16	.16	.02
210	.06	.09	.12	.14	.12	.02	210	.07	.09	.12	.14	.14	.02
190	.06	.08	.10	.12	.10	.02	190	.06	.09	.10	.14	.10	.02

JULY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40° N N=40							35° N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.4	1.6	1.9	2.1	2.0	.8	590	1.3	1.5	1.7	1.9	1.8	.7
570	1.2	1.4	1.6	1.8	1.8	.65	570	1.0	1.2	1.4	1.6	1.6	.55
550	.9	1.1	1.3	1.5	1.5	.50	550	.8	1.0	1.2	1.3	1.3	.40
530	.60	.8	1.0	1.2	1.3	.30	530	.55	.7	.9	1.0	1.0	.25
510	.55	.7	.9	1.1	1.2	.25	510	.50	.60	.8	.9	.9	.20
490	.45	.60	.8	.9	1.0	.20	490	.40	.55	.65	.8	.8	.16
470	.40	.50	.65	.8	.9	.14	470	.30	.45	.55	.65	.7	.10
450	.30	.40	.55	.65	.7	.06	450	.25	.30	.40	.40	.60	.05
430	.25	.35	.45	.55	.65	.05	430	.20	.25	.35	.45	.55	.04
410	.20	.30	.40	.50	.65	.05	410	.16	.25	.30	.35	.45	.04
390	.20	.25	.35	.40	.65	.05	390	.14	.20	.25	.30	.30	.04
370	.18	.25	.30	.35	.60	.05	370	.12	.18	.20	.25	.30	.04
350	.14	.20	.25	.30	.50	.04	350	.12	.16	.20	.25	.25	.04
330	.12	.18	.20	.25	.40	.04	330	.10	.14	.18	.20	.25	.03
310	.09	.14	.18	.20	.30	.03	310	.09	.12	.14	.18	.20	.03
290	.08	.12	.16	.18	.25	.03	290	.08	.10	.14	.16	.18	.03
270	.07	.10	.14	.18	.20	.03	270	.08	.10	.12	.16	.16	.03
250	.07	.10	.14	.16	.16	.03	250	.07	.10	.12	.16	.14	.03
230	.07	.10	.12	.16	.14	.03	230	.07	.09	.12	.14	.12	.03
210	.07	.09	.12	.14	.12	.03	210	.07	.09	.12	.14	.10	.03
190	.06	.09	.12	.14	.10	.03	190	.06	.08	.10	.12	.09	.02

30° N N=13							25° N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.3	1.5	1.7	1.6	.60	590	1.0	1.2	1.3	1.5	1.4	.55
570	.9	1.1	1.3	1.5	1.4	.50	570	.8	1.0	1.1	1.3	1.1	.45
550	.7	.9	1.0	1.2	1.1	.35	550	.65	.8	.9	1.0	.9	.30
530	.45	.60	.7	.8	.8	.20	530	.45	.55	.65	.7	.65	.18
510	.40	.50	.65	.7	.7	.14	510	.40	.45	.55	.65	.60	.16
490	.35	.45	.55	.60	.7	.14	490	.30	.40	.45	.55	.50	.12
470	.25	.35	.40	.50	.65	.09	470	.25	.30	.40	.45	.45	.10
450	.18	.25	.30	.35	.65	.05	450	.18	.20	.25	.30	.35	.07
430	.14	.20	.25	.30	.45	.04	430	.14	.18	.20	.25	.30	.05
410	.12	.16	.20	.25	.35	.03	410	.12	.14	.18	.20	.25	.04
390	.09	.12	.14	.18	.18	.03	390	.09	.12	.14	.16	.16	.03
370	.08	.10	.14	.16	.16	.03	370	.08	.10	.12	.16	.14	.03
350	.08	.10	.14	.16	.14	.03	350	.08	.10	.12	.14	.14	.03
330	.08	.10	.12	.16	.14	.03	330	.07	.10	.12	.14	.12	.03
310	.08	.10	.12	.14	.12	.03	310	.07	.09	.12	.14	.12	.03
290	.08	.10	.12	.14	.12	.03	290	.07	.09	.10	.12	.12	.03
270	.08	.10	.12	.14	.12	.03	270	.07	.09	.10	.12	.12	.03
250	.07	.09	.12	.14	.10	.02	250	.07	.09	.10	.12	.10	.02
230	.07	.09	.10	.12	.10	.02	230	.06	.08	.10	.12	.10	.02
210	.06	.08	.10	.12	.09	.02	210	.06	.08	.10	.12	.09	.02
190	.06	.08	.10	.12	.08	.02	190	.06	.08	.10	.12	.08	.02

JULY - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20°N							15°N						
N=14							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.0	1.2	1.3	1.2	.50	590	.8	.9	1.0	1.2	1.1	.45
570	.7	.9	1.0	1.1	1.0	.40	570	.65	.7	.9	1.0	.9	.35
550	.55	.65	.8	.9	.7	.30	550	.45	.55	.65	.8	.65	.25
530	.40	.45	.55	.65	.50	.16	530	.30	.40	.45	.55	.40	.14
510	.35	.40	.50	.55	.45	.14	510	.25	.35	.40	.45	.35	.12
490	.30	.35	.40	.45	.35	.12	490	.25	.30	.35	.40	.30	.10
470	.25	.30	.35	.40	.30	.10	470	.18	.25	.25	.30	.25	.08
450	.18	.20	.25	.30	.20	.08	450	.14	.16	.20	.25	.18	.06
430	.14	.18	.20	.25	.18	.06	430	.10	.14	.16	.20	.16	.05
410	.12	.14	.16	.20	.16	.05	410	.09	.12	.14	.16	.14	.04
390	.09	.10	.12	.14	.12	.05	390	.07	.09	.10	.14	.12	.03
370	.08	.10	.12	.14	.12	.03	370	.06	.08	.10	.12	.12	.03
350	.07	.09	.12	.14	.12	.03	350	.06	.08	.10	.12	.10	.03
330	.07	.09	.10	.12	.10	.02	330	.06	.08	.10	.12	.10	.02
310	.06	.08	.10	.12	.10	.02	310	.05	.07	.09	.12	.09	.02
290	.06	.08	.10	.12	.10	.02	290	.05	.07	.09	.10	.09	.02
270	.06	.08	.10	.12	.10	.02	270	.05	.07	.09	.10	.09	.02
250	.06	.08	.10	.12	.09	.02	250	.05	.07	.08	.10	.08	.02
230	.06	.08	.10	.12	.09	.02	230	.05	.06	.08	.10	.08	.02
210	.06	.08	.10	.12	.09	.02	210	.05	.06	.08	.09	.07	.02
190	.05	.07	.09	.12	.08	.02	190	.04	.06	.07	.09	.06	.02

10°N						
N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.65	.8	.9	1.0	1.0	.35
570	.50	.65	.7	.9	.8	.30
550	.40	.45	.55	.65	.55	.20
530	.20	.30	.35	.45	.30	.12
510	.20	.25	.30	.40	.25	.10
490	.16	.20	.25	.30	.20	.08
470	.12	.16	.20	.25	.18	.06
450	.09	.12	.14	.18	.12	.04
430	.07	.10	.12	.14	.12	.03
410	.04	.09	.10	.14	.12	.02
390	.05	.07	.09	.12	.12	.02
370	.05	.07	.09	.10	.12	.02
350	.05	.07	.09	.10	.10	.02
330	.04	.06	.08	.10	.10	.01
310	.04	.06	.08	.10	.09	.01
290	.04	.06	.08	.09	.08	.01
270	.04	.06	.07	.09	.07	.01
250	.04	.05	.06	.08	.07	.01
230	.04	.05	.06	.07	.06	.01
210	.04	.05	.06	.07	.06	.01
190	.03	.04	.05	.06	.05	.01

JULY - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N							47°N						
N=32							N=107						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.4	1.7	2.0	2.2	1.9	1.0	590	1.3	1.5	1.8	2.0	2.4	.8
570	1.2	1.5	1.7	2.0	1.7	.8	570	1.1	1.3	1.5	1.8	2.1	.65
550	1.0	1.2	1.5	1.7	1.4	.60	550	.9	1.1	1.3	1.5	1.7	.50
530	.8	1.0	1.2	1.4	1.1	.40	530	.65	.9	1.1	1.3	1.3	.35
510	.7	.9	1.1	1.3	1.0	.35	510	.60	.8	1.0	1.2	1.3	.30
490	.60	.8	1.0	1.2	1.0	.25	490	.50	.7	.9	1.1	1.2	.20
470	.50	.7	.9	1.1	.9	.18	470	.45	.60	.8	1.0	1.1	.12
450	.40	.60	.8	1.0	.8	.09	450	.35	.50	.65	.8	1.0	.04
430	.35	.55	.7	.9	.7	.07	430	.30	.45	.60	.8	.9	.02
410	.30	.50	.65	.8	.65	.05	410	.25	.40	.55	.7	.8	.03
390	.25	.40	.60	.8	.60	.04	390	.25	.40	.55	.65	.65	.03
370	.20	.35	.50	.65	.55	.04	370	.20	.35	.45	.60	.60	.03
350	.18	.30	.45	.55	.50	.03	350	.16	.25	.40	.50	.55	.03
330	.14	.25	.35	.45	.45	.03	330	.14	.20	.30	.35	.45	.02
310	.10	.16	.25	.30	.40	.02	310	.09	.14	.20	.25	.40	.02
290	.08	.12	.18	.25	.35	.02	290	.07	.10	.14	.18	.35	.01
270	.07	.12	.16	.20	.30	.02	270	.07	.10	.12	.16	.25	.01
250	.07	.10	.14	.18	.25	.02	250	.06	.08	.10	.12	.16	.01
230	.06	.10	.14	.16	.20	.02	230	.06	.07	.09	.10	.09	.01
210	.06	.08	.12	.14	.16	.02	210	.06	.07	.09	.10	.09	.01
190	.05	.07	.09	.10	.12	.02	190	.06	.07	.09	.10	.09	.01

39°N						
N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.0	1.2	1.3	1.1	.60
570	.7	.9	1.0	1.2	1.0	.50
550	.55	.7	.8	1.0	.9	.35
530	.35	.50	.65	.8	.7	.18
510	.35	.50	.60	.8	.7	.16
490	.30	.45	.55	.7	.60	.14
470	.25	.40	.50	.65	.55	.10
450	.20	.35	.45	.60	.50	.07
430	.20	.30	.40	.50	.40	.06
410	.16	.25	.35	.45	.35	.06
390	.14	.20	.25	.35	.30	.06
370	.12	.18	.25	.30	.25	.05
350	.10	.16	.20	.25	.20	.05
330	.09	.12	.16	.20	.18	.05
310	.08	.10	.12	.14	.12	.04
290	.07	.09	.10	.12	.10	.04
270	.07	.09	.10	.12	.12	.04
250	.07	.09	.10	.12	.12	.04
230	.07	.09	.10	.12	.12	.04
210	.07	.09	.10	.12	.12	.04
190	.06	.08	.10	.12	.12	.04

AUGUST - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43°N N=16							36°N N=3						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.0	1.1	1.3	1.4	1.2	.7	590	.8	.9	.9	1.0	.9	.7
570	.8	.9	1.1	1.2	1.0	.55	570	.7	.8	.8	.9	.8	.60
550	.60	.7	.9	1.0	.9	.35	550	.55	.65	.7	.8	.65	.45
530	.35	.50	.65	.8	.65	.18	530	.40	.50	.60	.45	.55	.35
510	.30	.45	.55	.65	.55	.16	510	.35	.40	.50	.45	.45	.30
490	.25	.35	.45	.55	.45	.14	490	.30	.35	.40	.45	.35	.25
470	.20	.25	.35	.40	.35	.12	470	.25	.25	.30	.35	.30	.20
450	.14	.18	.20	.25	.20	.09	450	.16	.18	.20	.20	.18	.14
430	.12	.14	.18	.20	.20	.07	430	.14	.16	.18	.20	.16	.12
410	.10	.14	.16	.20	.18	.06	410	.14	.16	.18	.20	.16	.10
390	.08	.12	.14	.18	.16	.05	390	.14	.16	.20	.20	.16	.09
370	.08	.12	.14	.18	.16	.04	370	.12	.14	.18	.20	.16	.09
350	.08	.10	.14	.16	.16	.04	350	.10	.12	.14	.16	.14	.08
330	.07	.10	.14	.16	.14	.04	330	.10	.10	.12	.14	.12	.08
310	.07	.10	.12	.16	.14	.04	310	.08	.09	.09	.10	.09	.08
290	.07	.09	.12	.14	.12	.04	290	.07	.08	.08	.08	.08	.07
270	.07	.09	.12	.14	.12	.04	270	.07	.08	.08	.08	.08	.07
250	.07	.09	.12	.14	.12	.04	250	.07	.07	.08	.08	.07	.06
230	.07	.09	.12	.14	.12	.03	230	.07	.07	.08	.08	.07	.06
210	.07	.09	.10	.12	.10	.03	210	.07	.07	.08	.08	.07	.06
190	.07	.09	.10	.12	.10	.03	190	.06	.07	.08	.09	.07	.05

32°N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	.9	1.0	1.1	1.0	.55
570	.60	.7	.8	.9	.8	.40
550	.40	.50	.60	.7	.65	.25
530	.20	.30	.35	.45	.45	.10
510	.18	.25	.30	.40	.40	.09
490	.14	.20	.25	.30	.30	.08
470	.12	.16	.20	.25	.25	.06
450	.09	.12	.14	.18	.14	.04
430	.07	.10	.12	.16	.12	.03
410	.07	.09	.12	.14	.12	.03
390	.06	.08	.10	.12	.10	.04
370	.06	.08	.10	.12	.10	.03
350	.06	.08	.09	.12	.10	.03
330	.06	.08	.09	.12	.10	.03
310	.05	.07	.09	.12	.10	.03
290	.05	.07	.09	.12	.09	.03
270	.05	.07	.09	.10	.09	.03
250	.05	.07	.09	.10	.09	.03
230	.05	.07	.09	.10	.09	.03
210	.05	.07	.09	.10	.09	.02
190	.05	.06	.08	.10	.09	.02

AUGUST - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	65° N						N=8	FLIGHT LEVEL	60° N						N=8
	MEAN	16%	2%	.1%	MAX	MIN			MEAN	16%	2%	.1%	MAX	MIN	
590	2.1	2.4	2.6	2.9	2.5	1.7	590	1.9	2.2	2.4	2.6	2.3	1.6		
570	1.8	2.1	2.3	2.6	2.3	1.5	570	1.7	1.9	2.1	2.4	2.1	1.3		
550	1.5	1.8	2.0	2.2	2.0	1.2	550	1.4	1.6	1.8	2.0	1.8	1.1		
530	1.2	1.4	1.6	1.9	1.7	.9	530	1.0	1.3	1.5	1.7	1.5	.8		
510	1.0	1.3	1.5	1.7	1.5	.8	510	.9	1.1	1.3	1.6	1.4	.65		
490	.9	1.1	1.3	1.5	1.3	.65	490	.8	1.0	1.2	1.4	1.2	.55		
470	.7	.9	1.1	1.2	1.1	.50	470	.65	.8	1.0	1.2	1.0	.40		
450	.55	.7	.9	1.1	.8	.30	450	.50	.65	.8	1.0	.8	.25		
430	.50	.60	.7	.9	.7	.25	430	.45	.60	.7	.9	.65	.18		
410	.40	.55	.65	.8	.60	.18	410	.35	.50	.65	.8	.60	.14		
390	.35	.45	.55	.7	.45	.10	390	.30	.45	.55	.7	.45	.09		
370	.30	.40	.45	.55	.40	.08	370	.25	.35	.45	.60	.40	.07		
350	.20	.30	.40	.45	.30	.07	350	.20	.30	.40	.45	.30	.06		
330	.16	.20	.25	.35	.20	.06	330	.16	.20	.25	.35	.25	.05		
310	.10	.14	.16	.18	.14	.04	310	.09	.12	.16	.20	.14	.03		
290	.07	.08	.10	.12	.09	.03	290	.06	.08	.10	.12	.09	.03		
270	.06	.08	.09	.12	.08	.03	270	.06	.08	.10	.12	.09	.03		
250	.06	.07	.09	.10	.08	.03	250	.06	.07	.09	.12	.08	.03		
230	.05	.07	.08	.09	.07	.03	230	.05	.07	.09	.10	.08	.02		
210	.05	.06	.07	.09	.07	.03	210	.05	.06	.08	.09	.07	.02		
190	.04	.05	.07	.08	.06	.03	190	.04	.06	.07	.09	.07	.02		

FLIGHT LEVEL	55° N						N=8	FLIGHT LEVEL	50° N						N=9
	MEAN	16%	2%	.1%	MAX	MIN			MEAN	16%	2%	.1%	MAX	MIN	
590	1.7	1.9	2.2	2.4	2.0	1.4	590	1.5	1.7	1.9	2.1	1.8	1.2		
570	1.5	1.7	1.9	2.1	1.8	1.2	570	1.3	1.5	1.7	1.9	1.6	1.0		
550	1.2	1.4	1.6	1.8	1.6	.9	550	1.0	1.2	1.4	1.6	1.3	.8		
530	.9	1.1	1.3	1.5	1.3	.65	530	.7	1.0	1.2	1.4	1.1	.50		
510	.8	1.0	1.2	1.4	1.2	.55	510	.65	.9	1.1	1.3	1.0	.40		
490	.7	.9	1.1	1.3	1.1	.45	490	.60	.8	1.0	1.2	.9	.30		
470	.55	.8	1.0	1.2	.9	.30	470	.50	.7	.9	1.1	.8	.20		
450	.45	.65	.8	1.0	.8	.18	450	.40	.60	.8	1.0	.7	.10		
430	.40	.55	.7	.9	.65	.12	430	.35	.50	.7	.9	.65	.07		
410	.35	.50	.65	.8	.55	.10	410	.30	.45	.65	.8	.55	.06		
390	.30	.40	.55	.7	.45	.07	390	.25	.40	.55	.7	.50	.05		
370	.25	.35	.45	.60	.40	.06	370	.20	.35	.45	.60	.40	.04		
350	.18	.30	.40	.45	.30	.05	350	.18	.30	.40	.50	.30	.04		
330	.14	.20	.30	.35	.25	.04	330	.12	.20	.30	.35	.25	.03		
310	.09	.12	.16	.20	.14	.03	310	.08	.12	.16	.20	.14	.02		
290	.06	.09	.10	.14	.09	.02	290	.06	.09	.12	.14	.10	.02		
270	.06	.08	.10	.12	.09	.02	270	.06	.08	.10	.14	.09	.02		
250	.05	.08	.10	.12	.09	.02	250	.05	.08	.10	.12	.09	.02		
230	.05	.07	.09	.12	.08	.02	230	.05	.07	.10	.12	.09	.01		
210	.05	.07	.08	.10	.08	.02	210	.05	.07	.09	.12	.08	.01		
190	.04	.06	.08	.10	.07	.02	190	.04	.06	.08	.10	.08	.01		

AUGUST - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45°N N=21							40°N N=44						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.5	1.7	1.9	1.6	1.0	590	1.1	1.2	1.4	1.6	1.5	.7
570	1.1	1.3	1.4	1.6	1.4	.8	570	.8	1.0	1.2	1.3	1.2	.55
550	.8	1.0	1.2	1.3	1.1	.60	550	.60	.7	.8	1.0	.9	.40
530	.58	.7	.9	1.0	.8	.35	530	.35	.45	.55	.60	.55	.20
510	.50	.65	.8	1.0	.8	.30	510	.30	.40	.50	.55	.50	.18
490	.45	.60	.8	.9	.7	.20	490	.25	.35	.40	.50	.50	.14
470	.35	.55	.7	.9	.7	.14	470	.20	.30	.35	.45	.45	.10
450	.30	.45	.60	.8	.60	.05	450	.14	.20	.30	.35	.45	.05
430	.25	.40	.55	.7	.55	.04	430	.12	.18	.25	.30	.40	.03
410	.20	.35	.50	.65	.50	.03	410	.10	.16	.20	.25	.35	.02
390	.18	.30	.45	.55	.40	.03	390	.09	.14	.18	.25	.30	.01
370	.16	.25	.35	.45	.35	.03	370	.08	.12	.16	.20	.25	.01
350	.14	.20	.30	.40	.30	.02	350	.08	.12	.16	.20	.25	.02
330	.10	.16	.25	.30	.25	.02	330	.07	.10	.14	.18	.20	.02
310	.08	.12	.16	.20	.16	.02	310	.07	.10	.12	.16	.18	.02
290	.06	.09	.12	.14	.12	.02	290	.06	.09	.12	.14	.16	.02
270	.06	.08	.10	.14	.12	.02	270	.06	.08	.10	.14	.14	.02
250	.05	.08	.10	.12	.10	.02	250	.06	.08	.10	.12	.12	.02
230	.05	.07	.10	.12	.10	.02	230	.06	.08	.09	.12	.12	.02
210	.05	.07	.09	.12	.09	.02	210	.05	.07	.09	.10	.10	.02
190	.04	.06	.08	.10	.08	.02	190	.05	.06	.08	.09	.08	.02

35°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.0	1.1	1.3	1.1	.60
570	.7	.8	.9	1.1	.9	.50
550	.50	.60	.7	.8	.7	.35
530	.30	.40	.50	.60	.45	.16
510	.25	.35	.45	.50	.40	.14
490	.20	.30	.35	.40	.35	.12
470	.16	.20	.25	.30	.25	.09
450	.09	.12	.14	.18	.16	.06
430	.08	.10	.12	.14	.12	.04
410	.07	.09	.12	.14	.12	.04
390	.06	.08	.10	.14	.12	.03
370	.06	.08	.10	.12	.10	.03
350	.06	.08	.10	.12	.10	.03
330	.06	.08	.10	.12	.10	.03
310	.05	.08	.10	.12	.10	.03
290	.05	.08	.10	.12	.10	.03
270	.05	.07	.09	.12	.10	.03
250	.05	.07	.09	.10	.09	.03
230	.05	.07	.08	.10	.09	.03
210	.05	.06	.08	.09	.08	.03
190	.04	.06	.07	.09	.08	.03

AUGUST - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N N=15							75°N N=40						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.5	2.6	2.8	2.9	1.8	590	2.2	2.4	2.6	2.8	2.9	1.8
570	2.1	2.2	2.4	2.5	2.5	1.4	570	2.0	2.1	2.3	2.5	2.5	1.4
550	1.8	2.0	2.1	2.3	2.2	1.1	550	1.7	1.9	2.0	2.2	2.2	1.1
530	1.6	1.7	1.8	2.0	1.8	.7	530	1.4	1.6	1.7	1.9	1.8	.7
510	1.4	1.5	1.6	1.7	1.6	.65	510	1.3	1.4	1.5	1.7	1.6	.65
490	1.2	1.3	1.4	1.5	1.4	.55	490	1.1	1.2	1.3	1.4	1.4	.55
470	.9	1.0	1.1	1.2	1.1	.45	470	.8	1.0	1.1	1.2	1.1	.45
450	.65	.7	.8	.9	.9	.35	450	.60	.7	.8	.9	.9	.35
430	.55	.65	.7	.8	.8	.30	430	.50	.60	.7	.8	.8	.30
410	.50	.55	.65	.7	.7	.25	410	.45	.55	.60	.7	.7	.25
390	.45	.50	.60	.65	.60	.20	390	.40	.45	.55	.65	.60	.20
370	.40	.45	.50	.60	.55	.16	370	.35	.40	.50	.55	.55	.16
350	.30	.40	.45	.50	.50	.12	350	.30	.35	.40	.45	.50	.12
330	.25	.30	.35	.40	.50	.08	330	.20	.25	.35	.40	.50	.08
310	.18	.25	.30	.35	.45	.04	310	.16	.20	.25	.30	.45	.04
290	.14	.18	.20	.25	.35	.02	290	.12	.16	.20	.25	.35	.02
270	.12	.16	.18	.20	.30	.02	270	.10	.14	.16	.20	.30	.02
250	.09	.12	.16	.18	.25	.02	250	.08	.10	.14	.16	.25	.02
230	.07	.09	.12	.14	.18	.02	230	.06	.09	.12	.14	.18	.02
210	.06	.08	.10	.12	.14	.02	210	.06	.08	.10	.12	.14	.02
190	.06	.07	.09	.10	.10	.02	190	.06	.07	.09	.10	.10	.02

70°N N=20							65°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.3	2.5	2.7	2.9	1.8	590	2.0	2.2	2.4	2.7	2.9	1.7
570	1.8	2.0	2.2	2.4	2.5	1.4	570	1.8	2.0	2.2	2.4	2.5	1.4
550	1.6	1.8	1.9	2.1	2.2	1.1	550	1.5	1.7	1.9	2.1	2.1	1.1
530	1.3	1.5	1.6	1.8	1.8	.7	530	1.2	1.4	1.6	1.7	1.7	.7
510	1.1	1.3	1.4	1.6	1.6	.65	510	1.1	1.2	1.4	1.6	1.6	.65
490	1.0	1.1	1.2	1.4	1.3	.55	490	.9	1.1	1.2	1.4	1.3	.55
470	.8	.9	1.0	1.2	1.1	.45	470	.8	.9	1.0	1.2	1.0	.45
450	.45	.65	.8	.9	.8	.35	450	.55	.7	.8	1.0	.8	.35
430	.45	.55	.7	.8	.7	.30	430	.45	.60	.7	.8	.7	.30
410	.40	.50	.60	.7	.65	.25	410	.40	.50	.60	.7	.65	.25
390	.35	.40	.50	.60	.60	.18	390	.30	.40	.50	.60	.60	.16
370	.30	.35	.45	.50	.55	.14	370	.25	.35	.40	.50	.55	.12
350	.25	.30	.35	.45	.50	.10	350	.20	.30	.35	.40	.50	.09
330	.18	.25	.30	.35	.45	.07	330	.16	.20	.30	.35	.45	.07
310	.12	.16	.20	.25	.40	.04	310	.10	.16	.20	.25	.40	.04
290	.08	.12	.16	.20	.35	.02	290	.08	.12	.16	.20	.35	.02
270	.07	.12	.14	.18	.30	.02	270	.07	.10	.14	.18	.30	.02
250	.07	.10	.12	.16	.20	.02	250	.06	.09	.12	.16	.20	.02
230	.06	.08	.10	.14	.18	.02	230	.05	.08	.10	.14	.18	.02
210	.06	.08	.10	.12	.14	.02	210	.05	.07	.10	.12	.14	.02
190	.05	.07	.09	.10	.10	.02	190	.05	.07	.09	.10	.09	.02

AUGUST - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N							N=5	55°N							N=10
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN		FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
590	1.9	2.1	2.4	2.6	2.9	1.7		590	1.7	2.0	2.2	2.5	2.7	1.5	
570	1.7	1.9	2.1	2.3	2.5	1.4		570	1.5	1.7	2.0	2.2	2.4	1.2	
550	1.4	1.6	1.8	2.0	2.1	1.0		550	1.3	1.5	1.7	1.9	2.1	.9	
530	1.1	1.3	1.5	1.7	1.7	.65		530	1.0	1.2	1.3	1.5	1.7	.60	
510	1.0	1.2	1.3	1.5	1.5	.60		510	.9	1.0	1.2	1.4	1.5	.50	
490	.8	1.0	1.2	1.3	1.3	.50		490	.7	.9	1.1	1.2	1.3	.45	
470	.7	.8	1.0	1.1	1.0	.40		470	.60	.7	.9	1.0	1.0	.35	
450	.50	.65	.8	.9	.8	.30		450	.45	.55	.7	.8	.8	.20	
430	.40	.55	.65	.8	.7	.25		430	.35	.50	.60	.7	.7	.16	
410	.35	.45	.55	.65	.65	.18		410	.30	.45	.55	.65	.65	.10	
390	.25	.35	.45	.55	.60	.09		390	.25	.35	.45	.55	.65	.05	
370	.25	.30	.40	.45	.55	.07		370	.25	.30	.40	.50	.60	.04	
350	.18	.25	.35	.40	.50	.06		350	.20	.25	.35	.40	.50	.04	
330	.14	.20	.25	.35	.40	.04		330	.14	.20	.25	.35	.45	.03	
310	.10	.16	.20	.25	.35	.03		310	.10	.16	.20	.25	.35	.03	
290	.07	.12	.16	.20	.30	.02		290	.07	.12	.16	.20	.30	.03	
270	.07	.10	.14	.18	.25	.02		270	.07	.10	.14	.18	.25	.03	
250	.06	.09	.12	.16	.20	.02		250	.06	.09	.12	.16	.20	.02	
230	.05	.08	.10	.14	.16	.02		230	.05	.08	.10	.14	.16	.02	
210	.05	.07	.10	.12	.12	.02		210	.05	.07	.09	.12	.12	.02	
190	.04	.07	.09	.12	.08	.02		190	.05	.06	.08	.09	.08	.02	

50°N							N=10	45°N							N=20
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN		FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
590	1.6	1.8	2.1	2.3	2.4	1.2		590	1.4	1.7	1.9	2.1	2.1	1.1	
570	1.4	1.6	1.8	2.0	2.2	1.0		570	1.2	1.4	1.6	1.8	1.8	.9	
550	1.1	1.3	1.5	1.7	1.9	.8		550	1.0	1.1	1.3	1.5	1.5	.65	
530	.8	1.0	1.2	1.4	1.6	.50		530	.7	.9	1.0	1.2	1.2	.40	
510	.7	.9	1.1	1.2	1.4	.45		510	.60	.8	.9	1.1	1.1	.35	
490	.65	.8	.9	1.1	1.2	.35		490	.50	.65	.8	1.0	1.0	.25	
470	.50	.65	.8	.9	1.0	.25		470	.40	.55	.7	.8	.8	.18	
450	.40	.50	.65	.8	.7	.18		450	.30	.45	.55	.7	.7	.10	
430	.35	.45	.60	.7	.7	.14		430	.25	.40	.50	.60	.65	.08	
410	.30	.40	.50	.65	.65	.09		410	.25	.35	.45	.50	.60	.06	
390	.25	.35	.45	.55	.60	.05		390	.18	.25	.35	.45	.55	.04	
370	.25	.30	.40	.50	.55	.04		370	.16	.25	.30	.40	.50	.04	
350	.20	.25	.35	.40	.50	.04		350	.14	.20	.25	.35	.45	.04	
330	.14	.20	.25	.35	.40	.03		330	.12	.18	.20	.30	.40	.03	
310	.10	.16	.20	.25	.35	.03		310	.09	.14	.18	.20	.35	.03	
290	.07	.12	.16	.20	.30	.03		290	.08	.12	.14	.18	.30	.03	
270	.07	.10	.14	.18	.25	.03		270	.07	.10	.14	.18	.25	.03	
250	.06	.10	.12	.16	.20	.02		250	.07	.10	.14	.16	.20	.03	
230	.06	.09	.12	.14	.16	.02		230	.06	.09	.12	.16	.18	.03	
210	.06	.08	.10	.14	.12	.02		210	.06	.09	.12	.14	.14	.03	
190	.05	.08	.10	.12	.09	.02		190	.06	.08	.10	.14	.12	.03	

AUGUST - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40° N							35° N						
N=40							N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.5	1.7	1.9	1.8	.65	590	1.1	1.3	1.5	1.7	1.5	.60
570	1.0	1.2	1.4	1.6	1.5	.50	570	.9	1.1	1.3	1.4	1.3	.45
550	.8	1.0	1.2	1.3	1.2	.30	550	.7	.9	1.0	1.1	1.0	.30
530	.55	.7	.9	1.0	.9	.06	530	.50	.60	.7	.8	.7	.10
510	.50	.65	.8	.9	.8	.05	510	.40	.55	.65	.8	.65	.09
490	.40	.55	.7	.8	.8	.04	490	.35	.45	.55	.7	.60	.07
470	.35	.45	.60	.7	.7	.03	470	.30	.40	.50	.60	.55	.05
450	.25	.35	.50	.60	.60	.01	450	.20	.30	.40	.50	.45	.03
430	.20	.30	.40	.50	.55	.01	430	.15	.25	.35	.40	.40	.03
410	.16	.25	.35	.40	.50	.01	410	.14	.20	.25	.35	.35	.02
390	.10	.18	.25	.30	.40	.01	390	.10	.16	.20	.25	.25	.02
370	.10	.16	.20	.30	.40	.01	370	.09	.14	.18	.25	.25	.02
350	.09	.14	.20	.25	.35	.01	350	.09	.12	.18	.20	.25	.02
330	.09	.14	.18	.20	.30	.01	330	.08	.12	.16	.20	.20	.02
310	.08	.12	.16	.18	.24	.01	310	.08	.12	.14	.18	.20	.02
290	.08	.10	.14	.16	.25	.01	290	.08	.10	.14	.16	.20	.02
270	.07	.10	.14	.16	.20	.01	270	.08	.10	.14	.16	.18	.02
250	.07	.10	.14	.16	.18	.01	250	.07	.10	.14	.16	.16	.03
230	.07	.10	.12	.16	.16	.01	230	.07	.10	.12	.16	.14	.03
210	.07	.09	.12	.14	.14	.02	210	.07	.09	.12	.14	.12	.03
190	.06	.09	.12	.14	.10	.02	190	.06	.09	.12	.14	.10	.03

30° N							25° N						
N=12							N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.0	1.2	1.3	1.4	1.3	.60	590	.9	1.0	1.1	1.2	1.1	.55
570	.8	1.0	1.1	1.2	1.0	.45	570	.7	.8	.9	1.0	.9	.40
550	.60	.7	.8	.9	.8	.30	550	.50	.60	.7	.8	.65	.25
530	.40	.50	.60	.65	.55	.14	530	.30	.40	.45	.55	.45	.09
510	.35	.45	.50	.60	.50	.12	510	.30	.35	.40	.50	.40	.06
490	.30	.40	.45	.55	.45	.10	490	.25	.30	.35	.45	.35	.07
470	.25	.30	.40	.45	.40	.07	470	.18	.25	.30	.35	.30	.06
450	.18	.25	.30	.35	.35	.05	450	.14	.18	.25	.30	.25	.04
430	.14	.20	.25	.30	.30	.04	430	.12	.16	.20	.25	.20	.04
410	.12	.16	.20	.25	.25	.03	410	.10	.14	.18	.20	.18	.03
390	.09	.12	.16	.20	.18	.03	390	.08	.12	.14	.18	.14	.02
370	.08	.12	.16	.20	.16	.03	370	.07	.10	.14	.18	.14	.02
350	.08	.12	.16	.18	.16	.04	350	.07	.10	.14	.16	.14	.02
330	.08	.12	.14	.18	.18	.04	330	.07	.10	.12	.16	.12	.03
310	.08	.12	.14	.18	.18	.05	310	.07	.09	.12	.14	.12	.03
290	.08	.10	.14	.16	.16	.05	290	.06	.09	.12	.14	.12	.03
270	.08	.10	.14	.16	.16	.04	270	.06	.09	.12	.14	.12	.03
250	.07	.10	.14	.16	.14	.04	250	.06	.09	.12	.14	.10	.03
230	.07	.10	.12	.16	.12	.03	230	.06	.08	.10	.14	.10	.03
210	.07	.09	.12	.14	.12	.03	210	.06	.08	.10	.12	.09	.03
190	.06	.09	.12	.14	.10	.03	190	.06	.08	.10	.12	.08	.03

AUGUST - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20° N							N=10	15° N							N=5
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN		FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
570	.7	.8	.9	1.0	.9	.50		590	.60	.7	.8	.9	.7	.40	
570	.55	.65	.7	.8	.7	.35		570	.45	.55	.60	.7	.55	.30	
550	.40	.45	.55	.65	.55	.20		550	.30	.35	.45	.40	.40	.18	
530	.25	.30	.35	.45	.35	.04		530	.14	.18	.25	.30	.20	.05	
510	.20	.25	.30	.40	.30	.04		510	.12	.16	.20	.25	.18	.05	
490	.16	.20	.25	.30	.25	.04		490	.10	.14	.18	.20	.14	.04	
470	.14	.18	.20	.25	.20	.04		470	.09	.12	.14	.18	.12	.04	
450	.10	.12	.16	.20	.14	.04		450	.06	.09	.10	.12	.09	.03	
430	.09	.12	.14	.18	.12	.04		430	.06	.08	.09	.12	.08	.03	
410	.08	.10	.14	.16	.10	.03		410	.05	.07	.08	.10	.07	.02	
390	.07	.10	.14	.16	.10	.02		390	.05	.06	.07	.08	.06	.02	
370	.07	.09	.12	.16	.10	.02		370	.05	.06	.07	.08	.06	.02	
350	.06	.09	.12	.14	.09	.02		350	.05	.06	.07	.08	.06	.02	
330	.06	.08	.10	.12	.09	.02		330	.04	.06	.07	.08	.06	.02	
310	.05	.07	.10	.12	.08	.02		310	.04	.06	.07	.08	.06	.02	
290	.05	.07	.09	.12	.08	.02		290	.04	.06	.07	.09	.06	.02	
270	.05	.07	.09	.12	.08	.02		270	.04	.06	.07	.09	.06	.02	
250	.05	.07	.09	.12	.08	.02		250	.04	.06	.07	.09	.06	.02	
230	.05	.07	.09	.10	.08	.02		230	.04	.06	.07	.08	.06	.02	
210	.05	.07	.08	.10	.08	.02		210	.04	.05	.07	.08	.06	.02	
190	.05	.06	.08	.09	.07	.02		190	.04	.05	.06	.08	.05	.02	

10° N							N=7
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
590	.50	.60	.65	.8	.60	.35	
570	.40	.45	.50	.60	.45	.25	
550	.25	.30	.35	.40	.30	.16	
530	.17	.14	.18	.20	.16	.07	
510	.10	.12	.16	.18	.14	.06	
490	.09	.10	.12	.14	.12	.05	
470	.07	.08	.10	.12	.09	.04	
450	.04	.06	.07	.08	.06	.02	
430	.04	.05	.06	.07	.05	.02	
410	.04	.05	.06	.07	.04	.01	
390	.04	.05	.06	.07	.04	.01	
370	.04	.05	.06	.07	.04	.01	
350	.04	.05	.06	.07	.04	.01	
330	.03	.04	.05	.06	.05	.02	
310	.03	.04	.05	.06	.05	.02	
290	.03	.04	.05	.06	.05	.02	
270	.03	.04	.05	.06	.05	.02	
250	.03	.04	.05	.06	.05	.01	
230	.03	.04	.05	.06	.05	.01	
210	.03	.04	.05	.06	.05	.01	
190	.03	.04	.05	.06	.04	.01	

AUGUST - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N N=32							47°N N=88						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.8	2.1	2.3	2.2	1.0	590	1.3	1.5	1.8	2.0	2.7	.8
570	1.3	1.6	1.8	2.1	2.0	.8	570	1.1	1.3	1.6	1.8	2.4	.60
550	1.1	1.3	1.6	1.8	1.7	.55	550	.9	1.1	1.3	1.5	2.0	.45
530	.8	1.0	1.3	1.5	1.4	.30	530	.65	.8	1.0	1.2	1.6	.25
510	.7	.9	1.1	1.3	1.2	.30	510	.55	.7	.9	1.1	1.4	.20
490	.60	.8	1.0	1.1	1.1	.25	490	.45	.65	.8	.9	1.2	.18
470	.50	.65	.8	.9	.9	.20	470	.40	.50	.65	.8	.9	.12
450	.35	.45	.55	.7	.65	.16	450	.25	.40	.50	.65	.60	.06
430	.30	.40	.50	.60	.55	.12	430	.25	.35	.45	.55	.50	.05
410	.25	.35	.40	.50	.45	.10	410	.20	.30	.40	.50	.50	.04
390	.18	.25	.35	.45	.40	.07	390	.16	.25	.35	.40	.45	.03
370	.16	.25	.30	.40	.35	.05	370	.14	.20	.30	.35	.40	.03
350	.14	.20	.25	.35	.30	.05	350	.12	.18	.25	.30	.40	.03
330	.12	.16	.20	.25	.25	.04	330	.10	.14	.20	.25	.35	.02
310	.09	.12	.16	.20	.20	.03	310	.08	.12	.16	.18	.30	.02
290	.07	.10	.14	.16	.18	.03	290	.07	.10	.12	.16	.25	.02
270	.07	.10	.12	.16	.16	.03	270	.07	.09	.12	.14	.20	.02
250	.06	.09	.12	.14	.14	.02	250	.06	.08	.10	.12	.16	.01
230	.06	.08	.10	.14	.12	.02	230	.06	.08	.10	.12	.12	.01
210	.06	.08	.10	.12	.10	.02	210	.06	.07	.09	.10	.10	.02
190	.05	.07	.09	.10	.08	.02	190	.05	.07	.08	.10	.10	.02

39°N N=12						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.1	1.2	1.3	1.3	.65
570	.8	.9	1.0	1.1	1.1	.55
550	.55	.65	.8	.9	.8	.35
530	.35	.45	.55	.65	.60	.20
510	.30	.40	.50	.60	.55	.16
490	.25	.35	.45	.55	.45	.12
470	.20	.30	.40	.50	.40	.07
450	.14	.25	.35	.40	.35	.02
430	.12	.20	.30	.35	.30	.02
410	.12	.16	.25	.30	.25	.04
390	.10	.14	.16	.20	.16	.05
370	.09	.12	.14	.18	.14	.05
350	.08	.10	.14	.16	.14	.04
330	.07	.10	.12	.14	.12	.03
310	.07	.09	.10	.14	.12	.01
290	.06	.08	.10	.12	.10	.01
270	.06	.08	.10	.12	.09	.02
250	.06	.08	.09	.10	.09	.02
230	.06	.07	.09	.10	.08	.03
210	.06	.07	.09	.10	.09	.03
190	.06	.07	.09	.10	.09	.03

SEPTEMBER - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43°N							N=15	36°N							N=16
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN		FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
590	1.2	1.4	1.7	2.0	1.9	.8		590	1.0	1.3	1.5	1.8	1.5	.55	
570	1.0	1.2	1.5	1.7	1.6	.60		570	.8	1.0	1.2	1.5	1.2	.40	
550	.7	1.0	1.2	1.4	1.3	.40		550	.50	.7	.9	1.1	.9	.20	
530	.50	.7	.9	1.1	1.0	.14		530	.25	.40	.55	.65	.60	.03	
510	.45	.65	.8	1.0	.9	.14		510	.20	.35	.45	.60	.55	.03	
490	.40	.55	.7	.9	.8	.12		490	.18	.30	.40	.50	.45	.02	
470	.30	.45	.60	.7	.65	.10		470	.16	.25	.30	.40	.35	.02	
450	.25	.35	.45	.60	.55	.08		450	.12	.16	.25	.30	.25	.01	
430	.20	.30	.40	.55	.50	.07		430	.10	.14	.20	.25	.25	.01	
410	.20	.30	.40	.50	.45	.06		410	.08	.12	.18	.20	.20	.01	
390	.18	.25	.35	.45	.40	.05		390	.07	.12	.16	.18	.18	.02	
370	.16	.25	.35	.40	.40	.05		370	.07	.10	.14	.18	.16	.02	
350	.14	.20	.30	.35	.35	.05		350	.06	.09	.12	.16	.14	.02	
330	.12	.18	.25	.30	.25	.05		330	.06	.08	.10	.14	.12	.02	
310	.09	.14	.18	.20	.20	.04		310	.05	.07	.09	.12	.09	.02	
290	.08	.12	.14	.18	.18	.04		290	.05	.07	.09	.10	.08	.02	
270	.08	.10	.14	.16	.16	.04		270	.05	.07	.09	.10	.09	.02	
250	.07	.10	.12	.14	.14	.04		250	.05	.07	.09	.10	.09	.02	
230	.07	.09	.12	.14	.12	.04		230	.05	.07	.09	.10	.09	.02	
210	.07	.08	.10	.12	.10	.04		210	.06	.07	.09	.10	.09	.02	
190	.06	.07	.09	.10	.09	.04		190	.06	.07	.09	.12	.09	.02	

32°N							N=16
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
590	.7	.9	1.0	1.1	.9	.50	
570	.55	.65	.8	.9	.7	.40	
550	.35	.45	.50	.60	.50	.25	
530	.16	.20	.25	.30	.25	.09	
510	.14	.20	.25	.30	.25	.08	
490	.12	.18	.20	.25	.20	.06	
470	.10	.14	.18	.25	.18	.05	
450	.08	.12	.16	.20	.16	.03	
430	.07	.10	.14	.18	.14	.03	
410	.07	.09	.12	.16	.12	.02	
390	.06	.08	.10	.14	.10	.02	
370	.06	.08	.10	.12	.10	.02	
350	.05	.07	.09	.12	.09	.02	
330	.05	.07	.09	.10	.08	.03	
310	.05	.06	.08	.09	.07	.03	
290	.05	.06	.08	.09	.07	.03	
270	.05	.06	.08	.09	.07	.03	
250	.05	.06	.08	.10	.07	.02	
230	.05	.06	.08	.10	.07	.02	
210	.05	.06	.08	.10	.08	.01	
190	.04	.06	.09	.10	.08	.01	

SEPTEMBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	65°N						N=8	FLIGHT LEVEL	60°N						N=0
	MEAN	16%	2%	.1%	MAX	MIN			MEAN	16%	2%	.1%	MAX	MIN	
590	2.0	2.2	2.3	2.4	2.3	1.9	590	1.9	2.0	2.2	2.3	2.2	1.6		
570	1.7	1.9	2.0	2.2	2.0	1.5	570	1.6	1.8	1.9	2.1	1.9	1.3		
550	1.4	1.6	1.8	1.9	1.8	1.1	550	1.3	1.5	1.7	1.9	1.7	1.0		
530	1.0	1.2	1.5	1.7	1.5	.7	530	.9	1.2	1.4	1.7	1.4	.60		
510	.9	1.1	1.4	1.6	1.3	.60	510	.8	1.0	1.3	1.5	1.2	.50		
490	.8	1.0	1.2	1.4	1.2	.50	490	.7	.9	1.1	1.3	1.1	.40		
470	.65	.9	1.1	1.3	1.0	.35	470	.60	.8	1.0	1.1	.9	.30		
450	.50	.7	.9	1.1	.7	.18	450	.45	.60	.8	.9	.65	.16		
430	.45	.60	.8	1.0	.65	.14	430	.35	.50	.65	.8	.55	.12		
410	.35	.50	.65	.8	.50	.12	410	.30	.45	.55	.7	.50	.10		
390	.30	.40	.50	.60	.40	.10	390	.25	.35	.45	.65	.40	.08		
370	.25	.30	.40	.50	.35	.08	370	.20	.30	.40	.45	.35	.07		
350	.18	.25	.35	.40	.30	.07	350	.16	.25	.30	.40	.30	.06		
330	.14	.20	.25	.30	.25	.06	330	.12	.18	.25	.30	.20	.05		
310	.09	.12	.18	.20	.16	.04	310	.08	.12	.16	.20	.16	.03		
290	.06	.09	.12	.16	.14	.03	290	.06	.08	.12	.14	.12	.03		
270	.06	.08	.12	.14	.12	.03	270	.05	.08	.10	.12	.10	.03		
250	.05	.08	.10	.12	.10	.02	250	.05	.07	.10	.12	.10	.02		
230	.05	.07	.09	.12	.09	.02	230	.05	.07	.09	.10	.09	.02		
210	.04	.06	.08	.10	.08	.02	210	.04	.06	.08	.09	.07	.02		
190	.04	.05	.06	.08	.06	.02	190	.04	.05	.07	.08	.06	.02		

FLIGHT LEVEL	55°N						N=0	FLIGHT LEVEL	50°N						N=10
	MEAN	16%	2%	.1%	MAX	MIN			MEAN	16%	2%	.1%	MAX	MIN	
590	1.7	1.9	2.1	2.4	2.1	1.4	590	1.5	1.7	2.0	2.2	2.0	1.1		
570	1.4	1.6	1.9	2.1	1.8	1.1	570	1.3	1.5	1.8	2.0	1.7	.9		
550	1.1	1.4	1.6	1.9	1.6	.8	550	1.0	1.3	1.5	1.8	1.5	.60		
530	.8	1.1	1.3	1.6	1.3	.45	530	.7	1.0	1.3	1.6	1.2	.35		
510	.7	1.0	1.2	1.4	1.2	.40	510	.65	.9	1.1	1.3	1.1	.30		
490	.60	.8	1.0	1.2	1.0	.30	490	.50	.7	.9	1.1	.9	.25		
470	.50	.65	.8	1.0	.8	.25	470	.40	.55	.7	.9	.65	.18		
450	.35	.50	.60	.8	.55	.14	450	.25	.35	.45	.65	.45	.12		
430	.30	.40	.55	.65	.45	.12	430	.20	.30	.40	.60	.40	.10		
410	.25	.35	.45	.60	.45	.09	410	.18	.30	.40	.40	.40	.08		
390	.20	.30	.40	.50	.40	.07	390	.16	.25	.35	.45	.40	.05		
370	.16	.25	.35	.45	.35	.06	370	.14	.20	.30	.40	.35	.04		
350	.14	.20	.30	.35	.30	.05	350	.10	.18	.25	.35	.30	.04		
330	.10	.16	.20	.25	.20	.04	330	.09	.14	.20	.25	.20	.03		
310	.07	.10	.14	.18	.14	.03	310	.06	.09	.12	.16	.14	.03		
290	.05	.08	.10	.12	.10	.03	290	.05	.07	.09	.12	.09	.02		
270	.05	.07	.09	.12	.10	.02	270	.05	.07	.09	.10	.09	.02		
250	.05	.07	.09	.10	.09	.02	250	.04	.06	.08	.10	.08	.02		
230	.04	.06	.08	.10	.08	.02	230	.04	.06	.08	.09	.07	.02		
210	.04	.06	.07	.09	.07	.02	210	.04	.06	.07	.09	.07	.02		
190	.04	.05	.07	.08	.06	.02	190	.04	.05	.07	.08	.06	.02		

SEPTEMBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45°N							40°N						
N=22							N=45						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.5	1.8	2.0	1.8	.9	590	1.0	1.3	1.5	1.7	1.6	.7
570	1.1	1.3	1.6	1.8	1.6	.7	570	.8	1.0	1.3	1.5	1.3	.55
550	.8	1.1	1.3	1.6	1.3	.45	550	.65	.8	1.0	1.2	1.1	.35
530	.60	.8	1.1	1.3	1.1	.25	530	.40	.55	.7	.9	.8	.18
510	.50	.7	.9	1.1	.9	.20	510	.35	.50	.60	.8	.7	.14
490	.40	.60	.7	.9	.8	.16	490	.30	.40	.50	.65	.60	.12
470	.30	.45	.55	.7	.55	.14	470	.20	.30	.40	.50	.50	.08
450	.20	.30	.35	.45	.35	.09	450	.14	.20	.30	.40	.35	.03
430	.16	.25	.30	.40	.35	.07	430	.12	.18	.25	.35	.35	.03
410	.14	.20	.30	.40	.35	.05	410	.10	.16	.25	.30	.35	.02
390	.12	.20	.30	.40	.40	.03	390	.09	.14	.20	.25	.35	.02
370	.10	.18	.25	.35	.35	.03	370	.08	.14	.18	.25	.30	.02
350	.09	.16	.20	.30	.30	.03	350	.07	.12	.16	.20	.30	.02
330	.07	.12	.16	.20	.20	.02	330	.06	.10	.14	.18	.25	.01
310	.06	.09	.12	.14	.16	.02	310	.05	.09	.12	.16	.20	.01
290	.05	.07	.09	.12	.12	.02	290	.05	.08	.10	.14	.18	.01
270	.04	.07	.09	.10	.12	.02	270	.04	.07	.10	.12	.18	.01
250	.04	.06	.08	.10	.10	.02	250	.04	.07	.09	.12	.16	.01
230	.04	.06	.08	.10	.09	.02	230	.04	.06	.08	.10	.14	.01
210	.04	.06	.07	.09	.08	.02	210	.04	.06	.08	.09	.12	.01
190	.04	.05	.07	.08	.07	.02	190	.04	.05	.07	.08	.09	.01

35°N						
N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	1.0	1.2	1.4	1.3	.65
570	.65	.8	1.0	1.1	1.0	.45
550	.45	.60	.7	.8	.7	.30
530	.25	.35	.40	.50	.40	.07
510	.20	.30	.35	.45	.35	.06
490	.18	.25	.30	.35	.30	.04
470	.12	.18	.25	.30	.25	.03
450	.08	.12	.16	.20	.16	.01
430	.07	.10	.14	.18	.14	.01
410	.06	.10	.14	.18	.14	.01
390	.06	.10	.14	.18	.14	.01
370	.05	.09	.12	.16	.14	.01
350	.05	.08	.12	.14	.12	.01
330	.05	.07	.10	.12	.10	.01
310	.04	.06	.08	.10	.09	.01
290	.04	.06	.08	.09	.08	.01
270	.04	.06	.07	.09	.07	.01
250	.04	.06	.07	.09	.07	.01
230	.04	.06	.07	.09	.07	.02
210	.04	.06	.07	.08	.07	.02
190	.04	.06	.07	.08	.06	.02

SEPTEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N N=15							75°N N=32						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.4	2.7	3.0	2.8	1.6	590	2.1	2.4	2.7	3.0	2.8	1.5
570	1.9	2.2	2.5	2.8	2.6	1.4	570	1.9	2.2	2.5	2.7	2.6	1.3
550	1.8	2.0	2.3	2.5	2.4	1.2	550	1.7	1.9	2.2	2.4	2.4	1.1
530	1.5	1.8	2.0	2.2	2.1	.9	530	1.4	1.7	1.9	2.1	2.1	.8
510	1.4	1.6	1.8	2.0	1.8	.8	510	1.3	1.5	1.7	1.9	1.8	.65
490	1.2	1.4	1.6	1.8	1.6	.60	490	1.1	1.3	1.5	1.7	1.6	.55
470	1.0	1.1	1.3	1.5	1.3	.45	470	.9	1.1	1.3	1.5	1.3	.40
450	.7	.9	1.0	1.2	1.0	.30	450	.7	.9	1.0	1.2	1.0	.25
430	.60	.7	.9	1.0	.8	.20	430	.60	.7	.9	1.0	.8	.18
410	.50	.60	.7	.8	.65	.18	410	.50	.60	.8	.9	.65	.16
390	.35	.45	.55	.65	.55	.12	390	.40	.50	.60	.7	.55	.12
370	.30	.40	.50	.55	.45	.10	370	.30	.40	.50	.60	.45	.10
350	.25	.35	.40	.50	.40	.09	350	.25	.35	.45	.55	.40	.09
330	.25	.30	.35	.40	.40	.06	330	.20	.30	.35	.45	.40	.06
310	.18	.25	.30	.35	.35	.04	310	.16	.20	.25	.30	.35	.04
290	.14	.18	.25	.30	.30	.03	290	.14	.18	.20	.25	.30	.03
270	.12	.16	.20	.25	.25	.03	270	.12	.14	.18	.20	.25	.03
250	.10	.14	.16	.20	.18	.03	250	.09	.12	.14	.16	.18	.03
230	.08	.10	.12	.16	.14	.03	230	.07	.09	.12	.14	.14	.03
210	.07	.09	.10	.12	.12	.03	210	.07	.08	.10	.12	.12	.03
190	.06	.07	.09	.10	.09	.03	190	.06	.07	.08	.10	.09	.03

70°N N=20							65°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.0	2.3	2.7	3.0	2.9	1.5	590	2.0	2.3	2.6	2.9	3.0	1.5
570	1.8	2.1	2.4	2.7	2.6	1.3	570	1.8	2.0	2.3	2.6	2.6	1.3
550	1.6	1.8	2.1	2.4	2.3	1.1	550	1.5	1.8	2.0	2.3	2.3	1.0
530	1.3	1.5	1.8	2.0	2.0	.8	530	1.2	1.5	1.7	1.9	1.9	.7
510	1.2	1.4	1.6	1.8	1.8	.65	510	1.1	1.3	1.5	1.7	1.7	.60
490	1.0	1.2	1.4	1.6	1.5	.55	490	.9	1.1	1.3	1.5	1.4	.50
470	.8	1.0	1.2	1.4	1.3	.40	470	.7	.9	1.1	1.3	1.2	.35
450	.60	.8	.9	1.1	1.0	.25	450	.55	.7	.9	1.0	.9	.20
430	.50	.65	.8	.9	.8	.18	430	.45	.60	.7	.9	.7	.16
410	.40	.55	.7	.8	.65	.14	410	.35	.50	.65	.8	.65	.12
390	.30	.45	.55	.65	.55	.10	390	.30	.40	.50	.65	.50	.07
370	.30	.35	.45	.55	.45	.09	370	.25	.35	.45	.55	.45	.05
350	.25	.30	.40	.50	.40	.07	350	.20	.30	.35	.45	.40	.05
330	.20	.25	.35	.40	.40	.06	330	.16	.25	.30	.35	.35	.04
310	.16	.20	.25	.30	.35	.04	310	.12	.18	.25	.30	.30	.03
290	.12	.16	.20	.25	.30	.03	290	.10	.14	.18	.20	.25	.02
270	.10	.14	.16	.20	.25	.03	270	.08	.12	.14	.18	.20	.02
250	.08	.10	.12	.14	.18	.03	250	.07	.09	.12	.14	.16	.02
230	.06	.08	.10	.12	.14	.03	230	.06	.07	.09	.10	.12	.02
210	.06	.07	.09	.10	.12	.03	210	.05	.07	.08	.10	.10	.02
190	.05	.07	.08	.09	.09	.03	190	.05	.06	.07	.09	.08	.02

SEPTEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60° N							55° N						
N=5							N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.9	2.2	2.5	2.8	3.0	1.5	590	1.8	2.0	2.3	2.6	2.9	1.3
570	1.7	2.0	2.2	2.5	2.6	1.3	570	1.5	1.8	2.1	2.3	2.5	1.1
550	1.4	1.7	1.9	2.2	2.2	1.0	550	1.3	1.5	1.8	2.0	2.1	.8
530	1.1	1.4	1.6	1.8	1.7	.7	530	1.0	1.2	1.5	1.7	1.6	.50
510	1.0	1.2	1.4	1.7	1.5	.60	510	.8	1.1	1.3	1.5	1.4	.40
490	.8	1.0	1.2	1.5	1.3	.45	490	.7	.9	1.1	1.3	1.3	.30
470	.65	.8	1.0	1.2	1.1	.35	470	.55	.7	.9	1.1	1.1	.20
450	.45	.65	.8	1.0	.8	.18	450	.40	.55	.7	.9	.8	.10
430	.40	.55	.7	.8	.7	.14	430	.30	.50	.65	.8	.7	.07
410	.30	.45	.60	.7	.65	.10	410	.25	.40	.55	.7	.65	.06
390	.25	.35	.50	.60	.50	.06	390	.20	.35	.45	.60	.50	.04
370	.20	.30	.40	.50	.45	.05	370	.18	.30	.40	.50	.45	.04
350	.16	.25	.35	.45	.40	.04	350	.16	.25	.35	.45	.40	.03
330	.14	.20	.30	.35	.35	.03	330	.12	.20	.30	.35	.35	.03
310	.10	.16	.20	.25	.30	.02	310	.09	.16	.20	.30	.30	.02
290	.07	.12	.16	.20	.25	.02	290	.08	.12	.18	.20	.25	.02
270	.07	.10	.14	.16	.20	.02	270	.07	.10	.14	.18	.20	.02
250	.06	.08	.10	.14	.16	.02	250	.06	.08	.12	.14	.16	.02
230	.05	.06	.08	.10	.12	.02	230	.05	.07	.09	.12	.12	.02
210	.05	.06	.08	.09	.10	.02	210	.04	.06	.08	.10	.09	.02
190	.04	.06	.07	.08	.08	.01	190	.04	.05	.07	.08	.07	.02

50° N							45° N						
N=10							N=25						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.6	1.9	2.2	2.4	2.7	1.1	590	1.4	1.7	1.9	2.2	2.4	.9
570	1.3	1.6	1.9	2.2	2.4	.9	570	1.2	1.4	1.7	1.9	2.1	.7
550	1.1	1.3	1.6	1.9	1.9	.65	550	.9	1.2	1.4	1.6	1.8	.45
530	.8	1.1	1.3	1.5	1.5	.40	530	.7	.9	1.1	1.3	1.4	.16
510	.7	.9	1.2	1.4	1.3	.30	510	.60	.8	1.0	1.2	1.2	.14
490	.60	.8	1.0	1.2	1.2	.25	490	.50	.65	.8	1.0	1.1	.10
470	.45	.65	.8	1.0	1.0	.14	470	.40	.55	.7	.8	.9	.07
450	.30	.50	.65	.8	.7	.05	450	.25	.40	.55	.65	.65	.04
430	.25	.40	.55	.7	.65	.03	430	.20	.35	.45	.60	.55	.03
410	.20	.35	.50	.65	.55	.03	410	.18	.30	.40	.50	.50	.02
390	.18	.30	.45	.55	.45	.03	390	.14	.25	.35	.45	.40	.02
370	.16	.25	.40	.50	.40	.03	370	.12	.20	.30	.40	.35	.02
350	.14	.25	.35	.45	.35	.03	350	.10	.18	.25	.35	.30	.02
330	.12	.20	.30	.35	.30	.02	330	.10	.16	.20	.30	.25	.02
310	.09	.16	.20	.30	.25	.02	310	.08	.12	.18	.20	.20	.02
290	.08	.12	.18	.25	.18	.02	290	.07	.10	.14	.18	.16	.02
270	.07	.10	.16	.20	.16	.02	270	.06	.10	.12	.16	.14	.02
250	.06	.09	.12	.16	.14	.02	250	.05	.08	.12	.14	.14	.02
230	.05	.07	.10	.12	.12	.02	230	.05	.07	.09	.12	.12	.02
210	.04	.06	.08	.10	.10	.02	210	.05	.07	.09	.10	.12	.02
190	.04	.05	.07	.09	.08	.02	190	.04	.06	.08	.10	.10	.02

SEPTEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40°N N=35							35°N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.5	1.7	1.9	2.1	.65	590	1.1	1.3	1.4	1.6	1.6	.60
570	1.0	1.2	1.4	1.7	1.9	.50	570	.9	1.0	1.2	1.4	1.3	.45
550	.8	1.0	1.2	1.3	1.6	.30	550	.65	.8	.9	1.1	1.0	.25
530	.55	.7	.9	1.0	1.3	.07	530	.40	.50	.65	.8	.65	.08
510	.50	.65	.8	.9	1.1	.06	510	.35	.45	.55	.65	.60	.07
490	.40	.55	.65	.8	1.0	.03	490	.30	.40	.50	.60	.50	.05
470	.30	.45	.55	.65	.8	.04	470	.25	.30	.40	.50	.40	.04
450	.20	.30	.40	.50	.55	.02	450	.16	.25	.30	.35	.30	.02
430	.18	.25	.35	.40	.45	.02	430	.14	.20	.25	.30	.30	.02
410	.14	.20	.30	.35	.40	.02	410	.12	.16	.20	.25	.25	.02
390	.10	.16	.25	.30	.35	.02	390	.09	.14	.18	.25	.25	.02
370	.09	.14	.20	.25	.30	.02	370	.08	.12	.16	.20	.25	.02
350	.08	.14	.18	.25	.25	.02	350	.08	.12	.16	.18	.20	.02
330	.08	.12	.16	.20	.20	.01	330	.07	.10	.14	.16	.16	.01
310	.07	.10	.14	.16	.16	.01	310	.07	.09	.12	.14	.14	.01
290	.06	.09	.12	.14	.14	.01	290	.06	.09	.10	.12	.12	.01
270	.06	.08	.10	.14	.14	.01	270	.06	.08	.10	.12	.12	.01
250	.05	.08	.10	.12	.12	.02	250	.05	.07	.09	.10	.10	.02
230	.05	.07	.09	.12	.12	.02	230	.05	.07	.08	.10	.10	.02
210	.05	.07	.09	.12	.12	.02	210	.05	.07	.08	.10	.10	.02
190	.05	.07	.09	.12	.10	.02	190	.05	.07	.08	.10	.09	.02

30°N N=12							25°N N=9						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.1	1.2	1.3	1.1	.60	590	.8	.9	1.0	1.1	1.0	.55
570	.7	.8	.9	1.1	.9	.45	570	.60	.7	.8	.9	.8	.40
550	.50	.60	.7	.8	.65	.30	550	.40	.50	.55	.65	.55	.25
530	.25	.30	.40	.45	.40	.10	530	.20	.25	.30	.35	.35	.10
510	.20	.30	.35	.40	.35	.09	510	.18	.20	.25	.30	.30	.08
490	.18	.25	.30	.35	.30	.07	490	.16	.20	.25	.30	.25	.07
470	.14	.20	.25	.30	.20	.05	470	.12	.16	.20	.25	.20	.05
450	.10	.14	.18	.25	.16	.03	450	.09	.14	.18	.20	.16	.02
430	.09	.12	.16	.20	.16	.03	430	.08	.12	.16	.20	.14	.02
410	.09	.12	.16	.18	.16	.02	410	.08	.12	.14	.18	.14	.02
390	.08	.12	.14	.18	.18	.02	390	.08	.10	.14	.16	.14	.02
370	.08	.10	.14	.16	.16	.02	370	.07	.10	.12	.16	.14	.02
350	.07	.10	.12	.14	.14	.02	350	.07	.09	.12	.14	.12	.02
330	.07	.09	.12	.14	.12	.03	330	.06	.09	.10	.14	.10	.03
310	.07	.09	.10	.12	.10	.03	310	.06	.08	.10	.12	.10	.03
290	.06	.08	.10	.12	.09	.03	290	.06	.07	.09	.10	.09	.03
270	.06	.07	.09	.10	.09	.03	270	.06	.07	.08	.10	.09	.03
250	.05	.07	.08	.09	.08	.02	250	.05	.06	.08	.09	.08	.02
230	.05	.06	.07	.08	.08	.02	230	.05	.06	.07	.08	.08	.02
210	.05	.06	.07	.08	.08	.02	210	.05	.06	.07	.08	.08	.02
190	.05	.06	.07	.08	.07	.02	190	.05	.06	.07	.08	.07	.02

SEPTEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20° N							15° N						
N=7							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.65	.8	.8	.9	.8	.50	590	.55	.65	.8	.9	.7	.40
570	.50	.60	.65	.7	.60	.40	570	.45	.55	.60	.7	.55	.30
550	.35	.40	.45	.55	.45	.25	550	.30	.35	.45	.60	.40	.18
530	.18	.20	.25	.30	.25	.10	530	.16	.20	.25	.30	.20	.06
510	.16	.20	.25	.30	.25	.08	510	.14	.18	.20	.25	.18	.05
490	.14	.18	.20	.25	.20	.06	490	.12	.16	.20	.25	.16	.04
470	.12	.16	.18	.25	.18	.04	470	.10	.14	.16	.20	.14	.03
450	.09	.12	.16	.20	.14	.02	450	.08	.12	.14	.18	.12	.02
430	.08	.12	.14	.18	.14	.01	430	.07	.10	.12	.16	.12	.02
410	.08	.10	.14	.18	.12	.01	410	.07	.09	.12	.14	.10	.02
390	.07	.10	.12	.16	.12	.01	390	.06	.08	.10	.12	.08	.02
370	.07	.09	.12	.14	.12	.01	370	.06	.08	.09	.12	.08	.02
350	.06	.09	.12	.14	.10	.02	350	.05	.07	.09	.10	.08	.02
330	.06	.08	.10	.12	.10	.02	330	.05	.07	.08	.10	.07	.03
310	.05	.07	.09	.12	.09	.03	310	.05	.06	.08	.09	.07	.03
290	.05	.07	.08	.10	.08	.03	290	.05	.06	.07	.09	.07	.03
270	.05	.07	.08	.09	.08	.03	270	.05	.06	.07	.08	.07	.03
250	.05	.06	.07	.09	.08	.02	250	.05	.06	.07	.08	.07	.02
230	.05	.06	.07	.08	.08	.02	230	.04	.05	.06	.07	.07	.02
210	.05	.06	.07	.08	.08	.02	210	.04	.05	.06	.07	.07	.02
190	.04	.05	.06	.07	.07	.02	190	.04	.05	.06	.07	.06	.02

10° N						
N=4						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.55	.7	.8	.9	.7	.40
570	.45	.55	.60	.7	.55	.25
550	.30	.35	.40	.50	.35	.14
530	.14	.18	.20	.25	.18	.02
510	.12	.16	.20	.25	.16	.03
490	.10	.14	.18	.20	.14	.03
470	.09	.12	.14	.18	.12	.04
450	.07	.10	.12	.14	.10	.05
430	.06	.08	.10	.12	.09	.05
410	.05	.07	.08	.10	.07	.04
390	.04	.05	.06	.07	.05	.03
370	.04	.05	.06	.07	.05	.03
350	.04	.05	.06	.07	.05	.03
330	.04	.05	.06	.07	.06	.03
310	.04	.05	.06	.07	.06	.03
290	.04	.05	.06	.07	.06	.03
270	.04	.05	.06	.07	.06	.03
250	.04	.05	.06	.07	.06	.02
230	.04	.05	.06	.07	.06	.02
210	.04	.05	.06	.07	.06	.02
190	.03	.04	.05	.06	.05	.02

SEPTEMBER - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N							47°N						
N=46							N=88						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.8	2.1	2.4	2.2	1.0	590	1.3	1.6	1.8	2.1	1.9	.8
570	1.3	1.6	1.8	2.1	1.9	.8	570	1.1	1.3	1.6	1.8	1.7	.7
550	1.0	1.3	1.5	1.7	1.5	.55	550	.9	1.1	1.3	1.5	1.4	.55
530	.7	1.0	1.2	1.4	1.1	.30	530	.65	.8	1.0	1.1	1.0	.35
510	.65	.8	1.0	1.2	1.0	.25	510	.55	.7	.8	1.0	.9	.30
490	.55	.7	.9	1.1	.9	.20	490	.45	.60	.7	.9	.8	.20
470	.45	.60	.8	.9	.7	.14	470	.35	.50	.60	.7	.7	.14
450	.30	.45	.60	.7	.55	.07	450	.25	.35	.45	.55	.55	.05
430	.25	.40	.50	.65	.50	.05	430	.20	.30	.40	.50	.50	.03
410	.25	.35	.45	.55	.45	.04	410	.16	.25	.35	.40	.40	.03
390	.18	.30	.40	.50	.40	.03	390	.14	.20	.30	.35	.35	.02
370	.16	.25	.35	.40	.40	.03	370	.12	.18	.25	.30	.30	.02
350	.14	.20	.30	.35	.35	.02	350	.10	.16	.20	.25	.30	.02
330	.10	.16	.20	.30	.30	.02	330	.08	.14	.18	.25	.25	.01
310	.08	.12	.16	.20	.25	.01	310	.07	.10	.14	.18	.25	.01
290	.06	.09	.12	.16	.20	.01	290	.06	.09	.12	.14	.20	.01
270	.06	.09	.12	.14	.18	.01	270	.05	.08	.10	.12	.16	.01
250	.06	.08	.10	.14	.16	.01	250	.05	.07	.09	.12	.12	.01
230	.05	.08	.10	.12	.14	.01	230	.05	.07	.08	.10	.09	.02
210	.05	.07	.08	.10	.12	.01	210	.05	.06	.08	.09	.09	.02
190	.05	.06	.07	.08	.08	.01	190	.05	.06	.07	.09	.08	.02

39°N						
N=4						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.1	1.2	1.4	1.4	.65
570	.7	.9	1.0	1.2	1.1	.50
550	.55	.7	.8	1.0	.9	.35
530	.35	.50	.60	.7	.55	.16
510	.30	.45	.55	.65	.50	.14
490	.25	.35	.45	.55	.45	.10
470	.20	.30	.35	.45	.35	.06
450	.12	.20	.25	.35	.30	.02
430	.09	.16	.20	.25	.25	.01
410	.07	.12	.16	.20	.18	.01
390	.05	.08	.10	.14	.12	.02
370	.04	.07	.09	.12	.10	.02
350	.04	.07	.09	.12	.10	.01
330	.05	.07	.09	.12	.09	.01
310	.05	.07	.09	.12	.09	.01
290	.05	.07	.09	.10	.08	.01
270	.05	.07	.08	.10	.08	.01
250	.04	.06	.08	.10	.07	.01
230	.04	.06	.08	.09	.07	.01
210	.04	.06	.08	.09	.07	.02
190	.05	.06	.07	.09	.07	.02

OCTOBER - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43°N							36°N						
N=20							N=21						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.6	1.9	2.3	2.1	.60	590	.8	1.0	1.2	1.4	1.2	.45
570	1.0	1.4	1.7	2.0	1.9	.50	570	.65	.8	1.0	1.2	1.1	.35
550	.9	1.2	1.5	1.8	1.6	.35	550	.50	.7	.9	1.1	1.0	.25
530	.65	1.0	1.2	1.5	1.4	.20	530	.30	.50	.7	.9	.9	.10
510	.60	.8	1.1	1.4	1.2	.18	510	.30	.45	.65	.8	.8	.09
490	.50	.7	.9	1.2	1.1	.16	490	.25	.40	.55	.7	.7	.07
470	.40	.60	.8	.9	.9	.14	470	.20	.35	.45	.60	.60	.05
450	.30	.45	.55	.7	.65	.12	450	.16	.25	.40	.60	.30	.03
430	.25	.35	.50	.60	.55	.09	430	.14	.25	.35	.40	.45	.03
410	.20	.30	.40	.50	.45	.08	410	.12	.20	.30	.35	.40	.04
390	.18	.25	.35	.45	.35	.06	390	.10	.18	.25	.30	.35	.05
370	.16	.25	.30	.35	.30	.05	370	.10	.16	.20	.25	.30	.05
350	.14	.20	.25	.30	.25	.05	350	.09	.14	.18	.25	.25	.05
330	.12	.16	.20	.25	.20	.05	330	.08	.12	.16	.20	.20	.04
310	.09	.12	.14	.18	.16	.05	310	.07	.10	.14	.16	.16	.04
290	.07	.09	.12	.14	.14	.04	290	.07	.09	.12	.14	.14	.04
270	.07	.09	.10	.12	.12	.04	270	.07	.09	.12	.14	.14	.04
250	.06	.08	.10	.12	.12	.04	250	.06	.09	.12	.14	.14	.04
230	.06	.08	.09	.10	.10	.04	230	.06	.09	.12	.14	.14	.03
210	.06	.07	.08	.09	.09	.04	210	.06	.08	.10	.14	.14	.03
190	.05	.06	.07	.08	.07	.04	190	.05	.08	.10	.12	.14	.03

32°N						
N=16						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.65	.8	1.0	1.2	1.1	.30
570	.50	.65	.8	1.0	.8	.25
550	.30	.45	.55	.65	.55	.16
530	.16	.20	.30	.35	.30	.07
510	.14	.20	.25	.30	.25	.06
490	.12	.16	.20	.25	.20	.05
470	.10	.14	.18	.25	.18	.04
450	.08	.12	.14	.18	.14	.03
430	.07	.10	.14	.16	.12	.02
410	.06	.10	.12	.16	.12	.02
390	.06	.09	.12	.14	.12	.01
370	.06	.08	.12	.14	.12	.01
350	.05	.08	.10	.14	.12	.01
330	.05	.08	.10	.12	.12	.01
310	.05	.07	.09	.12	.10	.01
290	.05	.07	.09	.10	.10	.01
270	.05	.07	.08	.10	.10	.01
250	.05	.06	.08	.10	.09	.01
230	.05	.06	.08	.10	.08	.01
210	.05	.06	.08	.09	.07	.01
190	.04	.06	.07	.09	.06	.01

OCTOBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65° N							60° N						
N=7							N=0						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.9	2.3	2.6	3.0	2.4	1.3	590	1.8	2.2	2.5	2.9	2.4	1.1
570	1.8	2.1	2.5	2.9	2.3	1.1	570	1.6	2.0	2.4	2.8	2.2	1.0
550	1.6	2.0	2.4	2.8	2.1	1.0	550	1.4	1.8	2.3	2.7	2.0	.8
530	1.4	1.8	2.3	2.8	2.0	.8	530	1.2	1.6	2.1	2.5	1.8	.60
510	1.2	1.7	2.1	2.5	1.8	.7	510	1.0	1.5	1.9	2.3	1.6	.55
490	1.1	1.4	1.8	2.2	1.5	.55	490	.9	1.3	1.6	2.0	1.4	.45
470	.9	1.2	1.6	1.9	1.3	.40	470	.7	1.0	1.3	1.7	1.1	.30
450	.7	1.0	1.2	1.5	1.0	.25	450	.55	.8	1.1	1.3	.9	.20
430	.55	.8	1.1	1.3	.8	.20	430	.45	.7	.9	1.1	.7	.16
410	.45	.65	.9	1.1	.7	.20	410	.40	.55	.7	.9	.65	.16
390	.35	.50	.65	.8	.60	.18	390	.30	.45	.60	.7	.55	.14
370	.30	.45	.55	.65	.50	.16	370	.25	.35	.50	.60	.45	.12
350	.25	.35	.45	.55	.40	.12	350	.20	.30	.40	.50	.35	.10
330	.18	.25	.35	.40	.30	.09	330	.16	.25	.30	.35	.25	.07
310	.12	.16	.20	.25	.18	.06	310	.10	.14	.20	.25	.18	.05
290	.08	.12	.14	.18	.14	.04	290	.07	.10	.14	.16	.12	.03
270	.07	.10	.14	.18	.12	.04	270	.05	.09	.12	.15	.12	.03
250	.07	.10	.12	.16	.12	.03	250	.06	.09	.12	.14	.10	.03
230	.06	.09	.12	.14	.10	.03	230	.05	.08	.10	.12	.09	.03
210	.06	.08	.10	.12	.10	.03	210	.05	.07	.09	.12	.09	.03
190	.05	.07	.09	.10	.09	.03	190	.04	.06	.08	.10	.07	.03

55° N							50° N						
N=0							N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.6	2.1	2.5	2.9	2.3	.9	590	1.5	1.9	2.4	2.8	2.3	.8
570	1.4	1.9	2.3	2.7	2.1	.8	570	1.3	1.7	2.2	2.6	2.0	.60
550	1.2	1.6	2.1	2.5	1.8	.60	550	1.0	1.5	1.9	2.3	1.7	.40
530	1.0	1.4	1.9	2.3	1.6	.45	530	.8	1.2	1.6	2.1	1.4	.25
510	.9	1.2	1.6	2.0	1.4	.35	510	.65	1.0	1.4	1.8	1.2	.20
490	.7	1.1	1.4	1.7	1.2	.30	490	.55	.9	1.2	1.5	1.0	.16
470	.60	.9	1.1	1.4	1.0	.20	470	.45	.7	.9	1.2	.8	.12
450	.40	.65	.8	1.1	.7	.14	450	.30	.45	.65	.8	.60	.07
430	.35	.55	.7	.9	.65	.12	430	.25	.40	.55	.7	.50	.06
410	.30	.45	.60	.8	.55	.10	410	.20	.35	.50	.65	.45	.06
390	.25	.40	.50	.65	.45	.10	390	.18	.30	.45	.65	.40	.05
370	.20	.30	.45	.55	.40	.08	370	.16	.25	.40	.50	.35	.05
350	.16	.25	.35	.45	.30	.07	350	.12	.20	.30	.40	.30	.04
330	.12	.20	.25	.35	.25	.05	330	.10	.16	.25	.40	.20	.03
310	.08	.12	.16	.20	.16	.03	310	.06	.10	.14	.18	.14	.02
290	.06	.09	.12	.14	.10	.03	290	.05	.07	.10	.12	.10	.02
270	.05	.08	.10	.14	.10	.02	270	.04	.07	.09	.12	.09	.02
250	.05	.07	.10	.12	.09	.02	250	.04	.06	.08	.10	.08	.02
230	.05	.07	.09	.10	.08	.02	230	.04	.06	.07	.09	.07	.02
210	.04	.06	.08	.10	.07	.02	210	.03	.05	.06	.08	.06	.02
190	.04	.05	.07	.08	.06	.02	190	.03	.04	.05	.07	.05	.02

OCTOBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45° N							40° N						
N=22							N=45						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.3	1.7	2.1	2.5	2.1	.65	590	1.1	1.3	1.4	1.9	1.7	.60
570	1.1	1.5	1.8	2.2	1.8	.50	570	.9	1.1	1.4	1.5	1.5	.45
550	.8	1.2	1.6	1.9	1.5	.30	550	.65	.9	1.0	1.3	1.1	.30
530	.55	.9	1.3	1.6	1.1	.14	530	.40	.55	.7	.8	.8	.14
510	.50	.8	1.1	1.4	1.0	.12	510	.35	.50	.65	.8	.7	.12
490	.40	.65	.9	1.1	.8	.09	490	.30	.40	.55	.65	.65	.09
470	.30	.50	.7	.9	.65	.07	470	.20	.30	.45	.55	.55	.06
450	.20	.35	.45	.60	.50	.04	450	.14	.25	.30	.40	.40	.03
430	.16	.30	.40	.50	.45	.03	430	.12	.18	.25	.35	.35	.02
410	.14	.25	.35	.45	.40	.03	410	.10	.16	.20	.30	.35	.02
390	.12	.25	.35	.45	.35	.02	390	.08	.14	.18	.25	.30	.01
370	.10	.20	.30	.35	.30	.02	370	.07	.12	.16	.20	.25	.01
350	.09	.16	.25	.30	.25	.02	350	.06	.10	.14	.18	.25	.01
330	.07	.12	.18	.25	.20	.02	330	.05	.09	.12	.16	.20	.01
310	.05	.09	.12	.16	.16	.02	310	.04	.07	.10	.14	.20	.01
290	.04	.06	.09	.12	.12	.01	290	.04	.06	.09	.12	.14	.01
270	.04	.06	.08	.10	.12	.01	270	.04	.06	.09	.12	.16	.01
250	.04	.06	.08	.10	.10	.01	250	.04	.06	.08	.10	.14	.01
230	.03	.05	.07	.09	.09	.01	230	.04	.05	.07	.09	.12	.01
210	.03	.05	.06	.08	.07	.01	210	.03	.05	.07	.09	.10	.01
190	.03	.04	.05	.06	.06	.01	190	.03	.05	.06	.08	.08	.01

35° N						
N=17						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.2	1.4	1.7	1.4	.50
570	.7	.9	1.2	1.4	1.2	.40
550	.50	.7	.9	1.1	1.0	.25
530	.30	.45	.60	.7	.7	.14
510	.25	.40	.50	.65	.60	.12
490	.20	.30	.40	.55	.50	.09
470	.16	.25	.35	.40	.40	.06
450	.12	.18	.25	.30	.25	.03
430	.09	.14	.18	.25	.20	.02
410	.08	.12	.14	.18	.16	.02
390	.06	.08	.10	.12	.12	.02
370	.05	.07	.09	.10	.09	.01
350	.04	.06	.08	.09	.08	.01
330	.04	.05	.07	.08	.07	.01
310	.03	.04	.05	.06	.05	.01
290	.03	.04	.05	.06	.04	.01
270	.03	.04	.05	.06	.05	.01
250	.03	.04	.05	.06	.05	.01
230	.03	.04	.05	.06	.05	.01
210	.03	.04	.05	.06	.05	.01
190	.03	.04	.05	.06	.05	.01

OCTOBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N N=15							75°N N=35						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.3	2.6	3.0	3.3	3.3	1.4	590	2.2	2.5	2.8	3.1	3.3	1.4
570	2.1	2.4	2.7	3.0	2.9	1.2	570	2.0	2.3	2.6	2.8	2.9	1.2
550	1.9	2.1	2.4	2.7	2.5	.9	550	1.7	2.0	2.3	2.5	2.5	.9
530	1.6	1.8	2.1	2.3	2.0	.60	530	1.5	1.7	2.0	2.2	2.0	.60
510	1.4	1.6	1.8	2.1	1.7	.50	510	1.3	1.5	1.8	2.0	1.7	.50
490	1.2	1.4	1.6	1.8	1.5	.40	490	1.1	1.3	1.5	1.7	1.5	.40
470	1.0	1.1	1.3	1.5	1.2	.25	470	.9	1.1	1.3	1.5	1.2	.25
450	.7	.9	1.0	1.2	.9	.12	450	.7	.9	1.0	1.2	.9	.12
430	.60	.7	.9	1.0	.7	.10	430	.60	.7	.9	1.0	.7	.10
410	.50	.60	.8	.9	.65	.10	410	.50	.60	.8	.9	.65	.10
390	.40	.50	.60	.7	.55	.10	390	.40	.50	.60	.7	.55	.10
370	.30	.45	.55	.65	.50	.09	370	.30	.45	.55	.65	.50	.09
350	.25	.35	.45	.55	.45	.07	350	.25	.35	.45	.45	.45	.07
330	.20	.30	.40	.45	.40	.06	330	.20	.30	.40	.45	.40	.06
310	.16	.25	.30	.35	.35	.04	310	.16	.25	.30	.35	.35	.04
290	.12	.18	.25	.30	.30	.03	290	.12	.18	.25	.30	.30	.03
270	.10	.14	.20	.25	.25	.03	270	.10	.14	.20	.25	.25	.03
250	.08	.12	.16	.20	.20	.02	250	.08	.12	.16	.18	.20	.02
230	.06	.09	.12	.16	.18	.02	230	.06	.09	.12	.14	.18	.02
210	.06	.08	.10	.12	.14	.02	210	.06	.08	.10	.12	.14	.02
190	.05	.07	.09	.10	.10	.02	190	.05	.07	.08	.10	.10	.02

70°N N=20							65°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.0	2.4	2.7	3.0	3.2	1.4	590	1.9	2.2	2.5	2.8	3.1	1.4
570	1.8	2.1	2.4	2.7	2.9	1.2	570	1.7	2.0	2.3	2.5	2.7	1.2
550	1.6	1.9	2.1	2.4	2.4	.9	550	1.5	1.7	2.0	2.3	2.3	.9
530	1.4	1.6	1.8	2.1	2.0	.60	530	1.2	1.5	1.7	2.0	1.9	.60
510	1.2	1.5	1.7	1.9	1.8	.50	510	1.1	1.3	1.6	1.8	1.7	.50
490	1.1	1.3	1.5	1.7	1.5	.40	490	1.0	1.2	1.4	1.6	1.5	.40
470	.9	1.1	1.3	1.5	1.3	.25	470	.8	1.0	1.2	1.4	1.3	.25
450	.7	.9	1.0	1.2	1.0	.12	450	.65	.8	1.0	1.1	1.0	.12
430	.60	.7	.9	1.0	.8	.10	430	.55	.7	.8	1.0	.9	.10
410	.50	.60	.8	.9	.7	.10	410	.45	.60	.7	.9	.7	.09
390	.40	.50	.60	.7	.55	.10	390	.35	.45	.60	.7	.60	.08
370	.30	.45	.55	.65	.50	.09	370	.30	.40	.50	.60	.50	.07
350	.25	.35	.45	.55	.45	.07	350	.25	.35	.45	.40	.45	.06
330	.20	.30	.35	.45	.35	.06	330	.18	.25	.35	.45	.35	.05
310	.16	.20	.30	.35	.30	.04	310	.14	.20	.25	.35	.30	.04
290	.12	.18	.20	.25	.25	.03	290	.10	.16	.20	.25	.25	.03
270	.10	.14	.18	.20	.20	.03	270	.09	.12	.18	.20	.20	.03
250	.08	.12	.14	.18	.18	.02	250	.07	.10	.14	.18	.18	.02
230	.06	.09	.10	.14	.16	.02	230	.06	.08	.10	.14	.16	.02
210	.06	.08	.10	.12	.12	.02	210	.05	.08	.10	.12	.12	.02
190	.05	.07	.08	.10	.09	.02	190	.05	.07	.09	.10	.10	.02

OCTOBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N N=12							55°N N=13						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.0	2.3	2.6	2.9	1.4	590	1.6	1.9	2.2	2.5	2.6	1.3
570	1.5	1.8	2.1	2.4	2.6	1.2	570	1.4	1.7	2.0	2.3	2.3	1.1
550	1.3	1.6	1.8	2.1	2.3	.9	550	1.2	1.5	1.8	2.0	2.0	.8
530	1.1	1.3	1.6	1.8	1.9	.60	530	1.0	1.3	1.5	1.7	1.7	.50
510	1.0	1.2	1.4	1.7	1.7	.50	510	.9	1.1	1.4	1.6	1.6	.40
490	.9	1.1	1.3	1.5	1.6	.40	490	.8	1.0	1.2	1.4	1.4	.30
470	.7	.9	1.1	1.3	1.4	.25	470	.65	.8	1.0	1.2	1.3	.20
450	.55	.7	.9	1.1	1.1	.12	450	.50	.65	.8	1.0	1.1	.10
430	.45	.65	.8	.9	1.0	.09	430	.40	.55	.7	.9	1.0	.07
410	.40	.55	.65	.8	.8	.07	410	.30	.45	.60	.7	.8	.06
390	.30	.40	.55	.65	.60	.04	390	.25	.35	.50	.60	.55	.04
370	.25	.35	.45	.60	.50	.04	370	.20	.30	.40	.55	.45	.04
350	.20	.30	.40	.50	.40	.04	350	.16	.25	.35	.45	.40	.03
330	.16	.25	.30	.40	.35	.03	330	.14	.20	.30	.40	.30	.03
310	.10	.18	.25	.30	.25	.03	310	.09	.16	.20	.30	.25	.02
290	.08	.14	.18	.25	.20	.03	290	.07	.12	.18	.25	.20	.02
270	.07	.12	.16	.20	.18	.03	270	.07	.10	.16	.20	.18	.02
250	.06	.10	.14	.16	.16	.02	250	.06	.09	.12	.16	.16	.02
230	.05	.08	.10	.14	.14	.02	230	.05	.08	.10	.12	.14	.02
210	.05	.08	.10	.12	.12	.02	210	.05	.07	.09	.12	.12	.02
190	.05	.07	.09	.12	.10	.01	190	.04	.06	.08	.10	.10	.01

50°N N=10							45°N N=25						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.8	2.1	2.4	2.5	1.2	590	1.4	1.6	1.9	2.1	2.4	1.0
570	1.3	1.6	1.9	2.2	2.2	1.0	570	1.2	1.4	1.7	1.9	2.1	.8
550	1.1	1.4	1.7	1.9	1.9	.7	550	1.0	1.2	1.4	1.7	1.8	.55
530	.9	1.2	1.4	1.7	1.5	.40	530	.7	1.0	1.2	1.4	1.4	.30
510	.8	1.0	1.3	1.5	1.4	.35	510	.65	.9	1.0	1.2	1.3	.25
490	.7	.9	1.1	1.3	1.3	.25	490	.55	.7	.9	1.1	1.2	.20
470	.55	.7	.9	1.1	1.2	.18	470	.45	.60	.8	.9	1.1	.14
450	.40	.55	.7	.9	1.0	.09	450	.35	.50	.60	.8	.9	.07
430	.30	.50	.65	.8	.9	.06	430	.30	.40	.55	.65	.8	.05
410	.25	.40	.55	.7	.7	.05	410	.25	.35	.45	.55	.60	.04
390	.18	.30	.45	.55	.50	.04	390	.18	.25	.35	.45	.45	.03
370	.14	.25	.35	.50	.40	.04	370	.16	.25	.30	.40	.35	.03
350	.12	.20	.30	.40	.35	.03	350	.12	.20	.30	.35	.30	.03
330	.10	.18	.25	.35	.30	.03	330	.10	.16	.25	.30	.25	.02
310	.08	.14	.20	.25	.25	.02	310	.08	.12	.18	.25	.20	.02
290	.07	.12	.16	.20	.20	.02	290	.06	.10	.14	.20	.18	.02
270	.06	.10	.14	.18	.18	.02	270	.06	.10	.14	.18	.16	.02
250	.05	.09	.12	.16	.16	.02	250	.05	.08	.12	.14	.16	.01
230	.05	.07	.10	.12	.14	.02	230	.05	.07	.10	.12	.14	.01
210	.04	.06	.08	.10	.12	.02	210	.04	.07	.09	.12	.14	.01
190	.04	.05	.07	.09	.10	.01	190	.04	.06	.08	.10	.12	.01

OCTOBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40° N							35° N						
N=45							N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.4	1.6	1.9	2.2	.7	590	1.1	1.2	1.4	1.6	1.7	.60
570	1.0	1.2	1.4	1.6	2.0	.55	570	.9	1.1	1.2	1.4	1.5	.50
550	.8	1.0	1.2	1.4	1.8	.40	550	.7	.8	1.0	1.1	1.3	.35
530	.55	.7	.9	1.1	1.5	.25	530	.50	.60	.7	.9	1.1	.20
510	.50	.65	.8	1.0	1.3	.20	510	.40	.55	.65	.8	1.0	.16
490	.45	.60	.7	.9	1.1	.16	490	.35	.45	.60	.7	.8	.12
470	.35	.50	.60	.8	.9	.10	470	.30	.40	.50	.7	.65	.08
450	.25	.40	.50	.60	.65	.04	450	.20	.30	.40	.45	.45	.03
430	.25	.35	.45	.55	.55	.03	430	.18	.25	.35	.40	.35	.02
410	.20	.30	.40	.45	.45	.02	410	.16	.20	.30	.35	.30	.02
390	.18	.25	.30	.40	.35	.02	390	.12	.18	.20	.25	.25	.02
370	.16	.20	.25	.35	.30	.02	370	.12	.16	.20	.25	.25	.02
350	.12	.18	.25	.30	.30	.02	350	.10	.14	.18	.20	.20	.02
330	.10	.14	.20	.25	.25	.02	330	.08	.12	.16	.18	.16	.02
310	.07	.12	.16	.20	.18	.02	310	.07	.10	.12	.16	.14	.02
290	.06	.09	.12	.16	.16	.02	290	.06	.08	.10	.14	.12	.02
270	.05	.09	.12	.16	.16	.02	270	.05	.08	.10	.12	.12	.02
250	.05	.08	.12	.14	.14	.02	250	.05	.07	.09	.12	.12	.02
230	.05	.08	.10	.14	.14	.02	230	.04	.06	.08	.10	.12	.02
210	.05	.07	.10	.12	.14	.02	210	.04	.06	.08	.10	.12	.02
190	.04	.07	.09	.12	.14	.01	190	.04	.06	.08	.09	.12	.02

30° N							25° N						
N=10							N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.1	1.2	1.3	1.1	.60	590	.8	.9	1.0	1.2	1.0	.50
570	.7	.8	.9	1.1	.9	.45	570	.60	.7	.8	.9	.8	.35
550	.45	.55	.65	.8	.65	.30	550	.40	.45	.55	.65	.55	.25
530	.20	.30	.35	.45	.35	.10	530	.16	.20	.30	.35	.30	.07
510	.18	.25	.30	.40	.30	.08	510	.14	.20	.25	.30	.25	.06
490	.16	.20	.30	.35	.30	.06	490	.12	.16	.20	.25	.20	.04
470	.12	.18	.25	.30	.25	.04	470	.09	.14	.18	.20	.18	.03
450	.10	.14	.20	.25	.18	.02	450	.07	.10	.12	.16	.12	.01
430	.09	.14	.18	.20	.18	.02	430	.06	.09	.12	.14	.12	.01
410	.08	.12	.16	.20	.16	.02	410	.06	.08	.12	.14	.12	.02
390	.07	.10	.14	.16	.16	.03	390	.06	.08	.10	.12	.12	.02
370	.07	.09	.12	.14	.14	.03	370	.05	.08	.10	.12	.12	.02
350	.06	.09	.12	.14	.14	.03	350	.05	.07	.09	.12	.10	.02
330	.06	.08	.10	.12	.12	.02	330	.05	.07	.09	.10	.09	.02
310	.06	.08	.10	.12	.10	.02	310	.05	.06	.08	.10	.08	.02
290	.05	.07	.09	.10	.09	.02	290	.05	.06	.07	.09	.07	.02
270	.05	.06	.08	.09	.09	.02	270	.05	.06	.07	.08	.07	.02
250	.04	.06	.07	.08	.08	.01	250	.04	.05	.06	.08	.06	.02
230	.04	.05	.06	.07	.08	.01	230	.04	.05	.06	.07	.06	.02
210	.04	.05	.06	.07	.07	.01	210	.04	.05	.06	.07	.06	.02
190	.04	.05	.06	.07	.06	.01	190	.04	.05	.06	.07	.05	.01

OCTOBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20°N							15°N						
N=10							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.65	.8	.9	1.0	.9	.40	590	.55	.65	.8	.9	.7	.35
570	.50	.60	.7	.8	.7	.30	570	.45	.50	.60	.7	.55	.25
550	.30	.40	.45	.55	.45	.14	550	.30	.35	.40	.45	.35	.16
530	.12	.16	.20	.25	.25	.06	530	.12	.16	.20	.25	.14	.06
510	.10	.14	.20	.25	.20	.05	510	.10	.14	.18	.20	.16	.05
490	.09	.12	.16	.20	.16	.04	490	.09	.12	.14	.18	.12	.04
470	.07	.10	.12	.16	.12	.03	470	.07	.09	.12	.14	.10	.03
450	.04	.07	.09	.10	.07	.01	450	.04	.07	.09	.10	.07	.01
430	.04	.06	.08	.10	.07	.01	430	.04	.06	.08	.10	.06	.01
410	.04	.06	.08	.10	.08	.01	410	.04	.06	.08	.10	.07	.01
390	.04	.06	.08	.10	.09	.01	390	.04	.06	.08	.10	.07	.01
370	.04	.06	.08	.09	.09	.01	370	.04	.06	.08	.10	.07	.01
350	.04	.06	.07	.09	.08	.01	350	.04	.06	.07	.09	.07	.01
330	.04	.05	.07	.08	.07	.02	330	.04	.05	.07	.09	.06	.02
310	.04	.05	.06	.07	.06	.02	310	.04	.05	.07	.08	.06	.02
290	.04	.05	.06	.07	.06	.02	290	.04	.05	.06	.08	.06	.02
270	.04	.05	.06	.07	.06	.02	270	.04	.05	.06	.07	.06	.02
250	.04	.05	.06	.07	.05	.02	250	.04	.05	.06	.07	.05	.01
230	.04	.05	.06	.07	.05	.02	230	.04	.05	.06	.07	.05	.01
210	.04	.05	.06	.07	.05	.02	210	.03	.04	.05	.06	.05	.01
190	.03	.04	.05	.06	.04	.01	190	.03	.04	.05	.06	.04	.01

10°N						
N=9						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.50	.55	.65	.8	.60	.25
570	.35	.45	.50	.60	.45	.20
550	.25	.30	.35	.40	.30	.14
530	.10	.14	.16	.18	.14	.06
510	.09	.12	.14	.18	.12	.05
490	.08	.10	.14	.16	.12	.04
470	.07	.09	.12	.14	.09	.03
450	.05	.07	.09	.12	.07	.02
430	.05	.07	.09	.10	.07	.02
410	.04	.06	.08	.10	.06	.02
390	.04	.06	.08	.10	.06	.02
370	.04	.06	.08	.10	.06	.02
350	.04	.06	.08	.10	.06	.02
330	.03	.05	.07	.09	.06	.01
310	.03	.05	.07	.09	.06	.01
290	.03	.05	.07	.08	.06	.01
270	.03	.05	.06	.08	.06	.01
250	.03	.04	.05	.07	.05	.01
230	.03	.04	.05	.06	.05	.01
210	.03	.04	.05	.06	.05	.01
190	.03	.04	.05	.06	.05	.01

OCTOBER - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N N=22							47°N N=90						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.9	2.3	2.7	2.5	1.0	590	1.3	1.5	1.8	2.0	2.3	.40
570	1.3	1.6	2.0	2.3	2.2	.8	570	1.1	1.3	1.6	1.8	2.0	.35
550	1.0	1.3	1.6	1.9	1.8	.60	550	.9	1.1	1.3	1.5	1.6	.25
530	.7	1.0	1.3	1.5	1.5	.40	530	.60	.8	1.0	1.2	1.3	.18
510	.65	.9	1.1	1.4	1.3	.30	510	.55	.7	.9	1.1	1.1	.14
490	.55	.8	1.0	1.2	1.2	.25	490	.45	.60	.8	1.0	1.0	.12
470	.40	.60	.8	1.0	1.0	.18	470	.35	.50	.65	.8	.8	.07
450	.25	.45	.60	.8	.8	.10	450	.25	.35	.50	.65	.65	.03
430	.20	.35	.50	.65	.7	.08	430	.18	.30	.40	.50	.55	.02
410	.18	.30	.40	.55	.55	.06	410	.14	.25	.35	.40	.45	.01
390	.14	.25	.30	.40	.40	.04	390	.10	.18	.25	.30	.35	.01
370	.12	.20	.25	.35	.35	.04	370	.09	.14	.20	.25	.30	.01
350	.10	.18	.25	.30	.30	.03	350	.08	.12	.18	.25	.25	.00
330	.09	.14	.20	.25	.30	.03	330	.06	.10	.14	.18	.25	.00
310	.07	.12	.16	.20	.25	.02	310	.05	.08	.12	.14	.18	.00
290	.06	.10	.14	.18	.20	.02	290	.04	.07	.09	.12	.16	.01
270	.06	.09	.12	.16	.20	.02	270	.04	.06	.08	.10	.12	.01
250	.06	.09	.12	.14	.18	.02	250	.04	.05	.07	.08	.09	.01
230	.05	.08	.10	.12	.14	.03	230	.04	.05	.06	.07	.06	.01
210	.05	.07	.09	.10	.12	.03	210	.04	.05	.06	.07	.06	.01
190	.05	.06	.07	.08	.08	.03	190	.04	.05	.06	.07	.06	.01

39°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.5	1.7	2.0	1.9	1.0
570	1.1	1.3	1.5	1.7	1.6	.8
550	.8	1.0	1.2	1.3	1.2	.55
530	.50	.65	.8	1.0	.8	.25
510	.45	.60	.7	.9	.7	.20
490	.35	.50	.65	.8	.65	.18
470	.30	.40	.50	.65	.50	.12
450	.20	.30	.40	.50	.35	.07
430	.16	.25	.30	.40	.30	.05
410	.12	.18	.25	.30	.30	.03
390	.08	.12	.16	.20	.2	.02
370	.07	.10	.14	.18	.25	.02
350	.06	.09	.12	.16	.20	.01
330	.06	.08	.10	.14	.18	.01
310	.05	.07	.09	.12	.16	.01
290	.04	.06	.08	.10	.14	.01
270	.04	.06	.07	.09	.12	.01
250	.04	.05	.06	.08	.09	.02
230	.04	.05	.06	.07	.07	.01
210	.04	.05	.06	.07	.06	.01
190	.04	.05	.06	.08	.06	.01

NOVEMBER - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43° N							36° N						
N=21							N=22						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.6	2.0	2.4	2.9	2.2	.8	590	1.0	1.2	1.5	1.7	1.6	.60
570	1.4	1.7	2.1	2.5	2.0	.65	570	.8	1.0	1.3	1.5	1.4	.50
550	1.1	1.4	1.8	2.1	1.7	.50	550	.60	.8	1.0	1.2	1.1	.35
530	.8	1.1	1.4	1.7	1.4	.30	530	.40	.60	.8	1	.9	.18
510	.7	1.0	1.3	1.5	1.3	.25	510	.35	.50	.7		.8	.16
490	.60	.9	1.1	1.3	1.1	.20	490	.30	.45	.60		.7	.12
470	.50	.7	.9	1.1	1.0	.18	470	.25	.35	.45	.60	.55	.10
450	.40	.55	.7	.9	.8	.14	450	.18	.25	.35	.40	.45	.07
430	.30	.45	.60	.8	.7	.12	430	.16	.20	.30	.35	.35	.05
410	.25	.40	.50	.65	.55	.10	410	.14	.20	.25	.30	.30	.04
390	.20	.30	.40	.50	.40	.08	390	.12	.16	.20	.25	.20	.03
370	.18	.25	.35	.40	.35	.07	370	.10	.14	.18	.25	.18	.03
350	.14	.20	.30	.35	.30	.06	350	.09	.12	.16	.20	.16	.03
330	.12	.16	.20	.25	.25	.05	330	.08	.12	.14	.18	.14	.03
310	.08	.12	.16	.18	.18	.03	310	.07	.09	.12	.14	.12	.04
290	.06	.09	.12	.14	.14	.03	290	.06	.08	.10	.12	.10	.04
270	.06	.08	.10	.14	.14	.03	270	.06	.08	.10	.12	.10	.04
250	.06	.08	.10	.12	.12	.03	250	.06	.07	.09	.10	.09	.04
230	.05	.07	.09	.10	.10	.03	230	.06	.07	.08	.10	.08	.03
210	.05	.06	.08	.09	.09	.03	210	.05	.06	.08	.09	.08	.03
190	.05	.06	.07	.08	.08	.03	190	.05	.06	.07	.08	.07	.03

32° N						
N=14						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.60	.8	1.0	1.1	1.0	.35
570	.45	.60	.8	.9	.8	.25
550	.35	.45	.60	.7	.60	.18
530	.18	.30	.40	.50	.40	.07
510	.16	.25	.35	.40	.35	.06
490	.14	.20	.30	.35	.30	.05
470	.12	.16	.20	.30	.25	.05
450	.08	.12	.16	.20	.18	.04
430	.07	.10	.14	.16	.14	.03
410	.07	.10	.12	.16	.12	.03
390	.06	.09	.12	.14	.10	.03
370	.06	.09	.12	.14	.10	.02
350	.06	.08	.10	.12	.10	.02
330	.05	.08	.10	.12	.09	.02
310	.05	.07	.09	.12	.09	.02
290	.05	.07	.09	.10	.08	.02
270	.05	.07	.08	.10	.08	.02
250	.05	.07	.08	.10	.08	.03
230	.05	.06	.08	.09	.08	.03
210	.05	.06	.08	.09	.07	.03
190	.05	.06	.07	.08	.07	.03

NOVEMBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

65°N							N=8	60°N							N=0
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN		FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
590	2.0	2.4	2.9	3.3	2.8	1.4		590	1.9	2.3	2.7	3.1	2.7	1.3	
570	1.8	2.2	2.6	3.0	2.5	1.2		570	1.7	2.0	2.4	2.8	2.4	1.1	
550	1.5	1.9	2.3	2.7	2.2	1.0		550	1.4	1.8	2.1	2.4	2.1	.9	
530	1.3	1.6	2.0	2.3	1.9	.7		530	1.1	1.5	1.8	2.1	1.7	.7	
510	1.1	1.4	1.8	2.1	1.7	.65		510	1.0	1.3	1.6	1.9	1.6	.60	
490	1.0	1.2	1.5	1.8	1.5	.55		490	.9	1.1	1.4	1.7	1.4	.50	
470	.8	1.0	1.3	1.5	1.3	.40		470	.7	.9	1.2	1.4	1.2	.35	
450	.65	.8	1.0	1.2	1.0	.30		450	.50	.7	1.0	1.2	1.0	.25	
430	.45	.65	.8	1.0	.9	.20		430	.40	.60	.8	1.0	.9	.20	
410	.35	.50	.65	.8	.7	.18		410	.35	.50	.65	.8	.7	.16	
390	.25	.40	.50	.65	.55	.12		390	.25	.35	.50	.65	.55	.12	
370	.20	.30	.40	.55	.45	.10		370	.20	.30	.40	.55	.45	.09	
350	.18	.25	.35	.45	.40	.08		350	.16	.25	.35	.45	.40	.08	
330	.14	.20	.30	.35	.30	.06		330	.12	.20	.25	.35	.30	.06	
310	.10	.16	.20	.25	.20	.04		310	.09	.14	.18	.25	.20	.04	
290	.08	.12	.16	.20	.18	.03		290	.07	.10	.14	.18	.16	.03	
270	.07	.10	.14	.18	.16	.03		270	.06	.10	.12	.16	.14	.03	
250	.07	.10	.14	.16	.14	.03		250	.06	.09	.12	.14	.12	.02	
230	.06	.09	.12	.14	.12	.03		230	.05	.08	.10	.12	.10	.02	
210	.05	.08	.10	.12	.10	.02		210	.05	.07	.09	.10	.08	.02	
190	.05	.07	.08	.10	.07	.02		190	.04	.06	.07	.09	.06	.02	

55°N							N=0	50°N							N=10
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN		FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	
590	1.8	2.2	2.5	2.9	2.5	1.3		590	1.7	2.0	2.3	2.7	2.3	1.2	
570	1.5	1.9	2.2	2.6	2.2	1.1		570	1.4	1.7	2.0	2.3	2.0	1.0	
550	1.3	1.6	1.9	2.2	1.9	.9		550	1.2	1.4	1.7	2.0	1.7	.8	
530	1.0	1.3	1.5	1.8	1.5	.60		530	.9	1.1	1.3	1.6	1.3	.55	
510	.9	1.1	1.4	1.7	1.4	.55		510	.8	1.0	1.2	1.5	1.3	.45	
490	.8	1.0	1.3	1.5	1.3	.45		490	.65	.9	1.1	1.4	1.2	.40	
470	.60	.9	1.1	1.3	1.1	.35		470	.55	.8	1.0	1.2	1.1	.30	
450	.45	.7	.9	1.1	1.0	.20		450	.40	.65	.9	1.1	1.0	.18	
430	.40	.60	.8	1.0	.8	.16		430	.35	.55	.8	1.0	.8	.14	
410	.30	.50	.65	.8	.7	.14		410	.30	.45	.65	.8	.7	.12	
390	.25	.35	.50	.65	.55	.10		390	.20	.35	.50	.65	.55	.08	
370	.20	.30	.40	.55	.45	.08		370	.18	.30	.40	.55	.45	.07	
350	.16	.25	.35	.45	.35	.07		350	.14	.25	.35	.45	.35	.06	
330	.12	.18	.25	.35	.30	.05		330	.10	.18	.25	.30	.25	.04	
310	.08	.12	.16	.20	.18	.03		310	.07	.10	.16	.20	.16	.03	
290	.06	.09	.12	.16	.14	.02		290	.04	.07	.10	.12	.12	.02	
270	.05	.08	.10	.14	.12	.02		270	.04	.07	.09	.12	.10	.02	
250	.05	.07	.10	.12	.10	.02		250	.04	.06	.08	.10	.09	.02	
230	.04	.06	.09	.10	.09	.02		230	.03	.05	.07	.09	.07	.02	
210	.04	.06	.07	.09	.07	.02		210	.03	.04	.06	.07	.06	.01	
190	.03	.05	.06	.07	.05	.02		190	.03	.04	.05	.06	.04	.01	

NOVEMBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45°N N=21

FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.5	1.8	2.1	2.4	2.1	1.0
570	1.2	1.5	1.8	2.1	1.8	.8
550	1.0	1.2	1.5	1.7	1.5	.60
530	.7	.9	1.1	1.3	1.2	.35
510	.60	.8	1.0	1.2	1.1	.30
490	.55	.7	.9	1.1	1.0	.25
470	.45	.65	.8	1.0	.9	.18
450	.30	.50	.7	.9	.8	.12
430	.25	.45	.65	.8	.7	.09
410	.20	.40	.55	.7	.60	.07
390	.18	.30	.45	.55	.45	.05
370	.14	.25	.35	.45	.40	.05
350	.12	.20	.30	.40	.35	.04
330	.09	.16	.20	.30	.25	.03
310	.06	.10	.14	.18	.18	.02
290	.04	.07	.10	.12	.12	.01
270	.04	.06	.09	.12	.12	.01
250	.04	.06	.08	.10	.10	.01
230	.03	.05	.07	.09	.08	.01
210	.03	.04	.06	.07	.07	.01
190	.03	.04	.05	.06	.05	.01

40°N N=43

FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.4	1.7	2.0	1.7	.60
570	1.0	1.2	1.5	1.7	1.5	.45
550	.8	1.0	1.2	1.4	1.2	.25
530	.55	.7	.9	1.1	1.0	.08
510	.45	.65	.8	1.0	.9	.07
490	.40	.55	.7	.9	.8	.06
470	.30	.45	.60	.7	.7	.04
450	.20	.30	.45	.55	.65	.03
430	.16	.25	.40	.50	.55	.02
410	.14	.25	.35	.45	.45	.02
390	.10	.20	.30	.40	.35	.01
370	.09	.18	.25	.35	.35	.01
350	.08	.16	.25	.30	.30	.01
330	.07	.12	.18	.25	.25	.01
310	.06	.10	.14	.18	.20	.01
290	.05	.08	.12	.16	.18	.01
270	.05	.08	.10	.14	.16	.01
250	.04	.07	.10	.12	.14	.01
230	.04	.06	.09	.12	.12	.01
210	.04	.06	.08	.09	.10	.01
190	.04	.05	.06	.08	.08	.01

35°N N=11

FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.0	1.3	1.7	2.0	1.8	.60
570	.8	1.1	1.4	1.7	1.5	.45
550	.65	.9	1.2	1.5	1.2	.25
530	.50	.7	.9	1.2	.8	.08
510	.40	.60	.8	1.0	.7	.07
490	.35	.50	.7	.9	.60	.06
470	.25	.40	.55	.7	.50	.04
450	.16	.25	.40	.50	.40	.02
430	.12	.20	.30	.40	.30	.02
410	.10	.16	.20	.30	.20	.01
390	.06	.10	.14	.16	.12	.01
370	.05	.08	.10	.14	.10	.01
350	.05	.07	.09	.12	.09	.01
330	.04	.06	.08	.10	.08	.01
310	.03	.05	.06	.08	.06	.01
290	.03	.04	.05	.07	.06	.01
270	.03	.04	.05	.07	.06	.01
250	.03	.04	.06	.07	.06	.01
230	.03	.04	.06	.07	.06	.01
210	.03	.04	.06	.07	.06	.01
190	.03	.04	.06	.07	.06	.01

NOVEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

80°N N=10							75°N N=30						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.8	3.2	3.6	3.2	1.5	590	2.2	2.6	3.0	3.4	3.2	1.5
570	2.2	2.6	3.0	3.3	3.0	1.3	570	2.0	2.4	2.8	3.2	3.0	1.3
550	2.0	2.3	2.7	3.1	2.8	1.0	550	1.8	2.2	2.5	2.9	2.8	1.0
530	1.7	2.1	2.4	2.7	2.5	.7	530	1.6	1.9	2.2	2.6	2.5	.7
510	1.6	1.9	2.2	2.5	2.4	.60	510	1.4	1.7	2.0	2.4	2.4	.60
490	1.4	1.7	2.0	2.3	2.3	.50	490	1.2	1.5	1.8	2.1	2.3	.50
470	1.1	1.4	1.8	2.1	2.2	.40	470	1.0	1.3	1.6	1.9	2.2	.40
450	.9	1.2	1.5	1.8	2.0	.25	450	.8	1.1	1.3	1.6	2.0	.25
430	.7	1.0	1.3	1.6	1.7	.20	430	.65	.9	1.1	1.4	1.7	.20
410	.60	.9	1.1	1.4	1.4	.12	410	.55	.8	1.0	1.2	1.4	.12
390	.45	.65	.9	1.1	1.0	.05	390	.40	.60	.8	1.0	1.0	.05
370	.35	.55	.8	1.0	.8	.04	370	.35	.50	.7	.8	.8	.04
350	.30	.50	.65	.8	.65	.03	350	.30	.45	.60	.7	.65	.03
330	.25	.40	.55	.7	.50	.03	330	.25	.35	.45	.60	.50	.03
310	.18	.30	.40	.50	.35	.02	310	.16	.25	.35	.45	.35	.02
290	.12	.20	.30	.40	.25	.02	290	.12	.20	.25	.35	.25	.02
270	.10	.18	.25	.35	.20	.02	270	.10	.16	.25	.30	.20	.02
250	.09	.14	.20	.25	.16	.02	250	.08	.14	.18	.25	.16	.02
230	.07	.10	.14	.18	.14	.02	230	.07	.10	.14	.18	.14	.02
210	.06	.10	.12	.16	.12	.02	210	.06	.09	.12	.16	.12	.02
190	.06	.08	.10	.14	.10	.01	190	.06	.08	.10	.12	.10	.01

70°N N=20							65°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.5	2.9	3.3	3.1	1.4	590	2.0	2.4	2.8	3.2	3.0	1.4
570	1.9	2.2	2.6	3.0	2.9	1.2	570	1.8	2.1	2.5	2.9	2.8	1.2
550	1.6	2.0	2.3	2.7	2.7	1.0	550	1.5	1.9	2.3	2.6	2.6	1.0
530	1.4	1.7	2.0	2.4	2.4	.7	530	1.3	1.6	2.0	2.3	2.3	.7
510	1.2	1.5	1.9	2.2	2.3	.60	510	1.2	1.5	1.8	2.1	2.2	.60
490	1.1	1.4	1.6	1.9	2.2	.50	490	1.0	1.3	1.6	1.9	2.0	.50
470	.9	1.2	1.4	1.7	2.1	.40	470	.8	1.1	1.3	1.6	1.8	.40
450	.7	.9	1.2	1.4	1.9	.25	450	.65	.9	1.1	1.3	1.6	.25
430	.60	.8	1.0	1.2	1.6	.20	430	.55	.7	.9	1.1	1.4	.20
410	.50	.65	.8	1.0	1.3	.14	410	.45	.60	.8	1.0	1.1	.16
390	.40	.50	.65	.8	.9	.07	390	.35	.50	.65	.8	.8	.09
370	.30	.45	.60	.7	.7	.05	370	.30	.40	.55	.65	.65	.07
350	.25	.40	.50	.60	.60	.05	350	.25	.35	.45	.55	.55	.06
330	.20	.30	.40	.50	.45	.04	330	.20	.30	.40	.45	.40	.05
310	.16	.25	.30	.35	.30	.03	310	.16	.25	.30	.35	.30	.04
290	.12	.18	.25	.30	.25	.02	290	.12	.18	.25	.30	.25	.03
270	.10	.16	.20	.25	.20	.02	270	.10	.16	.20	.25	.20	.03
250	.08	.12	.16	.20	.16	.02	250	.08	.12	.16	.20	.16	.02
230	.06	.10	.12	.16	.14	.02	230	.06	.09	.12	.16	.12	.02
210	.06	.09	.12	.14	.12	.02	210	.06	.08	.12	.14	.10	.02
190	.05	.08	.10	.12	.10	.01	190	.05	.07	.10	.12	.09	.02

NOVEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N							55°N						
N=5							N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.9	2.3	2.7	3.1	3.0	1.4	590	1.8	2.1	2.5	2.9	2.9	1.2
570	1.7	2.1	2.4	2.8	2.8	1.1	570	1.6	1.9	2.3	2.6	2.7	1.0
550	1.4	1.8	2.2	2.5	2.5	.9	550	1.3	1.7	2.0	2.3	2.5	.8
530	1.2	1.5	1.9	2.2	2.3	.65	530	1.1	1.4	1.7	2.0	2.2	.50
510	1.1	1.4	1.7	2.0	2.1	.55	510	1.0	1.3	1.5	1.8	2.0	.45
490	.9	1.2	1.5	1.8	1.9	.45	490	.9	1.1	1.4	1.6	1.8	.35
470	.8	1.0	1.3	1.5	1.7	.35	470	.7	.9	1.2	1.4	1.5	.25
450	.60	.8	1.0	1.2	1.4	.20	450	.55	.7	.9	1.1	1.3	.18
430	.50	.7	.9	1.1	1.2	.18	430	.45	.65	.8	1.0	1.0	.16
410	.45	.60	.7	.9	.9	.16	410	.40	.55	.7	.8	.8	.14
390	.35	.45	.60	.7	.65	.12	390	.30	.40	.55	.65	.60	.12
370	.30	.40	.50	.60	.55	.10	370	.25	.35	.45	.50	.50	.10
350	.25	.35	.45	.55	.45	.09	350	.20	.30	.40	.40	.45	.09
330	.20	.30	.35	.45	.40	.07	330	.18	.25	.35	.40	.35	.08
310	.16	.25	.30	.35	.30	.05	310	.14	.20	.25	.30	.30	.06
290	.14	.18	.25	.30	.25	.04	290	.10	.16	.20	.25	.25	.05
270	.10	.14	.20	.25	.20	.04	270	.09	.12	.16	.20	.18	.04
250	.08	.12	.16	.18	.16	.03	250	.07	.10	.14	.16	.14	.04
230	.06	.09	.12	.14	.12	.03	230	.05	.08	.10	.14	.10	.03
210	.06	.08	.10	.12	.10	.03	210	.05	.07	.09	.12	.08	.03
190	.05	.07	.09	.12	.08	.02	190	.04	.06	.08	.10	.07	.02

50°N							45°N						
N=10							N=30						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.0	2.3	2.6	2.9	1.1	590	1.5	1.8	2.1	2.5	2.5	.9
570	1.5	1.8	2.1	2.4	2.7	.9	570	1.3	1.6	1.9	2.2	2.4	.7
550	1.3	1.5	1.8	2.1	2.4	.65	550	1.1	1.4	1.6	1.9	2.2	.45
530	1.0	1.3	1.5	1.8	2.2	.40	530	.9	1.1	1.4	1.6	2.1	.25
510	.9	1.1	1.4	1.6	1.9	.35	510	.8	1.0	1.2	1.5	1.8	.20
490	.8	1.0	1.2	1.4	1.7	.30	490	.65	.9	1.1	1.3	1.5	.18
470	.65	.8	1.0	1.2	1.4	.20	470	.55	.7	.9	1.1	1.2	.14
450	.50	.65	.8	1.0	1.1	.14	450	.40	.55	.7	.9	.9	.09
430	.40	.55	.7	.9	.9	.12	430	.35	.50	.65	.8	.8	.07
410	.35	.50	.60	.8	.7	.10	410	.30	.40	.55	.65	.7	.06
390	.25	.40	.50	.60	.60	.10	390	.20	.30	.40	.50	.60	.04
370	.20	.30	.45	.55	.50	.09	370	.18	.25	.35	.45	.55	.04
350	.18	.25	.35	.45	.45	.08	350	.16	.25	.30	.40	.45	.04
330	.14	.20	.30	.35	.35	.06	330	.12	.20	.25	.30	.40	.03
310	.10	.16	.20	.30	.30	.05	310	.09	.14	.20	.25	.30	.03
290	.08	.12	.16	.20	.25	.04	290	.08	.12	.16	.20	.25	.03
270	.07	.10	.14	.18	.20	.03	270	.07	.10	.14	.18	.20	.03
250	.06	.09	.12	.16	.16	.03	250	.06	.09	.12	.16	.16	.02
230	.05	.07	.10	.12	.12	.02	230	.05	.08	.10	.14	.14	.02
210	.04	.06	.08	.10	.10	.02	210	.05	.07	.10	.12	.12	.02
190	.04	.05	.07	.09	.08	.02	190	.05	.07	.09	.10	.10	.01

NOVEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40°N N=45							35°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.4	1.7	2.0	2.3	2.1	.00	590	1.2	1.5	1.7	2.0	1.7	.60
570	1.2	1.5	1.8	2.0	2.0	.45	570	1.0	1.2	1.5	1.7	1.5	.40
550	1.0	1.2	1.5	1.8	2.0	.30	550	.8	1.0	1.2	1.5	1.3	.25
530	.7	1.0	1.2	1.5	1.9	.16	530	.55	.8	1.0	1.2	1.1	.12
510	.65	.9	1.1	1.3	1.6	.14	510	.50	.65	.9	1.0	1.0	.10
490	.55	.7	1.0	1.2	1.4	.12	490	.40	.60	.7	.9	.8	.09
470	.45	.60	.8	1.0	1.1	.09	470	.35	.45	.60	.8	.65	.07
450	.35	.45	.60	.8	.8	.07	450	.25	.35	.45	.60	.45	.04
430	.25	.40	.50	.65	.65	.05	430	.20	.30	.40	.50	.40	.04
410	.25	.35	.45	.55	.60	.04	410	.18	.25	.30	.40	.35	.03
390	.18	.25	.35	.40	.55	.03	390	.14	.18	.25	.30	.35	.02
370	.16	.25	.30	.35	.50	.03	370	.12	.16	.20	.25	.30	.02
350	.14	.20	.25	.30	.40	.02	350	.10	.14	.18	.25	.30	.02
330	.12	.16	.20	.25	.35	.02	330	.09	.12	.16	.20	.25	.01
310	.09	.12	.18	.20	.25	.01	310	.07	.10	.14	.16	.18	.01
290	.07	.10	.14	.18	.20	.01	290	.06	.09	.12	.14	.16	.01
270	.07	.10	.14	.16	.18	.01	270	.06	.08	.10	.12	.14	.01
250	.06	.09	.12	.16	.16	.01	250	.05	.07	.10	.12	.14	.01
230	.06	.09	.12	.14	.14	.01	230	.05	.07	.09	.10	.12	.01
210	.06	.08	.10	.14	.14	.01	210	.05	.07	.08	.10	.12	.01
190	.05	.08	.10	.12	.12	.01	190	.05	.06	.08	.10	.10	.01

30°N N=12							25°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.0	1.2	1.5	1.7	1.4	.35	590	.8	1.0	1.2	1.3	1.1	.30
570	.8	1.0	1.2	1.4	1.2	.25	570	.60	.8	.9	1.1	.9	.25
550	.60	.8	1.0	1.2	.9	.16	550	.40	.55	.65	.8	.65	.16
530	.40	.55	.7	.9	.55	.06	530	.18	.30	.40	.50	.40	.07
510	.35	.45	.60	.7	.50	.05	510	.16	.25	.35	.40	.35	.06
490	.25	.40	.50	.60	.40	.04	490	.14	.20	.25	.35	.30	.05
470	.20	.30	.35	.45	.30	.03	470	.10	.16	.20	.25	.20	.04
450	.12	.18	.25	.30	.20	.02	450	.08	.10	.14	.18	.16	.03
430	.09	.14	.18	.25	.18	.02	430	.07	.10	.12	.14	.12	.03
410	.09	.12	.16	.20	.16	.01	410	.06	.09	.12	.14	.12	.02
390	.08	.12	.14	.18	.12	.01	390	.06	.08	.10	.12	.09	.02
370	.07	.10	.12	.16	.12	.01	370	.05	.07	.09	.12	.09	.02
350	.07	.09	.12	.14	.10	.01	350	.05	.07	.09	.10	.08	.02
330	.06	.08	.10	.12	.10	.01	330	.05	.06	.08	.10	.08	.01
310	.05	.07	.09	.12	.09	.01	310	.04	.06	.07	.09	.07	.01
290	.05	.06	.08	.10	.08	.01	290	.04	.05	.07	.08	.07	.01
270	.05	.06	.07	.09	.08	.01	270	.04	.05	.06	.07	.07	.01
250	.04	.05	.07	.08	.07	.01	250	.04	.05	.06	.07	.06	.01
230	.04	.05	.06	.07	.07	.01	230	.04	.05	.06	.07	.06	.01
210	.04	.05	.06	.07	.07	.01	210	.04	.05	.06	.07	.06	.01
190	.04	.05	.06	.07	.06	.01	190	.04	.05	.06	.07	.06	.01

NOVEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20°N							15°N						
N=8							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.50	.65	.8	1.0	.8	.25	590	.45	.55	.7	.8	.60	.20
570	.40	.50	.65	.8	.60	.20	570	.35	.45	.50	.60	.45	.16
550	.25	.35	.45	.55	.40	.14	550	.20	.30	.35	.45	.30	.12
530	.12	.16	.20	.25	.20	.08	530	.10	.14	.18	.20	.16	.06
510	.10	.14	.18	.25	.18	.07	510	.09	.12	.16	.20	.14	.05
490	.09	.12	.16	.18	.14	.06	490	.08	.10	.14	.16	.12	.05
470	.07	.10	.12	.14	.12	.05	470	.07	.09	.12	.14	.10	.04
450	.05	.07	.08	.09	.08	.04	450	.05	.07	.09	.10	.08	.03
430	.05	.06	.07	.08	.07	.04	430	.05	.06	.08	.09	.07	.03
410	.04	.05	.06	.07	.06	.03	410	.04	.05	.07	.08	.06	.02
390	.04	.05	.06	.07	.05	.02	390	.04	.05	.06	.07	.05	.02
370	.04	.05	.06	.07	.05	.02	370	.03	.04	.05	.06	.05	.02
350	.04	.05	.06	.07	.05	.02	350	.03	.04	.05	.06	.05	.02
330	.03	.04	.05	.06	.06	.01	330	.03	.04	.05	.06	.05	.01
310	.03	.04	.05	.06	.06	.01	310	.03	.04	.05	.06	.05	.01
290	.03	.04	.05	.06	.06	.01	290	.03	.04	.05	.06	.05	.01
270	.03	.04	.05	.06	.06	.01	270	.03	.04	.05	.06	.05	.01
250	.03	.04	.05	.06	.06	.01	250	.03	.04	.05	.06	.05	.01
230	.03	.04	.05	.06	.06	.01	230	.03	.04	.05	.06	.05	.01
210	.03	.04	.05	.06	.06	.01	210	.03	.04	.05	.06	.05	.01
190	.03	.04	.05	.06	.06	.01	190	.03	.04	.05	.06	.05	.01

10°N						
N=11						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.35	.45	.50	.60	.45	.14
570	.25	.35	.40	.45	.35	.10
550	.16	.20	.25	.30	.25	.08
530	.07	.10	.14	.16	.14	.04
510	.06	.09	.12	.14	.14	.04
490	.06	.08	.10	.14	.12	.03
470	.05	.07	.09	.12	.12	.03
450	.04	.06	.08	.10	.10	.02
430	.04	.06	.07	.08	.09	.02
410	.04	.05	.06	.07	.08	.02
390	.03	.04	.05	.06	.06	.02
370	.03	.04	.05	.06	.06	.02
350	.03	.04	.05	.06	.05	.02
330	.03	.04	.05	.06	.05	.01
310	.03	.04	.05	.06	.04	.01
290	.03	.04	.05	.06	.04	.01
270	.03	.04	.05	.06	.04	.01
250	.03	.04	.05	.06	.04	.01
230	.03	.04	.05	.06	.04	.01
210	.03	.04	.05	.06	.05	.01
190	.02	.03	.04	.05	.05	.01

NOVEMBER - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N N=34							47°N N=111						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.7	2.1	2.5	2.8	3.0	.65	590	1.4	1.7	2.1	2.4	2.6	.7
570	1.5	1.8	2.1	2.5	2.6	.55	570	1.2	1.5	1.9	2.2	2.4	.55
550	1.2	1.5	1.8	2.1	2.1	.45	550	1.0	1.3	1.6	1.9	2.2	.35
530	.9	1.2	1.5	1.7	1.6	.35	530	.7	1.0	1.3	1.6	2.0	.16
510	.8	1.0	1.3	1.5	1.5	.30	510	.65	.9	1.2	1.5	1.8	.14
490	.65	.9	1.1	1.3	1.3	.25	490	.55	.8	1.0	1.3	1.6	.10
470	.50	.7	.9	1.1	1.1	.16	470	.40	.65	.8	1.0	1.3	.07
450	.35	.55	.7	.9	.9	.08	450	.30	.45	.65	.8	1.1	.03
430	.30	.45	.60	.7	.8	.06	430	.25	.40	.55	.7	.9	.02
410	.25	.40	.50	.65	.7	.05	410	.20	.30	.45	.55	.7	.01
390	.20	.30	.40	.55	.60	.04	390	.16	.25	.35	.45	.50	.01
370	.16	.25	.35	.45	.55	.03	370	.12	.20	.30	.40	.45	.01
350	.14	.20	.30	.35	.45	.03	350	.10	.18	.25	.35	.40	.01
330	.10	.16	.20	.30	.35	.02	330	.09	.14	.20	.25	.35	.01
310	.07	.12	.16	.20	.25	.01	310	.06	.10	.14	.18	.30	.01
290	.06	.08	.12	.14	.16	.00	290	.05	.08	.12	.14	.20	.01
270	.05	.08	.10	.12	.16	.00	270	.04	.07	.09	.12	.16	.01
250	.05	.07	.09	.12	.14	.00	250	.04	.06	.07	.09	.10	.01
230	.04	.06	.08	.10	.12	.01	230	.04	.05	.06	.07	.06	.01
210	.04	.06	.07	.09	.10	.01	210	.04	.05	.06	.07	.06	.01
190	.03	.05	.06	.08	.08	.01	190	.03	.04	.05	.06	.06	.01

39°N N=10						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.6	1.9	2.2	1.9	.50
570	1.1	1.3	1.6	1.8	1.6	.45
550	.8	1.1	1.3	1.5	1.3	.35
530	.60	.8	.9	1.1	1.0	.30
510	.55	.65	.8	1.0	.9	.25
490	.45	.55	.7	.8	.8	.20
470	.35	.45	.60	.7	.65	.16
450	.25	.35	.45	.55	.50	.10
430	.18	.25	.35	.40	.40	.07
410	.14	.20	.25	.30	.30	.05
390	.08	.12	.14	.16	.16	.02
370	.06	.09	.10	.14	.12	.02
350	.06	.07	.09	.12	.10	.02
330	.05	.06	.08	.09	.09	.01
310	.03	.05	.06	.07	.07	.01
290	.03	.04	.05	.06	.06	.01
270	.03	.04	.05	.06	.05	.01
250	.03	.04	.05	.06	.05	.01
230	.03	.04	.05	.05	.05	.01
210	.03	.04	.05	.05	.04	.02
190	.03	.04	.04	.05	.04	.02

DECEMBER - JAPAN

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

43°N N=19							36°N N=17						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.1	2.6	3.0	3.5	3.1	1.4	590	1.2	1.6	2.1	2.5	2.2	.7
570	1.8	2.3	2.7	3.2	2.9	1.2	570	1.0	1.4	1.8	2.1	1.9	.55
550	1.6	2.0	2.4	2.9	2.6	.8	550	.8	1.1	1.4	1.7	1.4	.40
530	1.3	1.7	2.1	2.5	2.4	.55	530	.55	.8	1.1	1.3	1.0	.25
510	1.1	1.5	1.9	2.3	2.1	.45	510	.50	.7	.9	1.1	.9	.20
490	1.0	1.3	1.6	2.0	1.9	.40	490	.40	.60	.8	1.0	.7	.16
470	.8	1.1	1.3	1.6	1.6	.35	470	.30	.45	.60	.8	.60	.12
450	.60	.8	1.0	1.3	1.2	.25	450	.20	.35	.45	.55	.45	.07
430	.50	.7	.9	1.1	1.0	.20	430	.18	.30	.35	.45	.40	.05
410	.40	.60	.8	.9	.9	.18	410	.16	.25	.35	.40	.35	.04
390	.35	.50	.65	.8	.65	.14	390	.14	.20	.30	.35	.30	.03
370	.30	.40	.55	.7	.55	.12	370	.12	.18	.25	.30	.25	.02
350	.25	.35	.45	.55	.45	.10	350	.12	.16	.25	.30	.25	.02
330	.18	.30	.35	.48	.35	.07	330	.10	.14	.20	.25	.20	.02
310	.14	.20	.25	.35	.25	.05	310	.08	.12	.18	.20	.18	.02
290	.10	.14	.20	.25	.20	.03	290	.07	.12	.16	.20	.16	.02
270	.09	.14	.18	.20	.18	.03	270	.07	.10	.14	.18	.14	.02
250	.08	.12	.16	.20	.16	.03	250	.07	.10	.12	.16	.12	.03
230	.07	.10	.14	.16	.14	.03	230	.06	.09	.12	.14	.12	.03
210	.06	.08	.10	.12	.12	.03	210	.06	.08	.09	.12	.10	.03
190	.05	.06	.08	.09	.09	.03	190	.05	.06	.08	.09	.09	.04

32°N N=17						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.8	1.1	1.5	1.9	1.7	.40
570	.60	.9	1.2	1.5	1.4	.30
550	.45	.7	.9	1.2	1.1	.18
530	.25	.45	.65	.8	.8	.07
510	.25	.40	.60	.7	.7	.06
490	.20	.35	.50	.65	.65	.05
470	.16	.30	.45	.60	.60	.05
450	.12	.25	.35	.50	.55	.04
430	.12	.20	.35	.45	.50	.03
410	.10	.20	.30	.40	.50	.02
390	.09	.18	.30	.35	.45	.02
370	.08	.16	.25	.30	.35	.02
350	.07	.14	.20	.25	.30	.02
330	.06	.10	.16	.20	.20	.02
310	.05	.08	.10	.12	.12	.02
290	.04	.06	.08	.09	.08	.02
270	.04	.06	.07	.09	.07	.02
250	.04	.06	.07	.08	.07	.02
230	.04	.05	.07	.08	.06	.02
210	.04	.05	.06	.07	.06	.02
190	.04	.05	.06	.07	.06	.02

DECEMBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

FLIGHT LEVEL	65°N N=10						FLIGHT LEVEL	60°N N=0					
	MEAN	16%	2%	.1%	MAX	MIN		MEAN	16%	2%	.1%	MAX	MIN
590	2.4	2.9	3.3	3.8	3.5	1.8	590	2.1	2.5	2.9	3.3	3.0	1.6
570	2.2	2.7	3.2	3.7	3.2	1.4	570	1.9	2.3	2.7	3.1	2.7	1.3
550	2.0	2.5	3.0	3.5	2.9	1.1	550	1.7	2.1	2.5	2.9	2.5	1.0
530	1.8	2.3	2.8	3.3	2.6	.7	530	1.5	1.9	2.3	2.7	2.1	.60
510	1.6	2.1	2.5	3.0	2.4	.65	510	1.3	1.7	2.1	2.4	1.9	.55
490	1.4	1.8	2.2	2.7	2.1	.55	490	1.2	1.5	1.8	2.2	1.7	.50
470	1.2	1.6	1.9	2.3	1.7	.50	470	1.0	1.3	1.6	1.9	1.5	.45
450	.9	1.3	1.6	1.9	1.4	.45	450	.8	1.0	1.3	1.6	1.2	.35
430	.8	1.0	1.3	1.6	1.1	.35	430	.65	.9	1.1	1.3	1.0	.30
410	.60	.8	1.0	1.2	.9	.30	410	.50	.7	.9	1.0	.8	.25
390	.45	.55	.7	.8	.60	.20	390	.35	.50	.60	.7	.55	.16
370	.35	.45	.55	.65	.50	.16	370	.30	.40	.50	.60	.45	.14
350	.30	.35	.45	.50	.40	.14	350	.25	.30	.40	.45	.35	.10
330	.20	.25	.35	.40	.30	.10	330	.18	.25	.30	.35	.30	.08
310	.14	.18	.20	.25	.20	.06	310	.12	.16	.18	.25	.18	.05
290	.09	.12	.14	.18	.14	.04	290	.08	.10	.12	.16	.12	.03
270	.08	.10	.14	.16	.12	.03	270	.07	.09	.12	.14	.12	.03
250	.07	.10	.12	.14	.12	.03	250	.06	.08	.10	.12	.10	.03
230	.07	.09	.10	.12	.10	.03	230	.06	.07	.09	.12	.09	.02
210	.06	.07	.09	.10	.08	.03	210	.05	.06	.08	.10	.07	.02
190	.05	.06	.07	.09	.06	.02	190	.04	.05	.07	.08	.06	.02

FLIGHT LEVEL	55°N N=0						FLIGHT LEVEL	50°N N=11					
	MEAN	16%	2%	.1%	MAX	MIN		MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.2	2.5	2.8	2.5	1.4	590	1.5	1.8	2.1	2.3	2.0	1.2
570	1.6	1.9	2.3	2.6	2.3	1.1	570	1.3	1.5	1.8	2.0	1.8	.9
550	1.4	1.7	2.0	2.3	2.0	.8	550	1.0	1.3	1.5	1.7	1.5	.7
530	1.1	1.4	1.7	2.0	1.7	.55	530	.8	1.0	1.1	1.3	1.1	.45
510	1.0	1.3	1.6	1.8	1.5	.45	510	.7	.9	1.1	1.2	1.1	.40
490	.9	1.1	1.4	1.7	1.3	.40	490	.60	.8	1.0	1.1	1.0	.35
470	.7	1.0	1.2	1.5	1.2	.35	470	.50	.7	.9	1.0	.9	.25
450	.60	.8	1.0	1.2	1.0	.25	450	.40	.60	.8	.9	.7	.18
430	.50	.7	.9	1.1	.8	.20	430	.35	.50	.65	.8	.65	.14
410	.40	.55	.7	.9	.65	.16	410	.30	.40	.55	.7	.55	.10
390	.30	.40	.50	.65	.50	.12	390	.20	.30	.45	.55	.45	.06
370	.25	.35	.40	.50	.40	.09	370	.18	.25	.35	.45	.35	.05
350	.20	.25	.35	.40	.35	.07	350	.14	.20	.30	.35	.30	.04
330	.14	.20	.25	.30	.25	.05	330	.10	.16	.20	.25	.20	.03
310	.09	.12	.16	.20	.16	.03	310	.07	.10	.14	.16	.14	.02
290	.06	.09	.12	.14	.12	.02	290	.05	.07	.09	.12	.10	.02
270	.06	.08	.10	.12	.10	.02	270	.04	.06	.08	.10	.09	.02
250	.05	.07	.09	.12	.09	.02	250	.04	.06	.08	.09	.08	.02
230	.05	.06	.08	.10	.08	.02	230	.04	.05	.07	.08	.07	.02
210	.04	.05	.07	.08	.06	.02	210	.03	.04	.06	.07	.06	.02
190	.03	.05	.06	.07	.05	.02	190	.03	.04	.05	.06	.04	.01

DECEMBER - WESTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

45° N N=26							40° N N=56						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.4	1.7	1.9	2.2	1.9	.9	590	1.4	1.8	2.1	2.5	2.2	.7
570	1.2	1.4	1.7	1.9	1.7	.7	570	1.2	1.6	1.9	2.3	2.1	.50
550	.9	1.1	1.4	1.6	1.5	.55	550	.9	1.3	1.7	2.1	2.0	.35
530	.60	.8	1.1	1.3	1.2	.30	530	.7	1.1	1.5	1.9	1.8	.14
510	.44	.8	1.0	1.2	1.1	.25	510	.60	1.0	1.3	1.7	1.6	.12
490	.50	.7	.9	1.1	1.0	.20	490	.50	.8	1.1	1.4	1.4	.10
470	.40	.60	.8	.9	.9	.16	470	.40	.7	.9	1.2	1.2	.08
450	.35	.50	.65	.8	.7	.10	450	.30	.50	.7	.9	1.0	.05
430	.25	.40	.55	.7	.65	.08	430	.25	.45	.60	.8	.8	.03
410	.25	.35	.50	.60	.55	.06	410	.20	.35	.50	.65	.7	.03
390	.18	.30	.40	.50	.45	.03	390	.16	.30	.40	.45	.50	.02
370	.14	.25	.35	.45	.35	.02	370	.14	.25	.35	.45	.45	.02
350	.12	.20	.25	.35	.30	.02	350	.12	.20	.30	.35	.35	.02
330	.09	.14	.20	.25	.25	.02	330	.09	.16	.20	.30	.30	.02
310	.06	.10	.14	.16	.16	.02	310	.07	.12	.16	.20	.20	.02
290	.04	.07	.09	.12	.12	.02	290	.05	.09	.12	.16	.18	.02
270	.04	.06	.09	.10	.10	.02	270	.05	.08	.10	.14	.16	.02
250	.04	.06	.08	.10	.09	.01	250	.05	.07	.10	.12	.14	.02
230	.03	.05	.07	.09	.08	.01	230	.04	.07	.09	.10	.12	.02
210	.03	.05	.06	.07	.07	.01	210	.04	.06	.08	.09	.10	.02
190	.03	.04	.05	.06	.05	.01	190	.04	.05	.06	.08	.07	.02

35° N N=23						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.1	1.5	2.0	2.4	2.2	.40
470	1.0	1.4	1.7	2.1	1.9	.30
550	.7	1.1	1.5	1.9	1.7	.20
530	.50	.9	1.3	1.7	1.5	.08
510	.45	.8	1.1	1.4	1.3	.07
490	.35	.65	.9	1.2	1.0	.06
470	.30	.50	.7	.9	.8	.04
450	.20	.35	.45	.60	.55	.03
430	.16	.25	.35	.50	.45	.02
410	.14	.20	.30	.40	.35	.02
390	.10	.16	.20	.30	.25	.02
370	.09	.14	.20	.25	.20	.02
350	.08	.12	.18	.20	.20	.02
330	.06	.10	.14	.18	.18	.01
310	.05	.09	.12	.16	.18	.01
290	.04	.07	.10	.14	.16	.01
270	.04	.07	.10	.12	.14	.01
250	.04	.06	.09	.12	.12	.01
230	.03	.05	.08	.10	.10	.01
210	.03	.05	.07	.08	.09	.01
190	.03	.04	.05	.07	.06	.01

DECEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

90°N							75°N						
N=10							N=30						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.7	3.2	3.6	4.1	3.5	1.5	590	2.6	3.1	3.6	4.1	3.5	1.4
570	2.4	2.9	3.3	3.8	3.2	1.2	570	2.4	2.9	3.3	3.8	3.2	1.2
550	2.2	2.6	3.0	3.4	2.7	.9	550	2.2	2.6	3.0	3.4	2.7	.9
530	1.9	2.2	2.6	2.9	2.3	.60	530	1.9	2.3	2.7	3.0	2.3	.55
510	1.7	2.0	2.4	2.7	2.2	.55	510	1.7	2.1	2.4	2.7	2.2	.50
490	1.5	1.8	2.1	2.4	2.0	.55	490	1.5	1.8	2.1	2.4	2.0	.50
470	1.3	1.5	1.8	2.1	1.8	.50	470	1.2	1.5	1.8	2.1	1.8	.45
450	1.0	1.3	1.5	1.7	1.6	.45	450	1.0	1.2	1.4	1.7	1.6	.40
430	.9	1.1	1.3	1.5	1.4	.40	430	.8	1.0	1.2	1.4	1.4	.35
410	.7	.9	1.1	1.2	1.1	.35	410	.65	.8	1.0	1.2	1.1	.30
390	.55	.7	.8	1.0	.8	.25	390	.55	.65	.8	1.0	.7	.20
370	.45	.60	.7	.8	.65	.20	370	.45	.55	.7	.8	.60	.18
350	.40	.50	.60	.7	.55	.16	350	.35	.45	.55	.7	.50	.14
330	.30	.40	.45	.55	.45	.12	330	.30	.35	.45	.45	.45	.10
310	.20	.25	.35	.40	.35	.04	310	.20	.25	.30	.40	.35	.05
290	.14	.18	.25	.30	.30	.03	290	.14	.18	.25	.25	.30	.03
270	.10	.14	.18	.25	.25	.03	270	.10	.14	.18	.20	.25	.03
250	.08	.12	.14	.18	.20	.02	250	.08	.10	.14	.16	.20	.02
230	.06	.08	.10	.12	.16	.02	230	.06	.08	.10	.12	.16	.02
210	.05	.07	.09	.10	.12	.02	210	.05	.07	.09	.10	.12	.02
190	.04	.06	.07	.08	.09	.02	190	.04	.06	.07	.08	.09	.02

70°N							65°N						
N=15							N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.5	3.0	3.5	4.0	3.5	1.4	590	2.4	2.9	3.3	3.8	3.4	1.3
570	2.2	2.7	3.2	3.7	3.1	1.2	570	2.1	2.6	3.1	3.5	3.1	1.1
550	2.0	2.4	2.9	3.3	2.7	.9	550	1.9	2.3	2.8	3.2	2.8	.8
530	1.7	2.1	2.5	2.9	2.3	.55	530	1.6	2.0	2.4	2.8	2.4	.55
510	1.5	1.4	2.3	2.7	2.1	.50	510	1.4	1.8	2.2	2.6	2.2	.40
490	1.3	1.7	2.0	2.3	2.0	.50	490	1.2	1.6	1.9	2.2	1.9	.45
470	1.1	1.4	1.7	2.0	1.8	.45	470	1.0	1.3	1.6	1.9	1.7	.40
450	.9	1.1	1.4	1.6	1.5	.40	450	.8	1.0	1.3	1.5	1.4	.35
430	.7	1.0	1.2	1.4	1.3	.35	430	.65	.9	1.1	1.3	1.1	.30
410	.65	.8	1.0	1.2	1.0	.25	410	.55	.7	.9	1.1	.9	.25
390	.50	.65	.8	.9	.7	.20	390	.45	.60	.7	.9	.7	.18
370	.40	.55	.65	.8	.60	.16	370	.35	.50	.60	.7	.60	.14
350	.35	.45	.55	.65	.50	.12	350	.30	.40	.50	.60	.50	.10
330	.25	.35	.45	.50	.40	.09	330	.25	.30	.40	.40	.40	.07
310	.18	.25	.30	.35	.30	.05	310	.16	.25	.30	.35	.30	.04
290	.14	.18	.20	.25	.25	.03	290	.12	.16	.20	.25	.25	.02
270	.10	.14	.18	.20	.20	.03	270	.10	.14	.18	.20	.20	.02
250	.08	.10	.14	.16	.18	.02	250	.07	.10	.14	.16	.18	.02
230	.06	.08	.10	.12	.16	.02	230	.05	.08	.10	.12	.16	.02
210	.05	.07	.09	.10	.12	.02	210	.05	.07	.09	.10	.12	.02
190	.04	.06	.07	.08	.08	.02	190	.04	.06	.08	.09	.08	.02

DECEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

60°N N=10							55°N N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	2.2	2.7	3.2	3.7	3.3	1.3	590	2.0	2.5	2.9	3.4	3.3	1.1
570	2.0	2.5	2.9	3.4	3.0	1.1	570	1.8	2.2	2.6	3.1	3.0	.9
550	1.7	2.2	2.6	3.1	2.7	.8	550	1.5	1.9	2.3	2.7	2.7	.7
530	1.5	1.9	2.3	2.7	2.4	.55	530	1.2	1.6	2.0	2.4	2.4	.50
510	1.3	1.7	2.1	2.5	2.1	.50	510	1.1	1.4	1.8	2.1	2.1	.45
490	1.1	1.5	1.8	2.2	1.8	.40	490	.9	1.2	1.6	1.9	1.8	.35
470	.9	1.2	1.5	1.8	1.4	.30	470	.8	1.0	1.3	1.6	1.4	.30
450	.7	1.0	1.2	1.5	1.1	.20	450	.60	.8	1.0	1.3	1.1	.20
430	.60	.8	1.0	1.2	.9	.18	430	.50	.65	.9	1.1	.9	.16
410	.50	.65	.9	1.0	.8	.16	410	.40	.55	.7	.9	.8	.10
390	.35	.50	.65	.8	.65	.12	390	.30	.45	.55	.7	.65	.04
370	.30	.45	.55	.7	.60	.10	370	.25	.35	.50	.60	.55	.03
350	.25	.35	.45	.60	.50	.08	350	.20	.30	.40	.50	.45	.03
330	.20	.30	.40	.45	.35	.05	330	.16	.25	.35	.40	.35	.02
310	.14	.20	.25	.35	.25	.02	310	.12	.18	.25	.30	.25	.02
290	.10	.16	.20	.25	.20	.01	290	.09	.14	.18	.25	.18	.02
270	.09	.12	.16	.20	.18	.01	270	.07	.12	.16	.20	.16	.02
250	.07	.10	.14	.16	.16	.01	250	.06	.09	.12	.16	.14	.01
230	.05	.08	.10	.12	.14	.01	230	.05	.07	.10	.12	.12	.01
210	.04	.07	.09	.12	.10	.01	210	.04	.06	.08	.10	.10	.01
190	.04	.06	.08	.10	.08	.01	190	.04	.05	.07	.09	.08	.01

50°N N=20							45°N N=30						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.2	2.6	3.0	3.5	1.0	590	1.6	1.9	2.3	2.6	3.7	.9
570	1.5	1.9	2.3	2.7	3.2	.8	570	1.3	1.7	2.0	2.4	3.4	.7
550	1.3	1.6	2.0	2.4	2.9	.60	550	1.1	1.4	1.7	2.0	3.1	.45
530	1.0	1.3	1.7	2.0	2.6	.40	530	.8	1.1	1.4	1.7	2.8	.25
510	.9	1.2	1.5	1.8	2.3	.35	510	.7	1.0	1.3	1.5	2.4	.20
490	.8	1.0	1.3	1.6	1.9	.30	490	.65	.9	1.1	1.4	2.1	.20
470	.60	.8	1.1	1.3	1.5	.25	470	.55	.7	1.0	1.2	1.6	.16
450	.45	.65	.9	1.1	1.1	.18	450	.40	.60	.8	1.0	1.2	.12
430	.35	.55	.7	.9	.9	.12	430	.35	.50	.7	.8	1.0	.10
410	.30	.45	.60	.7	.8	.09	410	.30	.45	.60	.7	.9	.07
390	.25	.35	.45	.60	.65	.04	390	.25	.35	.50	.60	.7	.05
370	.18	.30	.40	.50	.60	.03	370	.20	.30	.40	.50	.65	.04
350	.16	.25	.35	.45	.50	.03	350	.16	.25	.35	.45	.55	.03
330	.12	.20	.30	.35	.35	.02	330	.14	.20	.30	.35	.40	.02
310	.09	.14	.20	.25	.25	.02	310	.09	.14	.20	.25	.30	.01
290	.07	.12	.16	.20	.18	.02	290	.07	.12	.16	.20	.25	.01
270	.06	.10	.14	.18	.16	.02	270	.07	.10	.14	.18	.20	.01
250	.05	.08	.12	.14	.14	.01	250	.06	.09	.12	.16	.16	.01
230	.04	.07	.09	.12	.12	.01	230	.05	.08	.10	.12	.14	.01
210	.04	.06	.08	.10	.10	.01	210	.05	.07	.09	.12	.12	.01
190	.04	.05	.06	.08	.08	.01	190	.04	.06	.08	.10	.10	.01

DECEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

40°N							35°N						
N=70							N=15						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.3	1.6	2.0	2.3	3.8	.60	590	1.1	1.4	1.7	1.9	2.8	.50
570	1.1	1.4	1.7	2.0	3.5	.45	570	1.0	1.2	1.4	1.7	2.4	.40
550	.9	1.2	1.4	1.7	3.2	.30	550	.8	1.0	1.2	1.4	2.0	.25
530	.65	.9	1.1	1.4	2.9	.10	530	.55	.7	.9	1.1	1.6	.10
510	.60	.8	1.1	1.3	2.5	.09	510	.50	.65	.8	1.0	1.4	.09
490	.50	.7	.9	1.2	2.1	.08	490	.40	.60	.7	.9	1.2	.08
470	.45	.65	.8	1.0	1.7	.07	470	.35	.50	.65	.8	1.0	.07
450	.35	.55	.7	.9	1.2	.06	450	.25	.40	.50	.65	.7	.05
430	.30	.45	.65	.8	1.0	.05	430	.20	.35	.45	.55	.65	.04
410	.30	.40	.55	.7	.9	.03	410	.20	.30	.40	.40	.60	.03
390	.25	.35	.50	.60	.7	.01	390	.16	.25	.35	.40	.50	.01
370	.20	.30	.40	.55	.65	.01	370	.14	.20	.30	.35	.50	.01
350	.18	.25	.35	.45	.55	.01	350	.12	.18	.25	.30	.45	.01
330	.14	.20	.30	.35	.50	.00	330	.10	.16	.20	.25	.40	.01
310	.10	.14	.20	.25	.40	.00	310	.07	.12	.16	.20	.35	.01
290	.08	.12	.16	.20	.35	.00	290	.06	.09	.12	.16	.35	.01
270	.07	.10	.14	.18	.30	.00	270	.06	.09	.12	.14	.30	.01
250	.06	.09	.12	.16	.25	.01	250	.05	.08	.10	.14	.25	.01
230	.06	.09	.12	.14	.25	.01	230	.05	.07	.10	.12	.25	.01
210	.06	.08	.10	.14	.18	.01	210	.05	.07	.09	.12	.20	.01
190	.05	.08	.10	.12	.12	.01	190	.05	.07	.08	.10	.18	.01

30°N							25°N						
N=15							N=13						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.9	1.2	1.4	1.6	1.7	.40	590	.8	.9	1.1	1.3	1.6	.35
570	.8	1.0	1.2	1.4	1.4	.30	570	.60	.7	.9	1.0	1.2	.25
550	.60	.8	1.0	1.1	1.1	.20	550	.40	.50	.60	.7	.8	.18
530	.40	.55	.7	.9	.7	.10	530	.18	.25	.30	.40	.40	.08
510	.35	.50	.65	.8	.65	.09	510	.16	.20	.30	.35	.35	.07
490	.30	.40	.55	.65	.55	.07	490	.14	.18	.25	.30	.30	.06
470	.25	.35	.40	.50	.50	.05	470	.12	.16	.20	.25	.25	.05
450	.16	.25	.30	.40	.40	.03	450	.09	.12	.14	.18	.20	.03
430	.12	.20	.25	.30	.40	.03	430	.08	.10	.14	.16	.20	.03
410	.10	.16	.20	.30	.40	.02	410	.07	.10	.14	.16	.20	.02
390	.09	.14	.18	.25	.40	.01	390	.07	.10	.14	.16	.20	.01
370	.08	.12	.16	.20	.35	.01	370	.06	.09	.12	.16	.18	.01
350	.07	.10	.14	.18	.30	.01	350	.06	.08	.10	.14	.16	.01
330	.06	.10	.12	.16	.20	.01	330	.05	.07	.10	.12	.12	.01
310	.05	.08	.12	.14	.14	.01	310	.04	.06	.08	.10	.09	.01
290	.05	.07	.10	.12	.10	.01	290	.04	.06	.07	.09	.07	.01
270	.04	.07	.09	.12	.10	.01	270	.04	.05	.07	.09	.07	.01
250	.04	.06	.08	.10	.10	.01	250	.04	.05	.07	.08	.07	.01
230	.04	.06	.08	.10	.10	.01	230	.04	.05	.06	.08	.07	.01
210	.04	.06	.07	.09	.10	.01	210	.04	.05	.06	.07	.07	.01
190	.04	.05	.07	.08	.09	.01	190	.04	.05	.06	.07	.07	.01

DECEMBER - EASTERN NORTH AMERICA

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

20°N N=13							15°N N=5						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.60	.8	.9	1.1	1.4	.25	590	.50	.65	.8	.9	.8	.18
570	.45	.55	.7	.8	1.0	.20	570	.35	.45	.55	.65	.60	.14
550	.30	.35	.45	.50	.60	.14	550	.25	.30	.35	.40	.40	.09
530	.10	.14	.16	.18	.16	.06	530	.08	.10	.12	.14	.12	.05
510	.09	.12	.14	.18	.14	.05	510	.07	.09	.10	.12	.10	.04
490	.08	.10	.14	.16	.12	.04	490	.07	.08	.10	.12	.10	.04
470	.07	.09	.12	.14	.10	.03	470	.06	.07	.09	.10	.09	.03
450	.05	.07	.09	.12	.08	.02	450	.05	.06	.07	.08	.07	.02
430	.05	.07	.09	.10	.08	.02	430	.05	.06	.07	.08	.07	.02
410	.05	.07	.09	.10	.07	.02	410	.05	.06	.07	.08	.06	.02
390	.05	.07	.09	.10	.07	.02	390	.04	.06	.07	.09	.05	.02
370	.05	.06	.08	.10	.07	.02	370	.04	.06	.07	.08	.05	.02
350	.04	.06	.07	.09	.06	.02	350	.04	.05	.06	.08	.05	.02
330	.04	.05	.06	.08	.06	.01	330	.04	.05	.06	.07	.04	.01
310	.03	.04	.05	.07	.05	.01	310	.03	.04	.05	.06	.04	.01
290	.03	.04	.05	.06	.05	.01	290	.03	.04	.05	.06	.04	.01
270	.03	.04	.05	.06	.05	.01	270	.03	.04	.05	.06	.04	.01
250	.03	.04	.05	.06	.05	.01	250	.03	.04	.05	.06	.04	.01
230	.03	.04	.05	.06	.05	.01	230	.03	.04	.05	.06	.04	.01
210	.03	.04	.05	.06	.05	.01	210	.03	.04	.05	.06	.04	.01
190	.03	.04	.05	.06	.05	.01	190	.03	.04	.05	.06	.04	.01

10°N N=8						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	.30	.40	.45	.55	.40	.12
570	.25	.30	.35	.45	.30	.10
550	.16	.20	.25	.30	.20	.07
530	.07	.09	.12	.14	.09	.04
510	.06	.08	.10	.12	.08	.04
490	.06	.07	.09	.10	.08	.04
470	.05	.06	.08	.09	.07	.03
450	.04	.05	.06	.07	.06	.03
430	.04	.05	.06	.07	.06	.03
410	.03	.04	.05	.06	.05	.02
390	.03	.04	.05	.06	.04	.01
370	.03	.04	.05	.06	.04	.01
350	.03	.04	.05	.06	.04	.01
330	.03	.04	.05	.06	.04	.02
310	.03	.04	.05	.06	.04	.02
290	.03	.04	.05	.06	.04	.02
270	.03	.04	.05	.06	.04	.02
250	.03	.04	.05	.06	.04	.01
230	.03	.04	.05	.06	.04	.01
210	.03	.04	.05	.06	.04	.01
190	.02	.03	.04	.05	.04	.01

DECEMBER - WESTERN EUROPE

UNIT: PPMV

PERCENTAGES INDICATE PROBABILITY OF EXCEEDING AMOUNT SHOWN.

52°N							47°N						
N=32							N=107						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN	FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.8	2.3	2.7	3.2	2.9	1.1	590	1.6	1.9	2.3	2.7	3.2	.60
570	1.6	2.0	2.5	2.9	2.8	.9	570	1.3	1.7	2.1	2.5	2.8	.50
550	1.3	1.8	2.2	2.7	2.8	.60	550	1.1	1.5	1.9	2.2	2.3	.35
530	1.0	1.5	1.9	2.4	2.7	.30	530	.8	1.2	1.6	1.9	1.8	.20
510	.9	1.3	1.7	2.1	2.4	.25	510	.7	1.1	1.4	1.7	1.7	.18
490	.8	1.1	1.5	1.9	2.2	.25	490	.65	.9	1.2	1.5	1.5	.16
470	.60	.9	1.3	1.6	1.9	.18	470	.50	.8	1.0	1.3	1.3	.12
450	.45	.7	1.0	1.3	1.6	.12	450	.40	.60	.8	1.0	1.0	.07
430	.40	.60	.8	1.1	1.3	.09	430	.30	.50	.65	.8	.9	.05
410	.30	.50	.7	.9	1.0	.07	410	.25	.40	.55	.7	.7	.03
390	.25	.40	.55	.7	.7	.04	390	.20	.35	.45	.60	.55	.01
370	.20	.35	.50	.60	.60	.04	370	.16	.30	.40	.50	.45	.01
350	.16	.30	.40	.50	.50	.03	350	.14	.25	.30	.40	.40	.01
330	.12	.20	.30	.40	.40	.02	330	.10	.18	.25	.35	.35	.01
310	.08	.14	.20	.25	.30	.02	310	.07	.12	.18	.25	.25	.01
290	.06	.10	.14	.18	.20	.01	290	.05	.09	.12	.16	.20	.01
270	.06	.09	.12	.16	.20	.01	270	.05	.07	.10	.14	.16	.01
250	.05	.08	.12	.14	.16	.01	250	.04	.06	.08	.10	.10	.01
230	.05	.07	.10	.12	.14	.01	230	.03	.05	.06	.07	.07	.01
210	.04	.06	.08	.10	.10	.01	210	.03	.04	.05	.06	.07	.01
190	.03	.05	.06	.08	.07	.01	190	.03	.04	.05	.06	.06	.01

39°N						
N=11						
FLIGHT LEVEL	MEAN	16%	2%	.1%	MAX	MIN
590	1.2	1.5	1.8	2.1	1.9	.65
570	1.1	1.4	1.7	2.0	1.7	.50
550	.9	1.2	1.6	1.9	1.6	.35
530	.8	1.1	1.4	1.7	1.3	.16
510	.7	1.0	1.2	1.5	1.2	.16
490	.60	.8	1.1	1.3	1.0	.14
470	.50	.7	.9	1.1	.8	.12
450	.35	.55	.7	.9	.65	.09
430	.30	.45	.60	.8	.55	.08
410	.25	.35	.50	.60	.45	.07
390	.18	.25	.35	.45	.35	.07
370	.16	.25	.30	.40	.30	.06
350	.12	.18	.25	.30	.25	.05
330	.10	.14	.20	.25	.18	.03
310	.07	.10	.14	.16	.14	.02
290	.05	.07	.10	.12	.10	.01
270	.04	.06	.08	.10	.09	.02
250	.04	.06	.07	.09	.08	.02
230	.04	.05	.06	.07	.08	.02
210	.04	.05	.06	.07	.07	.02
190	.04	.05	.06	.07	.07	.02

APPENDIX B

GASP OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 29,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54									
48						.06 5 .18	.23 1 .23		.09 6 .23
42			.24 1 .24	.11 1 .11					.17 2 .24
36			.02 5 .04	.04 6 .11					.03 11 .11 .06 .09 .11
30			.07 13 .30 .15 .22 .29						.07 13 .30 .15 .22 .29
24									
18		.04 9 .06						.03 4 .04	.04 13 .06 .05 .07 .09
12							.00 1 .00		.00 1 .00
6									
0									

APPENDIX B

GASP OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 31,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54					.05 3 .07				.05 3 .07
48			.06 5 .07		.07 6 .20				.07 11 .20 .12 .17 .21
42			.03 10 .12 .07 .11 .15	.16 3 .25	.06 10 .14 .10 .14 .18	.20 4 .34			.10 31 .34 .19 .29 .38
36	.08 1 .08		.04 15 .19 .09 .13 .17	.06 5 .12		.08 15 .18 .12 .16 .20			.06 36 .19 .11 .15 .20
30	.03 9 .08	.02 1 .02	.06 47 .32 .12 .18 .23			.09 1 .09			.06 94 .32 .11 .17 .22
24	.01 10 .01 .01 .02 .02	.07 5 .11	.07 3 .09				.04 1 .04		.04 19 .11 .07 .10 .13
18	.01 5 .01	.04 19 .09 .06 .08 .10					.01 5 .01		.03 29 .09 .05 .07 .09
12	.01 2 .01	.00 1 .00					.01 1 .01		.01 4 .01
6									
0									

APPENDIX B

GASP OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 33,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66				.26 4 .40	.17 9 .24				.20 13 .40 .28 .37 .46
60		.28 6 .32		.37 8 .44	.07 12 .19 .11 .16 .20				.21 26 .44 .35 .49 .63
54		.22 5 .22	.19 2 .20	.12 19 .28 .19 .27 .34	.03 28 .10 .05 .06 .08				.09 54 .28 .16 .24 .32
48			.11 3 .22	.08 30 .19 .14 .20 .26	.08 27 .32 .18 .27 .37				.08 60 .32 .16 .24 .32
42			.05 28 .12 .07 .10 .12	.07 23 .39 .15 .22 .30					.06 51 .39 .11 .17 .22
36		.03 1 .03	.07 97 .61 .14 .22 .29	.06 1 .06					.07 99 .61 .14 .22 .29
30		.03 56 .09 .05 .07 .09	.05 20 .14 .09 .12 .15						.04 76 .14 .05 .09 .11
24		.04 51 .15 .07 .11 .14					.01 1 .01		.04 52 .15 .07 .11 .14
18									
12									
6									
0									

APPENDIX B

GASP OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 35,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54		.36 7 .41	.20 12 .28 .25 .29 .33	.38 25 .62 .49 .61 .73	.08 33 .31 .15 .23 .31				.22 77 .62 .38 .54 .70
48			.22 2 .32	.27 20 .53 .43 .60 .76	.15 14 .46 .30 .46 .62				.22 36 .53 .39 .55 .72
42			.20 27 .38 .29 .38 .47	.21 68 .53 .34 .48 .61	.26 3 .38	.28 1 .28			.21 99 .53 .33 .46 .58
36			.08 119 .26 .14 .19 .25	.11 59 .44 .19 .27 .36					.09 178 .44 .16 .22 .29
30		.03 13 .07 .04 .06 .07	.08 267 .60 .15 .23 .30	.05 5 .06		.02 8 .03			.08 293 .60 .15 .22 .29
24		.05 173 .18 .09 .12 .16	.05 51 .14 .08 .10 .13				.03 24 .05 .04 .04 .05		.05 248 .18 .08 .11 .15
18		.04 98 .11 .07 .09 .12	.06 20 .11 .08 .11 .13				.06 15 .10 .08 .11 .13		.05 133 .11 .07 .10 .13
12	.00 22 .03 .01 .01 .02	.03 41 .08 .05 .07 .09	.03 1 .03				.02 4 .02		.02 68 .08 .04 .06 .08
6		.03 10 .05 .05 .07 .08							.03 10 .05 .05 .07 .08
0		.03 2 .04							.03 2 .04

APPENDIX B

GASP OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 37,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66			.25 12 .40 .36 .46 .57						.25 12 .40 .36 .46 .57
60		.31 13 .45 .41 .50 .60	.11 11 .26 .19 .26 .34	.50 2 .70	.12 8 .29				.21 34 .70 .37 .52 .68
54	.69 7 .78	.46 14 .60 .57 .68 .79		.15 42 .43 .30 .45 .61	.29 82 .78 .50 .71 .92				.28 145 .78 .51 .73 .95
48	.48 13 .71 .61 .75 .89	.34 2 .34	.15 48 .49 .25 .36 .46	.16 46 .49 .27 .38 .49	.22 20 .40 .33 .45 .57				.20 129 .71 .35 .50 .65
42	.33 17 .80 .54 .74 .95		.12 250 .48 .21 .31 .41	.20 32 .54 .34 .48 .62					.14 299 .80 .26 .38 .51
36		.05 19 .21 .09 .13 .18	.09 270 .52 .16 .23 .31						.08 289 .52 .16 .23 .30
30		.06 163 .37 .11 .16 .21	.09 83 .18 .12 .16 .19						.07 216 .37 .12 .16 .21
24		.06 57 .13 .10 .13 .16	.05 14 .09 .07 .09 .11				.26 1 .26		.06 72 .26 .10 .14 .18
18	.00 18 .01 .01 .01 .01	.03 17 .06 .04 .05 .06	.03 2 .04						.02 37 .06 .03 .05 .07
12		.03 21 .04 .04 .04 .05							.03 21 .04 .04 .04 .05
6		.03 29 .04 .03 .04 .05							.03 29 .04 .03 .04 .05
0									

APPENDIX B

GASE OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 39,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60		.32 12 .57 .45 .57 .70	.39 7 .54						.35 19 .57 .47 .59 .70
54		.19 11 .22 .21 .23 .24	.23 8 .30						.21 19 .30 .25 .28 .32
48				.24 8 .50	.37 9 .43				.31 17 .50 .48 .64 .81
42			.22 43 .57 .37 .52 .67	.16 48 .64 .37 .59 .80	.36 14 .50 .45 .54 .63				.21 105 .64 .40 .59 .77
36	.09 1 .09		.16 288 .60 .27 .38 .49	.18 28 .33 .25 .31 .38					.17 317 .60 .27 .38 .48
30		.08 1 .08	.13 177 .47 .22 .31 .40						.13 178 .47 .22 .31 .40
24		.09 79 .21 .13 .18 .22	.12 55 .26 .19 .26 .33						.10 134 .26 .16 .22 .28
18		.08 55 .14 .10 .13 .15					.01 9 .01		.07 64 .14 .10 .13 .17
12	.01 15 .01 .01 .01 .01	.04 26 .08 .05 .07 .09					.01 7 .01		.02 48 .08 .04 .06 .08
6		.03 38 .06 .04 .05 .06					.01 16 .02 .02 .02 .02		.03 54 .06 .04 .05 .06
0		.03 43 .04 .03 .04 .05							.03 43 .04 .03 .04 .05

APPENDIX B

GASP OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 41,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66		.22 1 .22							.22 1 .22
60		.51 12 .65 .56 .62 .67	.41 11 .57 .52 .62 .73						.46 23 .65 .56 .66 .75
54		.47 1 .47	.25 6 .36						.28 7 .47
48			.34 40 1.03 .55 .76 .96	.39 26 1.07 .64 .90 1.15					.36 66 1.07 .59 .82 1.05
42			.15 59 .28 .22 .29 .36	.44 27 .99 .71 .98 1.25					.24 86 .99 .45 .66 .87
36		.11 3 .13	.14 44 .23 .18 .23 .27	.14 1 .14					.14 48 .23 .18 .22 .27
30		.12 42 .34 .18 .24 .30	.14 31 .27 .22 .29 .37						.13 73 .34 .20 .27 .33
24		.08 19 .16 .12 .15 .19	.08 21 .24 .15 .21 .28						.08 40 .24 .13 .19 .25
18		.04 37 .10 .06 .08 .10	.06 2 .10						.04 39 .10 .06 .08 .11
12		.03 33 .05 .03 .04 .04							.03 33 .05 .03 .04 .04
6		.03 22 .05 .04 .05 .06							.03 22 .05 .04 .05 .06
0									

APPENDIX B

GASP OZONE DATA

DECEMBER, JANUARY, FEBRUARY

Pressure Altitude: 43,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M	
72										
66										
60										
54	.72 1.04	8			.70 .75	2			.72 1.04 1.04	10 .88 1.20
48	.40 .59	7		.19 .23	5	.58 .89 1.23	12 .90 1.55		.45 .89 1.02	24 .73 1.30
42	.19 .22	6		.22 .32	2	.22 .59	5		.21 .59 .45	13 .33 .58
36		.05 .05	1	.14 .26 .22	49 .18 .26				.14 .26 .22	50 .18 .26
30		.03 .04 .04	11 .04 .04	.10 .11	2				.04 .11 .09	13 .07 .12
24		.05 .07	5						.05 .07	5
18		.03 .05	6						.03 .05	6
12		.02 .02	3						.02 .02	3
6		.02 .02	5						.02 .02	5
0										

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 29,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66				.28 8 .30	.28 3 .35				.28 11 .35 .31 .34 .38
60					.24 18 .39 .35 .46 .57				.24 18 .39 .35 .46 .57
54			.09 1 .09	.13 9 .32	.09 29 .37 .16 .24 .31	.09 2 .10			.10 41 .37 .17 .28 .33
48			.14 18 .31 .27 .31 .39	.15 30 .46 .27 .39 .50					.15 48 .46 .28 .36 .47
42	.09 13 .17 .13 .18 .23	.07 4 .07	.08 20 .28 .14 .20 .26	.07 16 .11 .09 .11 .13		.10 19 .24 .15 .20 .28			.08 72 .28 .13 .18 .23
36	.07 15 .24 .12 .17 .21	.08 17 .10 .09 .10 .12	.07 26 .24 .12 .18 .23	.07 1 .07		.21 2 .22			.08 61 .24 .13 .17 .22
30	.04 15 .06 .05 .07 .08	.07 17 .10 .10 .12 .14	.05 8 .06	.05 2 .06			.06 2 .07		.06 44 .10 .08 .11 .13
24		.06 27 .10 .09 .11 .13	.03 7 .04				.02 7 .04		.05 41 .10 .08 .10 .13
18	.05 5 .05			.02 1 .02			.06 1 .06		.05 7 .06
12				.05 4 .10					.05 4 .10
6									
0									

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 31,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120L	M
72					.29 1 .29				.29 1 .29
66					.29 6 .37				.29 6 .37
60					.22 7 .25				.22 7 .25
54			.22 5 .47		.12 11 .24 .19 .26 .34				.15 16 .47 .27 .40 .52
48	.12 1 .12		.29 14 .45 .43 .57 .71	.28 1 .28	.09 14 .26 .15 .21 .27				.14 30 .45 .33 .48 .62
42		.12 6 .15	.12 77 .45 .22 .32 .41	.17 24 .63 .32 .48 .63					.13 107 .63 .25 .36 .47
36	.20 13 .34 .27 .35 .42		.10 60 .49 .19 .29 .39	.12 22 .41 .22 .31 .40		.08 7 .22			.11 102 .49 .21 .31 .41
30	.09 10 .13 .10 .12 .14	.04 3 .08	.06 54 .20 .09 .13 .17			.17 4 .36			.07 71 .36 .12 .18 .23
24	.09 12 .11 .10 .12 .13	.06 35 .09 .08 .10 .11	.08 3 .09	.06 1 .06			.07 1 .07		.07 42 .11 .09 .11 .13
18	.06 5 .07	.05 52 .14 .08 .11 .13					.05 8 .09		.05 65 .14 .08 .10 .13
12	.04 7 .06		.02 2 .03	.05 1 .05			.06 2 .07		.04 12 .07 .06 .08 .10
6				.02 15 .03 .03 .04 .05			.04 1 .04		.02 16 .04 .03 .04 .05
0				.04 3 .04					.04 3 .04

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 33,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60			.24 12 .43 .36 .47 .59	.47 18 .65 .61 .75 .89	.11 13 .24 .16 .21 .25				.30 43 .65 .49 .68 .87
54			.38 19 .58 .54 .69 .89	.09 13 .52 .21 .34 .46	.15 48 .59 .30 .46 .61				.19 40 .54 .38 .56 .75
48		.21 6 .33	.44 7 .46	.25 68 .44 .42 .60 .78	.15 128 .49 .27 .39 .51	.21 3 .44			.19 212 .64 .35 .50 .65
42	.05 5 .06	.06 18 .17 .11 .15 .20	.24 32 .60 .44 .63 .83	.18 99 .68 .35 .52 .68	.25 1 .25				.18 155 .68 .35 .52 .64
36	.25 18 .59 .46 .66 .86	.08 8 .09	.21 84 .65 .37 .54 .70	.18 20 .95 .35 .52 .69		.25 21 .45 .37 .48 .60			.21 151 .65 .37 .54 .70
30	.10 21 .18 .13 .16 .20	.07 33 .13 .10 .12 .14	.08 173 .37 .12 .16 .20	.09 8 .14		.12 21 .36 .24 .37 .49			.08 256 .37 .13 .19 .24
24		.08 156 .75 .15 .22 .30	.08 52 .25 .13 .17 .22	.06 2 .06			.07 24 .11 .09 .10 .12		.08 234 .75 .14 .20 .27
18		.07 92 .25 .11 .14 .18	.05 20 .14 .09 .12 .15	.06 7 .08			.04 10 .06 .05 .07 .08		.06 129 .25 .10 .14 .17
12	.03 78 .08 .05 .06 .08	.04 21 .06 .05 .06 .08	.01 5 .02	.04 15 .06 .05 .06 .07			.02 17 .05 .04 .06 .07		.03 136 .08 .05 .06 .08
6				.03 7 .04			.05 9 .06		.04 16 .06 .05 .06 .07
0				.03 7 .06					.03 7 .06

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 35,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
			.38 2 .41	.45 11 .50 .50 .55 .60	.45 5 .47			.44 18 .50 .49 .53 .58	
72			.53 3 .56	.58 33 .70 .67 .76 .85	.48 3 .53			.57 39 .70 .66 .74 .83	
66			.59 5 .62	.44 8 .52	.26 7 .51			.43 20 .62 .60 .75 .43	
60		.64 26 .76 .70 .76 .82	.35 1 .35	.42 3 .44	.59 7 .65			.60 37 .76 .69 .78 .87	
54		.58 5 .71	.54 2 .55	.33 76 .75 .54 .76 .94	.20 133 .72 .37 .54 .71	.43 3 .56		.26 219 .75 .46 .67 .87	
48		.47 19 .70 .60 .73 .87	.22 90 .73 .37 .52 .66	.26 31 .71 .44 .62 .80	.16 16 .47 .30 .45 .59	.28 23 .52 .44 .60 .75		.26 179 .73 .43 .60 .77	
42	.12 10 .29 .21 .30 .38	.19 10 .45 .31 .43 .54	.18 330 .73 .34 .51 .67	.14 61 .55 .25 .37 .48		.31 15 .56 .49 .67 .86		.18 426 .73 .34 .49 .65	
36	.11 14 .40 .20 .29 .38	.09 48 .20 .12 .15 .19	.10 293 .47 .17 .24 .31	.16 12 .41 .26 .35 .45		.22 29 .46 .34 .47 .59	.19 1 .19	.11 397 .47 .19 .27 .35	
30	.08 16 .10 .10 .11 .13	.08 251 .38 .12 .15 .19	.11 32 .16 .13 .16 .18	.06 7 .12		.11 1 .11	.09 43 .27 .16 .22 .29	.09 350 .38 .13 .17 .20	
24	.05 43 .10 .07 .09 .11	.08 158 .21 .13 .17 .22	.04 2 .04	.05 7 .06			.05 25 .10 .07 .10 .12	.07 235 .21 .11 .15 .19	
18	.04 125 .09 .06 .08 .09	.09 18 .12 .11 .14 .16	.07 2 .10	.03 47 .09 .05 .07 .09			.02 18 .04 .04 .05 .07	.04 210 .12 .07 .09 .12	
12				.03 36 .05 .04 .05 .07			.04 11 .04 .04 .04 .05	.03 47 .05 .04 .05 .07	
6				.03 12 .04 .03 .04 .04				.03 12 .04 .03 .04 .04	
0									

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 37,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72			.65 8 .76	.61 24 .80 .68 .76 .83	.58 4 .63				.62 36 .80 .49 .77 .84
66			.58 32 .94 .74 .89 1.05	.59 9 .63	.52 11 .60 .60 .68 .76				.57 52 .94 .70 .83 .96
60		.44 16 .76 .62 .64 .89	.36 22 .63 .50 .64 .78	.63 20 .81 .74 .85 .96	.40 87 .77 .60 .80 1.00				.43 145 .81 .63 .82 1.01
54	.77 8 .94	.59 6 .73	.41 19 .70 .63 .85 1.08	.35 25 .69 .53 .71 .90	.27 127 .66 .41 .61 .78	.38 3 .43			.32 188 .94 .53 .74 .95
48	.45 18 .80 .73 1.01 1.28	.30 57 .67 .49 .67 .85	.38 81 .83 .63 .88 1.13	.25 53 .60 .40 .56 .72	.19 30 .61 .38 .57 .76	.44 50 .80 .60 .76 .92			.34 289 .83 .56 .78 1.00
42	.20 38 .68 .40 .60 .80	.22 16 .45 .36 .50 .64	.25 438 .85 .44 .64 .84	.16 19 .58 .31 .46 .61		.42 7 .66			.24 518 .85 .44 .63 .83
36	.13 35 .32 .20 .27 .35	.11 60 .26 .15 .20 .24	.14 262 .58 .25 .36 .46	.08 14 .12 .10 .13 .16		.24 30 .54 .40 .57 .74			.14 401 .58 .25 .35 .46
30	.08 30 .14 .11 .14 .17	.10 193 .31 .14 .19 .23	.08 55 .14 .11 .15 .18	.06 9 .10		.13 1 .13	.09 51 .16 .11 .14 .16		.09 339 .31 .13 .17 .21
24	.03 5 .03	.07 116 .29 .12 .17 .21	.04 41 .26 .09 .13 .18				.05 41 .11 .08 .12 .15		.06 203 .29 .11 .15 .20
18	.04 14 .10 .06 .08 .11	.09 12 .14 .12 .14 .17	.04 39 .11 .07 .10 .13	.05 35 .09 .06 .08 .10			.02 23 .06 .04 .05 .07		.04 128 .14 .07 .10 .13
12				.03 68 .09 .05 .07 .09			.04 4 .05		.03 72 .09 .05 .07 .09
6				.01 48 .05 .03 .04 .05					.01 48 .05 .03 .04 .05
0									

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 39,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66		.48 9 .58	.37 8 .49						.43 17 .58 .52 .60 .69
60		.48 2 .49	.71 4 .89	.62 14 .85 .78 .93 1.09	.36 22 .50 .45 .53 .62				.49 42 .89 .67 .86 1.04
54	.73 7 1.17	.47 22 1.16 .71 .95 1.18	.41 1 .41	.44 74 .98 .64 .83 1.03	.44 31 .62 .53 .62 .71				.46 135 1.17 .66 .86 1.07
48	.42 10 .78 .57 .73 .88	.13 22 .37 .20 .27 .35	.43 142 .99 .65 .86 1.08	.33 142 .41 .53 .74 .95					.36 316 .99 .56 .80 1.02
42	.29 9 .38	.36 27 .71 .59 .82 1.05	.33 398 .96 .53 .74 .95	.21 44 .83 .43 .64 .86					.32 474 .96 .53 .74 .95
36	.09 8 .15	.12 22 .43 .20 .28 .36	.19 146 .60 .31 .42 .54	.14 35 .58 .27 .39 .51					.17 211 .60 .29 .40 .52
30	.05 7 .07	.12 121 .36 .18 .24 .30	.11 87 .31 .18 .24 .31	.08 10 .13 .11 .13 .16					.11 225 .36 .17 .24 .30
24	.03 13 .05 .04 .04 .05	.14 64 .37 .22 .30 .39	.04 39 .12 .08 .12 .16	.06 7 .10				.02 12 .04 .03 .03 .04	.09 135 .37 .17 .25 .33
18	.02 5 .02		.03 17 .10 .06 .08 .10	.03 4 .03			.04 2 .06		.03 24 .10 .05 .07 .09
12				.02 17 .05 .04 .05 .07					.02 17 .05 .04 .05 .07
6				.01 31 .04 .03 .04 .05					.01 31 .04 .03 .04 .05
0									

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 41,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66		.51 7 .83							.51 7 .83
60		.62 9 .88			.43 9 .48				.52 1A .88 .67 .82 .96
54	.41 7 .43	.41 4 .45		.37 24 .70 .51 .66 .81	.55 30 1.02 .80 1.05 1.30				.46 64 1.02 .67 .88 1.09
48	.26 9 .40	.50 12 .61 .58 .65 .73	.48 68 1.10 .73 .98 1.24	.36 70 .83 .54 .73 .91	.45 29 .60 .52 .60 .68				.42 1A 1.10 .62 .83 1.03
42	.34 11 .41 .41 .49 .56	.46 6 .48	.40 123 1.30 .64 .87 1.10	.36 28 .76 .60 .84 1.07		.36 1 .38			.39 169 1.30 .62 .84 1.06
36		.12 5 .14	.23 9 .55	.16 21 .64 .31 .46 .61					.17 35 .64 .31 .45 .58
30		.17 12 .24 .20 .23 .27							.17 12 .24 .20 .23 .27
24		.14 1 .14					.11 8 .15		.11 9 .15
18							.07 3 .08		.07 3 .08
12									
6									
0									

APPENDIX B

GASP OZONE DATA

MARCH, APRIL, MAY

Pressure Altitude: 43,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M	
72										
66										
60										
54		.44 .49	3						.44 .49	3
48	.71 .91	8	.59 .76	7		.39 .51	3		.61 .91 .92	1A .76 1.07
42	.75 1.01 .99	12 .87 1.10		.40 .58 .61	42 .51 .72	.27 .36 .40	22 .33 .46		.42 1.01 .78	7A .60 .97
36	.34 .55	7		.29 .54 .54	53 .41 .66	.19 .19	1		.30 .55 .55	61 .42 .68
30			.22 .22	1					.22 .22	1
24										
18										
12										
6										
0										

APPENDIX B

GASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 29,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54									
48			.08 1 .08		.08 16 .17 .11 .14 .17	.07 9 .09		.07 26 .17 .10 .12 .15	
42			.07 14 .09 .08 .09 .11			.08 22 .11 .10 .11 .12		.08 36 .11 .09 .11 .12	
36			.08 7 .14	.08 8 .25		.08 6 .12		.08 21 .25 .13 .19 .24	
30	.05 1 .05		.05 6 .11			.07 59 .11 .08 .10 .11	.05 1 .05	.06 67 .11 .08 .10 .11	
24	.05 1 .05					.05 11 .07 .06 .07 .08	.04 20 .07 .06 .08 .10	.05 32 .07 .06 .08 .09	
18		.04 8 .06					.03 19 .06 .04 .05 .06	.03 27 .06 .04 .06 .07	
12	.02 2 .03	.03 1 .03					.02 18 .04 .03 .04 .05	.02 21 .04 .03 .04 .05	
6							.03 23 .04 .03 .04 .05	.03 23 .04 .03 .04 .05	
0							.03 21 .04 .04 .04 .05	.03 21 .04 .04 .04 .05	

APPENDIX B

GASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 31,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60		.11 6 .20			.06 2 .07				.10 6 .20
54		.12 1 .12	.20 12 .26 .23 .26 .29	.13 5 .23	.08 46 .22 .12 .16 .20	.07 1 .07			.11 68 .26 .17 .23 .29
48			.09 7 .17	.05 16 .12 .09 .12 .16	.07 3 .08	.07 4 .08			.06 30 .17 .10 .13 .17
42	.05 9 .07		.06 12 .11 .09 .12 .15	.08 6 .11		.07 55 .12 .09 .11 .13			.07 62 .12 .09 .11 .13
36	.01 2 .01		.07 49 .24 .14 .21 .28			.06 24 .08 .07 .09 .10			.07 79 .29 .12 .18 .24
30	.05 8 .06	.08 16 .28 .14 .21 .27	.08 7 .18			.05 22 .09 .07 .08 .09	.04 48 .07 .05 .06 .07		.05 101 .28 .09 .12 .16
24		.05 24 .09 .06 .07 .09				.06 4 .08	.04 46 .16 .06 .08 .10		.04 74 .16 .06 .08 .10
18		.03 20 .04 .03 .04 .05					.03 29 .05 .04 .05 .05		.03 49 .05 .04 .04 .05
12		.02 10 .03 .02 .02 .03					.04 4 .05		.02 14 .05 .03 .04 .05
6		.01 4 .01		.03 1 .03			.04 7 .04		.03 12 .04 .04 .05 .07
0									

APPENDIX B

GASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 33,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54		.09 21 .17 .13 .16 .14							.09 21 .17 .13 .16 .19
48	.04 4 .11	.10 3 .16		.12 1 .12	.09 30 .24 .13 .17 .21				.09 43 .24 .13 .16 .20
42	.13 14 .28 .21 .29 .37	.11 8 .17	.06 6 .10	.09 15 .11 .11 .12 .14	.07 2 .08	.09 21 .16 .12 .15 .17			.10 66 .28 .15 .19 .24
36	.06 23 .20 .11 .16 .22		.15 11 .41 .29 .43 .57	.14 4 .16		.09 49 .23 .13 .18 .22			.09 87 .41 .17 .24 .32
30	.03 1 .03	.28 1 .28	.07 51 .27 .12 .18 .23			.06 54 .10 .07 .09 .10			.07 111 .28 .11 .15 .19
24	.05 4 .06	.09 38 .28 .16 .23 .30	.09 23 .36 .19 .29 .39			.04 17 .07 .05 .06 .07	.05 75 .08 .06 .08 .09		.06 154 .36 .12 .18 .23
18		.04 28 .08 .06 .07 .09				.04 4 .05	.03 96 .07 .04 .06 .07		.03 128 .08 .05 .06 .07
12	.02 1 .02	.02 3 .03					.03 23 .05 .04 .05 .05		.03 27 .05 .04 .04 .05
6	.02 6 .02	.03 5 .05					.04 4 .06		.03 15 .06 .04 .06 .07
0	.02 7 .02						.03 20 .05 .04 .05 .06		.03 27 .05 .04 .05 .06

APPENDIX B

CASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 35,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66			.22 1 .22						.22 1 .22
60			.20 6 .27	.13 4 .19	.19 25 .34 .28 .38 .47				.19 35 .34 .27 .36 .45
54		.06 9 .07	.06 1 .06	.09 50 .30 .15 .20 .26	.11 94 .37 .17 .24 .30	.21 14 .41 .33 .45 .57			.11 168 .41 .18 .26 .33
48	.15 5 .25	.07 8 .14	.18 25 .51 .34 .50 .67	.09 46 .26 .14 .18 .22	.16 6 .26	.14 51 .32 .21 .28 .35			.13 141 .51 .22 .31 .41
42	.06 13 .14 .09 .13 .16		.09 135 .41 .16 .23 .30	.16 8 .40		.11 41 .31 .18 .24 .30			.09 197 .41 .17 .24 .31
36	.04 1 .04	.08 10 .15 .11 .14 .17	.06 163 .36 .12 .18 .24			.05 106 .13 .07 .09 .11			.06 240 .36 .11 .16 .20
30		.06 129 .17 .09 .12 .15	.05 39 .10 .06 .08 .09			.04 29 .07 .04 .06 .06	.04 37 .10 .05 .07 .09		.05 234 .17 .08 .10 .13
24		.05 77 .19 .09 .12 .15				.04 1 .04	.03 28 .07 .04 .05 .06		.05 106 .19 .08 .11 .14
18	.02 3 .02	.02 12 .04 .03 .03 .04					.03 16 .05 .04 .05 .06		.03 31 .05 .04 .05 .06
12	.02 6 .02	.02 20 .03 .02 .03 .03		.03 6 .04			.03 37 .07 .04 .05 .07		.02 69 .07 .04 .05 .06
6	.01 7 .02	.02 38 .03 .02 .03 .04		.02 6 .03			.02 39 .05 .03 .04 .05		.02 40 .05 .03 .04 .05
0									

APPENDIX B

GASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 37,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120F	M
72									
60			.31 15 .36 .34 .37 .40						.31 15 .36 .34 .37 .40
60		.24 22 .45 .35 .47 .59	.35 3 .38	.16 7 .28	.17 13 .34 .24 .31 .38				.21 45 .45 .32 .43 .54
54		.21 22 .48 .34 .48 .61	.25 15 .45 .38 .51 .64	.21 33 .44 .34 .47 .60	.16 54 .33 .25 .35 .45	.13 7 .18			.19 131 .48 .31 .43 .55
48		.30 19 .39 .39 .48 .57	.13 62 .41 .23 .34 .45	.11 64 .34 .18 .26 .34	.18 7 .20	.16 21 .26 .22 .27 .32			.14 173 .41 .25 .36 .46
42	.04 3 .05		.14 139 .55 .26 .37 .48	.14 3 .22		.07 20 .18 .11 .15 .19			.13 165 .55 .24 .35 .46
36	.03 8 .06	.08 14 .19 .12 .17 .22	.08 138 .39 .15 .22 .30			.06 15 .08 .07 .08 .08			.07 175 .39 .14 .21 .27
30	.05 3 .08	.05 103 .14 .07 .10 .12	.09 64 .51 .21 .34 .46				.04 13 .07 .06 .07 .09		.06 183 .51 .14 .22 .30
24		.05 64 .12 .07 .09 .11					.03 9 .04		.05 73 .12 .07 .09 .11
18		.02 17 .03 .02 .03 .03		.03 3 .04			.02 40 .04 .03 .04 .05		.02 60 .04 .03 .04 .05
12		.02 36 .03 .02 .03 .03		.02 1 .02			.02 16 .04 .03 .04 .05		.02 53 .04 .03 .03 .04
6		.02 45 .03 .02 .03 .04							.02 45 .03 .02 .03 .04
0									

APPENDIX B

GASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 39,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60		.31 13 .37 .35 .39 .43	.34 2 .34						.32 15 .37 .35 .39 .42
54		.28 53 .50 .38 .47 .57	.35 7 .41	.28 19 .35 .34 .40 .47	.29 74 .40 .37 .45 .50				.29 143 .50 .37 .46 .54
48	.34 2 .34	.23 22 .36 .34 .44 .55	.23 22 .46 .36 .49 .62	.15 27 .34 .24 .32 .41	.24 54 .39 .33 .43 .52	.22 4 .28			.22 131 .46 .33 .43 .54
42	.05 2 .05	.06 2 .06	.10 22 .20 .13 .16 .20	.12 48 .33 .20 .28 .36	.16 6 .17	.27 3 .34			.12 83 .34 .19 .26 .34
36	.10 11 .14 .12 .15 .18		.14 103 .48 .23 .33 .42	.14 4 .21					.13 118 .48 .22 .31 .40
30		.07 7 .13	.12 66 .49 .23 .35 .46	.10 6 .15					.11 79 .49 .22 .32 .43
24		.12 39 .39 .21 .31 .41	.25 5 .44	.08 1 .08					.13 45 .44 .24 .35 .46
18		.08 14 .12 .10 .13 .15							.08 14 .12 .10 .13 .15
12		.01 4 .02					.03 7 .04		.02 16 .04 .03 .04 .05
6		.01 7 .01					.02 19 .03 .03 .03 .04		.02 26 .03 .03 .03 .04
0							.02 7 .02		.02 7 .02

APPENDIX B

GASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 41,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54		.20 8 .34		.30 5 .38	.32 9 .40				.27 22 .40 .36 .45 .54
48	.31 19 .49 .40 .48 .57	.26 6 .40	.19 20 .57 .34 .50 .66	.16 11 .32 .23 .31 .38	.34 19 .42 .39 .45 .51				.26 75 .57 .39 .51 .64
42	.20 29 .39 .30 .40 .50	.22 21 .28 .26 .29 .33	.36 26 .62 .54 .73 .91	.27 15 .36 .33 .38 .43					.26 91 .62 .40 .53 .66
36	.07 17 .25 .13 .18 .23		.45 7 .54						.16 24 .54 .37 .56 .74
30									
24									
18									
12									
6									
0									

APPENDIX B

GASP OZONE DATA

JUNE, JULY, AUGUST

Pressure Altitude: 43,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54				.29 .31	3				.29 .31
48				.25 .34 .40	26 .32 .48				.25 .34 .40
42	.21 .21	1 0	.35 .39	8 0	.19 .26	2 0	.23 .34 .35	31 .29 .41	.25 .34 .40
36	.13 .25	0							.13 .25
30									
24									
18									
12									
6									
0									

APPENDIX B

GASP OZONE DATA

SEPTEMBER, OCTOBER, NOVEMBER

Pressure Altitude: 29,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54					.08 8 .17				.08 8 .17
48			.12 1 .12	.05 5 .06					.06 6 .12
42	.07 1 .07		.03 7 .05	.04 15 .06 .05 .06 .07					.04 23 .07 .06 .07 .08
36	.04 2 .05	.04 2 .04	.04 17 .10 .06 .06 .10						.04 21 .10 .06 .08 .10
30		.03 7 .05					.05 1 .05		.04 8 .05
24		.03 14 .05 .04 .06 .07							.03 14 .05 .04 .06 .07
18		.03 7 .04	.03 3 .03						.03 10 .04 .04 .05 .05
12		.01 1 .01		.04 1 .04					.03 2 .04
6									
0									

APPENDIX B

GASP OZONE DATA

SEPTEMBER, OCTOBER, NOVEMBER

Pressure Altitude: 31,000 feet.

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60				.15 8 .18	.06 23 .10 .08 .10 .12				.08 31 .18 .13 .17 .22
54				.06 7 .11	.07 43 .17 .10 .13 .17				.06 40 .17 .10 .13 .16
48			.10 7 .20	.06 35 .15 .09 .12 .15	.05 2 .06	.05 1 .05			.07 44 .20 .10 .14 .17
42	.06 9 .12		.03 14 .07 .05 .07 .08	.07 15 .23 .13 .18 .23		.05 1 .05			.06 34 .23 .10 .14 .18
36	.06 3 .06		.04 24 .09 .05 .07 .09						.04 32 .09 .05 .07 .09
30		.03 7 .04	.02 4 .03				.02 1 .02		.03 12 .04 .03 .04 .05
24		.04 16 .06 .05 .06 .07					.05 2 .05		.04 18 .06 .05 .06 .08
18		.02 12 .05 .04 .05 .06		.04 1 .04					.03 13 .05 .04 .05 .06
12		.02 13 .03 .02 .03 .04		.04 1 .04					.02 14 .04 .03 .03 .04
6		.02 1 .02							.02 1 .02
0									

APPENDIX B

GASP OZONE DATA

SEPTEMBER, OCTOBER, NOVEMBER

Pressure Altitude: 33,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60									
54		.10 25 .23 .15 .21 .26		.18 11 .21 .21 .25 .28	.09 28 .19 .13 .18 .22				.11 64 .23 .17 .22 .28
48	.09 12 .13 .12 .14 .17	.09 3 .16	.22 8 .24	.07 71 .22 .12 .17 .22	.09 143 .25 .15 .21 .27				.09 237 .25 .15 .21 .27
42	.08 16 .12 .11 .13 .16		.11 3 .23	.07 84 .22 .12 .17 .21	.07 28 .17 .12 .16 .20	.06 1 .06			.07 132 .23 .12 .17 .21
36	.08 21 .13 .11 .14 .1		.06 14 .14 .10 .14 .17	.06 16 .23 .11 .15 .20					.07 51 .23 .11 .15 .19
30	.05 2 .06	.03 1 .03	.06 20 .09 .08 .09 .11			.05 1 .05			.06 24 .09 .07 .09 .11
24		.05 31 .20 .09 .14 .18	.05 11 .07 .06 .07 .08						.05 47 .20 .09 .13 .17
18		.05 11 .10 .08 .10 .13	.06 10 .07 .07 .08 .10						.05 21 .10 .07 .10 .12
12			.06 5 .07	.04 6 .06			.03 1 .03		.05 12 .07 .06 .08 .09
6				.04 6 .04					.04 6 .04
0		.04 5 .05							.04 5 .05

APPENDIX B

GASP OZONE DATASEPTEMBER, OCTOBER, NOVEMBERPressure Altitude: 35,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60		.20 5 .26	.18 51 .31 .25 .32 .39						.18 56 .31 .25 .32 .39
54			.17 92 .36 .26 .35 .44	.13 38 .36 .23 .32 .41	.09 97 .22 .13 .18 .22				.13 227 .36 .21 .30 .38
48	.12 1 .12	.13 5 .25	.11 35 .31 .20 .29 .38	.12 201 .38 .20 .28 .36	.10 186 .37 .16 .27 .27	.06 2 .06			.11 430 .38 .18 .28 .33
42	.08 15 .13 .11 .14 .17	.32 6 .35	.04 18 .07 .06 .07 .08	.10 214 .35 .18 .26 .34	.06 24 .13 .08 .10 .12	.13 10 .21 .1A .22 .27			.10 247 .35 .18 .26 .34
36	.09 31 .27 .15 .21 .26	.05 1 .05	.06 65 .29 .13 .20 .27	.05 26 .13 .08 .10 .13		.06 14 .08 .06 .07 .0A			.06 142 .29 .12 .14 .24
30	.06 5 .10	.04 2 .05	.05 139 .11 .07 .09 .11			.04 7 .05			.05 153 .11 .07 .09 .11
24		.04 78 .08 .05 .07 .09	.03 26 .06 .05 .07 .09				.04 17 .06 .05 .06 .06		.04 121 .04 .05 .07 .09
18		.03 59 .07 .05 .06 .08	.06 9 .07				.04 10 .04 .06 .07 .09		.04 78 .08 .05 .07 .09
12		.03 2 .03	.05 4 .06	.05 12 .06 .05 .05 .06			.01 1 .01		.04 19 .06 .05 .07 .08
6				.04 5 .05					.04 5 .05
0		.01 9 .02							.01 9 .02

APPENDIX B

GASP OZONE DATA

SEPTEMBER, OCTOBER, NOVEMBER

Pressure Altitude: 37,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72		.29 10 .33 .33 .38 .42	.26 5 .31						.26 15 .33 .32 .37 .41
66		.31 11 .50 .42 .54 .66	.21 95 .40 .30 .40 .49						.22 106 .50 .32 .42 .52
60		.26 69 .39 .34 .42 .50	.19 60 .38 .29 .40 .50	.12 5 .19	.13 55 .24 .18 .24 .29				.20 188 .39 .29 .39 .49
54	.15 21 .32 .25 .35 .45	.22 93 .41 .31 .40 .49	.15 34 .34 .24 .32 .41	.12 105 .52 .23 .34 .45	.12 120 .40 .20 .27 .35				.15 373 .52 .25 .35 .45
48	.09 84 .34 .17 .24 .32	.13 49 .33 .14 .26 .32	.08 53 .27 .15 .21 .27	.10 174 .35 .18 .25 .33	.06 19 .11 .08 .10 .12				.10 380 .35 .17 .24 .31
42	.07 149 .32 .12 .17 .21	.08 1 .08	.07 237 .36 .12 .17 .23	.10 26 .32 .17 .24 .31					.07 413 .36 .13 .18 .23
36	.03 2 .04	.04 26 .07 .06 .09 .11	.06 208 .28 .10 .13 .17	.04 19 .05 .04 .05 .05					.05 255 .28 .09 .13 .16
30		.04 157 .14 .07 .10 .12	.05 20 .12 .08 .11 .14	.03 19 .05 .04 .05 .05					.04 196 .14 .07 .10 .12
24		.05 36 .10 .07 .10 .12		.03 16 .05 .04 .05 .05					.04 52 .10 .07 .09 .11
18		.04 2 .05		.05 13 .09 .07 .10 .12					.05 15 .09 .07 .09 .12
12		.04 6 .05		.05 21 .07 .06 .07 .08					.05 27 .07 .06 .07 .08
6		.04 4 .06		.06 15 .09 .08 .10 .12					.06 19 .09 .08 .10 .12
0									

APPENDIX B

GASP OZONE DATA

SEPTEMBER, OCTOBER, NOVEMBER

Pressure, Altitude: 39,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72		.20 5 .28	.17 3 .21						.19 8 .24
66		.34 166 .59 .44 .53 .63	.30 79 .54 .41 .53 .64						.32 245 .59 .43 .53 .64
60		.32 240 .54 .42 .52 .62	.28 88 .44 .37 .46 .54	.28 18 .41 .39 .50 .61	.28 67 .44 .35 .42 .49				.31 413 .54 .40 .49 .59
54	.29 12 .50 .39 .50 .61	.26 121 .48 .37 .49 .61	.15 29 .26 .19 .23 .27	.14 60 .39 .24 .34 .43	.24 44 .48 .36 .48 .59				.22 266 .50 .34 .46 .54
48	.10 16 .18 .14 .18 .22	.20 57 .40 .31 .42 .52	.23 31 .51 .38 .52 .67	.11 100 .38 .19 .26 .34					.16 204 .51 .26 .37 .48
42	.11 13 .23 .15 .19 .23	.22 2 .22	.09 174 .44 .17 .25 .33	.10 21 .20 .15 .21 .26					.10 210 .44 .17 .25 .33
36	.06 6 .10	.10 1 .10	.07 68 .18 .09 .12 .15						.07 75 .18 .09 .12 .15
30	.05 8 .08	.07 36 .14 .10 .12 .14	.06 18 .09 .08 .09 .11						.07 64 .14 .09 .11 .13
24		.06 20 .08 .07 .09 .10		.03 7 .03			.07 5 .08		.05 32 .08 .07 .09 .11
18		.05 8 .09		.05 15 .07 .06 .07 .08			.04 9 .06		.04 32 .04 .06 .08 .10
12				.05 27 .08 .06 .08 .09			.03 11 .04 .04 .04 .05		.04 34 .08 .06 .07 .09
6				.07 25 .10 .09 .10 .12					.07 24 .10 .09 .10 .12
0									

APPENDIX B

GASP OZONE DATA

SEPTEMBER, OCTOBER, NOVEMBER

Pressure Altitude: 41,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60		.42 49 .67 .53 .64 .75	.24 44 .57 .35 .47 .58						.34 .03 .67 .48 .62 .77
54		.38 118 .66 .50 .62 .74	.31 84 .70 .45 .59 .74	.33 36 .64 .51 .69 .88	.25 18 .37 .31 .37 .43				.34 256 .70 .48 .62 .76
48	.33 146 .61 .48 .56 .68	.32 50 .59 .43 .54 .65	.21 109 .53 .32 .43 .55	.26 40 .59 .42 .57 .72	.33 56 .53 .45 .57 .69				.29 401 .61 .42 .55 .68
42	.19 105 .49 .29 .40 .51	.16 118 .31 .22 .29 .35	.24 46 .60 .40 .57 .74	.20 86 .56 .31 .43 .54					.19 345 .60 .30 .41 .52
36	.11 95 .46 .20 .29 .38	.34 27 .68 .50 .65 .81	.08 51 .19 .12 .16 .20	.11 10 .26 .18 .26 .34					.14 183 .68 .26 .39 .52
30		.03 1 .03	.05 22 .10 .06 .08 .10						.04 23 .10 .06 .08 .10
24				.03 4 .04					.03 4 .04
18				.05 9 .08					.05 9 .08
12				.10 8 .13					.10 8 .13
6				.05 1 .05					.05 1 .05
0				.07 11 .11 .09 .11 .13					.07 11 .11 .09 .11 .13

APPENDIX B

GASP OZONE DATA

SEPTEMBER, OCTOBER, NOVEMBER

Pressure Altitude: 43,000 feet

Code:	Mean Ozone	No. Obs.
	Max	16%
	2%	0.1%

Percentages are probabilities of exceeding values shown in the corresponding spaces (omitted if N is less than 10). The right hand column is the average of all longitudes; Max is the largest maximum.

LAT	120E	170E	140W	90W	40W	10E	60E	120E	M
72									
66									
60		.29 1 .29							.29 1 .29
54			.35 4 .37	.54 8 .76					.48 12 .76 .63 .78 .94
48	.48 14 .98 .68 .89 1.10	.68 1 .68	.27 23 .54 .41 .54 .67	.35 41 .73 .51 .67 .82					.35 79 .98 .53 .71 .89
42	.35 89 .87 .53 .71 .88	.22 14 .35 .30 .38 .46	.16 29 .40 .24 .32 .40	.30 95 .66 .45 .61 .77					.30 227 .87 .46 .63 .80
36	.18 107 .69 .33 .48 .63		.11 29 .23 .15 .18 .22	.18 16 .51 .31 .44 .57					.17 152 .69 .30 .44 .58
30	.03 3 .03		.08 3 .08	.06 26 .13 .09 .11 .14					.06 32 .13 .09 .11 .14
24				.05 21 .07 .06 .08 .09					.05 21 .07 .06 .08 .09
18				.04 10 .05 .05 .06 .07					.04 10 .05 .05 .06 .07
12				.04 3 .05					.04 3 .05
6									
0									

APPENDIX C

TABLE C-1. Preliminary regression relation for forecasting stratospheric ozone from stratospheric temperature

DECEMBER, JANUARY, FEBRUARY

<u>Procedure:</u>	Example for 45°N, FL 370
1. Forecast the temperature, T	-65°C
2. Find mean temperature, \bar{T} , in table, and subtract	- (-56) = - 9
3. Multiply by 0.0143 (for Dec, Jan, Feb)	x .0143 = -.1287
4. Add mean ozone, \bar{OZ} , from table	+ .24
5. Estimated outside ozone	= <u>.11</u>

In equation form, this is: $OZ = 0.0143 (T - \bar{T}) + \bar{OZ}$

Note: Do not use when flight level is forecast to be in the troposphere.

		LATITUDE (N)										
Flight Level		78	72	66	60	54	48	42	36	30	24	18
FL 430	$\frac{\bar{OZ}}{\bar{T}}$.72 -51	.45 -51	.21 -53	.14 -59	.08 -57		
FL 410	$\frac{\bar{OZ}}{\bar{T}}$.22 -46	.46 -50	.28 -51	.36 -54	.25 -56	.15 -60	.15 -58	.12 -57	
FL 390				.35 -47	.21 -51	.40 -56	.30 -56	.18 -57	.13 -56	.14 -55	.10 -52	
FL 370				.28 -49	.27 -57	.40 -57	.24 -56	.20 -54	.15 -52	.11 -51	.09 -52	
FL 350					.32 -51	.31 -52	.24 -51	.14 -53	.15 -49	.08 -52		
FL 330				.20 -58	.33 -50	.18 -54	.15 -53	.25 -49	.20 -45			
FL 310						.08 -57	.21 -51	.03 -49	.07 -40			
FL 290						.23 -54	.24 -47	.24 -47	.11 -44			

APPENDIX C

TABLE C-2. Preliminary regression relation for forecasting stratospheric ozone from stratospheric temperature

MARCH, APRIL, MAY

<u>Procedure:</u>	Example for 45°N, FL 370
1. Forecast the temperature, T	-62°C
2. Find mean temperature, \bar{T} , in table and subtract	- (-54) = - 8
3. Multiply by 0.0210 (for Mar, Apr, May)	x .0210 = -.1680
4. Add mean ozone, \bar{OZ} , from table	+ .42
5. Estimated outside ozone	= <u>.25</u>

In equation form, this is: $OZ = 0.0210 (T - \bar{T}) + \bar{OZ}$

Note: Do not use when flight level is forecast to be in the troposphere.

LATITUDE (N)

Flight Level		78	72	66	60	54	48	42	36	30	24	18
FL 430	\bar{OZ} - T -				.44 -53	.61 -50	.42 -56	.30 -57	.22 -58			
FL 410	\bar{OZ} - T -			.51 -46	.52 -54	.46 -53	.43 -55	.40 -54	.23 -58			
FL 390				.43 -56	.49 -54	.47 -52	.41 -55	.35 -56	.23 -58	.12 -58	.14 -52	
FL 370			.62 -49	.57 -53	.45 -54	.37 -56	.42 -54	.34 -54	.28 -57	.10 -58	.16 -55	
FL 350		.44 -60	.57 -48	.46 -54	.60 -46	.38 -51	.32 -53	.31 -52	.24 -54	.10 -52		
FL 330				.42 -51	.41 -50	.36 -50	.41 -48	.36 -49				
FL 310				.22 -57	.31 -54	.33 -48	.29 -47	.28 -48				
FL 290				.26 -45	.26 -45	.26 -45	.37 -43	.12 -44				

APPENDIX C

TABLE C-3. Preliminary regression relation for forecasting stratospheric ozone from stratospheric temperature

JUNE, JULY, AUGUST

<u>Procedure:</u>	<u>Example for 45°N, FL 370</u>
1. Forecast the temperature, T	-55°C
2. Find mean temperature, \bar{T} , in table and subtract	- (-50) = - 5
3. Multiply by 0.0127 (for Jun, Jul, Aug)	x .0127 = -.0635
4. Add mean ozone, \bar{OZ} , from table	+ .27
5. Estimated outside ozone	= <u>.21</u>

In equation form, this is: $OZ = 0.0127 (T - \bar{T}) + \bar{OZ}$

Note: Do not use when flight level is forecast to be in the troposphere.

		LATITUDE (N)										
Flight Level		78	72	66	60	54	48	42	36	30	24	18
FL 430	$\bar{OZ} =$.29	.25	.25	.19				
	$\bar{T} =$				-54	-54	-54	-56				
FL 410	$\bar{OZ} =$.27	.26	.28	.32				
	$\bar{T} =$				-49	-51	-54	-54				
FL 390	$\bar{OZ} =$.32	.29	.22	.14	.29				
	$\bar{T} =$			-49	-48	-54	-57	-59				
FL 370	$\bar{OZ} =$.31	.23	.24	.27	.24	.24	.06		
	$\bar{T} =$			-48	-54	-51	-50	-56	-56	-48		
FL 350	$\bar{OZ} =$.22	.22	.30	.24	.29				
	$\bar{T} =$			-53	-48	-50	-52	-50				
FL 330												
FL 310												
FL 290												

APPENDIX C

TABLE C-4. Preliminary regression relation for forecasting stratospheric ozone from stratospheric temperature

SEPTEMBER, OCTOBER, NOVEMBER

<u>Procedure:</u>	<u>Example for</u> <u>45°N, FL 370</u>
1. Forecast the temperature, T	-57°C
2. Find mean temperature, \bar{T} , in table and subtract	- (-50) = - 7
3. Multiply by 0.0113 (for Sep, Oct, Nov)	x .0113 = -.0791
4. Add mean ozone, \bar{OZ} , from table	+ .16
5. Estimated outside ozone	= <u>.08</u>

In equation form, this is: $OZ = 0.0113 (T - \bar{T}) + \bar{OZ}$

Note: Do not use when flight level is forecast to be in the troposphere.

LATITUDE (N)

Flight Level		78	72	66	60	54	48	42	36	30	24	18
FL 430	$\frac{\bar{OZ}}{\bar{T}}$.29 -44	.48 -48	.35 -53	.30 -56	.22 -58	.08 -63			
FL 410	$\frac{\bar{OZ}}{\bar{T}}$.34 -54	.34 -52	.29 -53	.21 -55	.22 -54	.10 -53			
FL 390			.19 -55	.32 -50	.31 -50	.23 -51	.19 -54	.20 -55	.20 -55	.09 -56		
FL 370			.28 -54	.25 -52	.22 -49	.19 -50	.16 -50	.15 -51	.21 -51			
FL 350				.19 -52	.21 -49	.17 -50	.20 -50	.22 -49				
FL 330					.15 -43	.18 -43	.18 -44	.07 -48				
FL 310					.17 -38	.17 -38	.13 -49	.18 -48				
FL 290												

APPENDIX D

Ozone unit conversion factors. Multiply "FROM" units by this factor to get "TO" units. All temperatures are in degree K and all pressures in millibars.

"TO"

	μgm^{-3}	10^{-3} cm STP km ⁻¹	molec cm ⁻³	μgg^{-1}	μmb	PPMV
μgm^{-3} ("gamma")	1	.0467	$.126 \times 10^{11}$	$\frac{2.87 \times 10^{-3}}{\text{P}}$	1.73×10^{-3} T	$\frac{1.73 \times 10^{-3}}{\text{P}}$ T
10^{-3} cm STP km ⁻¹	21.4	1	2.69×10^{11}	$\frac{.0614}{\text{P}}$.0370 T	$\frac{.0370}{\text{P}}$ T
molecules cm ⁻³	7.97×10^{-11}	0.372×10^{-11}	1	$\frac{2.29 \times 10^{-13}}{\text{P}}$	1.38×10^{-13} T	$\frac{1.38 \times 10^{-13}}{\text{P}}$ T
μgg^{-1}	$\frac{148. \text{P}}{\text{T}}$	$\frac{16.3 \text{P}}{\text{T}}$	$\frac{4.37 \times 10^{12}}{\text{T}}$	1	.603 P	.603
μmb	$\frac{578.}{\text{T}}$	$\frac{27.0}{\text{T}}$	$\frac{7.25 \times 10^{12}}{\text{T}}$	$\frac{1.66}{\text{P}}$	1	$\frac{1}{\text{P}}$
Parts per million by volume (PPMV)	$\frac{578. \text{P}}{\text{T}}$	$\frac{27.0 \text{P}}{\text{T}}$	$\frac{7.25 \times 10^{12}}{\text{T}}$	1.66	P	1

"FROM"