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ATMOSPHERIC TRANSMITTANCE, 7-30 MUM:
ATTENUATION OF CO₂ LASER RADIATION

R. A. McClatchey, et al

Air Force Cambridge Research Laboratories
L. G. Hanscom Field, Massachusetts

12 October 1972

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R.A. McCLATCHEY
J.E.A. SELBY



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13. ABSTRACT High resolution transmittance curves are presented for the spectral region 320-1400 wavenumbers. These spectra are useful as a guide for selecting laser wavelengths for atmospheric propagation studies in this spectral region. In addition, this report provides specific information concerning the attenuation coefficients of 41 CO ₂ rotational laser lines in the 10.4 micrometer band system ($\nu_3 \rightarrow \nu_1$). Charts for predicting the atmospheric attenuation of the CO ₂ laser lines are provided for each of five climatological model atmospheres and two haze models. The current report extends the work presented in two earlier reports on (1) CO laser attenuation in the 1400-2120 cm ⁻¹ (4.72-7.14 μ m) region: AFCRL-71-0370 and (2) HF and DF laser attenuation in the 2120-3740 cm ⁻¹ (2.67-4.72 μ m) region: AFCRL-72-0312. This report, when combined with the two previous reports described above, provides synthetic spectra for the entire region from 2.67-31.25 μ m.		

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AIR FORCE CAMBRIDGE RESEARCH LABORATORIES

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Atmospheric Transmittance, 7-30 μ m: Attenuation of CO₂ Laser Radiation

1. INTRODUCTION

Theoretical investigations of the attenuation of laser emission through the atmosphere require a knowledge of the molecular absorption of the atmosphere at very high spectral resolution. Absorption line widths of atmospheric molecules are typically of the order of 0.1 cm^{-1} at one atmosphere pressure and decrease with decreasing pressure. Thus, from the point of view of computations, a spectral resolution of better than 0.1 cm^{-1} is required. In two previous reports, calculation of synthetic atmospheric spectra were made for a spectral resolution of 0.01 cm^{-1} . The resulting spectra can thus be considered as representing an infinite resolution spectrum, limited only by the real width of the atmospheric absorption lines. One of the previous reports (McClatchey, 1971) provided spectra covering the region of CO emission - $1400\text{--}2120\text{ cm}^{-1}$. A second report (McClatchey and Selby, 1972) provided spectra covering the region of HF and DF emission from $2120\text{--}3740\text{ cm}^{-1}$.

In addition to the "infinite" resolution spectra provided in these reports, specific laser attenuation charts have been provided for a great number of laser wavelengths in the CO, HF, and DF systems. Although it is useful to have these laser attenuation coefficients immediately available, we have found the "infinite" resolution spectra of great value for a large number of purposes. For example,

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these spectra can be used directly as a guide to selecting other lasers which have lines that lie in the spectral interval in question.

Because of the growing interest in finding relatively transparent atmospheric windows for propagating new laser emission lines through the atmosphere, it was decided to extend the calculations reported earlier to longer wavelengths including three significant atmospheric windows centered near 9, 11, and 22 micrometers. The spectral region covered in this report is from $320\text{--}1400\text{ cm}^{-1}$ (about $7.14\text{--}31.25\mu\text{m}$). The molecular absorption responsible for atmospheric absorption in this region includes the wing of the $6.3\mu\text{m}$ band of water vapor (Benedict and Calfee, 1967), the ν_4 band of methane centered near $7.7\mu\text{m}$ (Kyle, 1968), the ozone bands near $9.6\mu\text{m}$ and $14.3\mu\text{m}$ (Clough and Kneizys, 1965; McCaa and Shaw, 1967), the important CO_2 band centered near $15\mu\text{m}$ (Drayson and Young, 1967), the rotational water vapor band (see Goody, 1964, p. 184), the 9.4 and $10.4\mu\text{m}$ bands of CO_2 (Burch, 1962), and weak bands of nitrous oxide located near $8.5\mu\text{m}$ and $17\mu\text{m}$ (Burch et al, 1971 and Burch et al, 1962). In addition to the rotational lines associated with water vapor, carbon dioxide, ozone, nitrous oxide and methane, at low levels in the atmosphere there is the important water vapor continuum of particular importance in the $8\text{--}13\mu\text{m}$ region and between $16\mu\text{m}$ and $30\mu\text{m}$ (Burch, 1970 and Bignell, 1970). Absorption by each of the molecules mentioned here has been included in the calculations of synthetic spectra provided below.

In addition to molecular absorption, three other sources of attenuation should be considered (McClatchey et al, 1971): molecular (or Rayleigh) scattering, aerosol scattering, and aerosol absorption. Attenuation due to molecular scattering (σ_{m}) is easily computed and is found to be less than 10^{-6} per km at all altitudes and is thus completely negligible. Aerosol attenuation (both absorption and scattering) can be significant, so examples of this attenuation for two specific aerosol models have been included (see Figures 1a and 1b). It should be noted that aerosol attenuation is a very slowly varying function of frequency and, therefore, provides a quasi-continuum attenuation over the whole spectral range of interest, whereas the molecular absorption is highly frequency-dependent. Thus, molecular absorption determines the relative "windows" where the transmittance of a laser beam is greatest.

An attenuation chart was previously constructed for a variety of atmospheric models for the P20 line of the $10.4\mu\text{m}$ CO_2 band (see McClatchey et al, 1971). In this report we have specifically included attenuation coefficient charts for all P-branch lines of this vibrational band from P2-P40 and all R-branch lines from R0-R40. Although much of the work done with CO_2 lasers has utilized the P20 line, many other lines have been observed (Patel, 1964; Howe, 1965) and there is a growing interest in developing lasers in which different lines can be isolated.

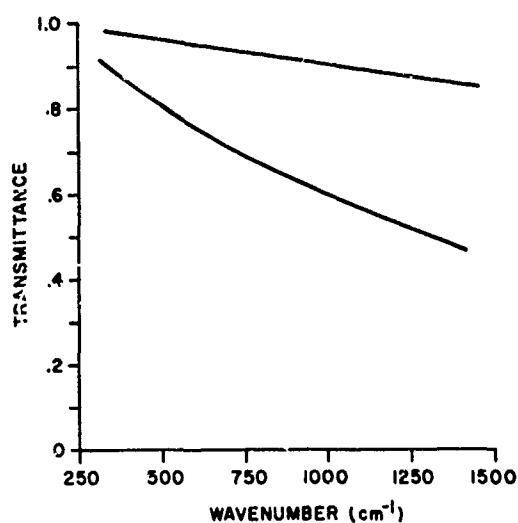


Figure 1a. Atmospheric Transmittance due to Aerosols Through a 10-km Horizontal Path at Sea Level in a "clear" and a "hazy" Atmosphere

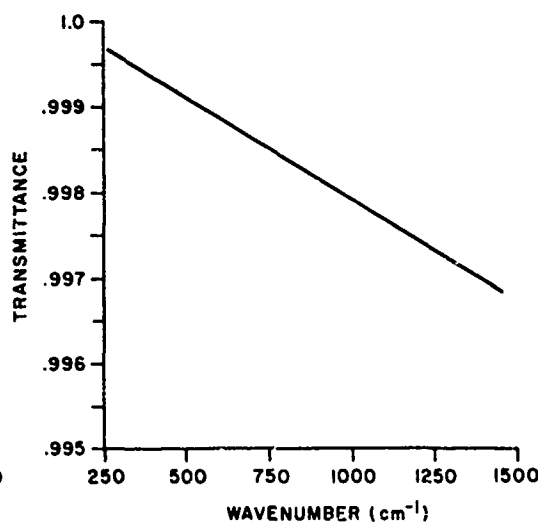


Figure 1b. Atmospheric Transmittance due to Aerosols Through a 10-km Horizontal Path at an Elevation of 12 km

2. CO₂ LASER EMISSION FREQUENCIES

Since the frequencies of the atmospheric absorption lines are known quite accurately ($\pm 0.01 \text{ cm}^{-1}$), and since CO₂ absorption in the atmosphere is a significant portion of the total attenuation, the laser emission frequencies were assumed to be identical to the CO₂ absorption line frequencies. The frequencies of the CO₂ lines are presented in Table 1. Computations of atmospheric attenuation were made for each line appearing in Table 1. The column in Table 1 associated with each laser frequency gives the attenuation per kilometer computed on the basis of the Midlatitude Winter Model (see Section 3). This gives a good idea of the relative atmospheric attenuation for all lines.

3. ATMOSPHERIC MODELS

The atmospheric models used in the computations have been fully described by McClatchey et al (1971), and so only a brief sketch will be provided here. Five model atmospheres for pressure, temperature, H₂O, and O₃ distributions have been used and are referred to as Tropical, Midlatitude Summer, Midlatitude Winter, Subarctic Summer, and Subarctic Winter. They refer to models of the same names defined in the Handbook of Geophysics and Space Environment

Table 1. CO₂ Laser Frequencies for which Attenuation Coefficients Have Been Computed. The Attenuation Coefficients included in this Table Refer to Molecular Absorption through a 1-km Horizontal Path at Sea Level

Rot. I.D.	Frequency (cm ⁻¹)	k _{mw}
P40	924.970	0.0359
P38	927.004	0.0423
P36	929.013	0.0584
P34	930.997	0.0536
P32	932.956	0.0650
P30	934.890	0.0737
P28	936.800	0.0852
P26	938.684	0.0853
P24	940.544	0.0955
P22	942.380	0.1021
P20	944.190	0.0958
P18	945.976	0.1223
P16	947.738	0.0747
P14	949.476	0.1101
P12	951.189	0.1058
P10	952.877	0.1008
P8	954.541	0.0817
P6	956.181	0.0615
P4	957.797	0.0498
P2	959.388	0.0753
R0	961.729	0.0347
R2	963.260	0.0401
R4	964.765	0.0502
R6	966.247	0.0614
R8	967.704	0.0663
R10	969.136	0.0714
R12	970.544	0.0788
R14	971.927	0.0796
R16	973.285	0.0799
R18	974.618	0.0755
R20	975.927	0.2140
R22	977.210	0.0871
R24	978.468	0.0641

Table 1. CO₂ Laser Frequencies for which Attenuation Coefficients Have Been Computed. (Cont)

Rot. I.D.	Frequency (cm ⁻¹)	k _{mw}
R26	979.701	0.0579
R28	980.909	0.0529
R30	982.091	0.0587
R32	983.248	0.0436
R34	984.379	0.0439
R36	985.484	0.0357
R38	986.563	0.0328
R40	987.616	0.0306

(Valley, 1965). Because the major effect these five different models have on the computations in this report is due to the differences in water vapor distribution, Table 3 indicates the water vapor amounts in a 10-km sea level path, a 10-km horizontal path at 12-km altitude, and in a vertical path through the entire atmosphere. The water vapor distribution in all models is identical above 11-km altitude.

In addition to the five models described above, computations were made for two aerosol models (see Figures 1a and 1b). The details of these models are also described by McClatchey et al (1971). Briefly, the two models describe a "clear" and "hazy" atmosphere corresponding to a ground level visibility of 23 and 5 km, respectively. The aerosol size distribution function for both models is the same at all altitudes and similar to one suggested by Deirmendjian (1963) for continental haze. It differs from Deirmendjian's model "C" in that the large particle cut-off has been extended from 5 μ m to 10 μ m.

The refractive index for the aerosols is assumed real for $\lambda \leq 0.6\mu$ m. For $\lambda > 0.6\mu$ m, the imaginary part is assumed to increase linearly to a value of 0.1 for $\lambda \geq 2\mu$ m. This model is based on measurements by Volz (1957).

The total numbers of aerosol particles per unit volume for the "clear" atmosphere have been adjusted to give an extinction coefficient at $\lambda = 0.55\mu$ m identical to the attenuation model of Elterman (1968 and 1970) at each altitude. The "clear" and "hazy" models are identical above 5 km. Below 5-km altitude, the number of aerosol particles in the "hazy" model increases exponentially to a value corresponding to a ground visibility of 5 km.

Table 2. Amount of Water Vapor (precipitable centimeters) in the Five Model Atmospheres for which Calculations have been made

	Tropical	Midlat. Summer	Midlat. Winter	Subarc. Summer	Subarc. Winter
10-km Horizontal Path at Sea Level	19.0	14.0	3.50	9.10	1.20
10-km Horizontal Path at 12-km Altitude	0.006	0.006	0.006	0.006	0.006
Vertical Path from Sea Level to Space	4.13	2.93	0.853	2.08	0.410

4. COMPUTATIONAL TECHNIQUES FOR MOLECULAR ABSORPTION

In the spectral region covered, molecular absorption by water vapor, carbon dioxide, nitrous oxide, ozone and methane occurs. Carbon dioxide, nitrous oxide and methane were taken to be uniformly mixed by volume in the atmosphere at 330 ppmv, 0.28 ppmv and 1.6 ppmv, respectively. The water vapor and ozone were distributed according to the models described above. A Lorentz line shape as given in Equation (1) was assumed for each line.

$$k_m = \frac{S\alpha}{\pi [(\nu - \nu_0)^2 + \alpha^2]} \quad (1)$$

in which S is the line intensity, α is the line half-width, ν_0 is the central line frequency, and ν is the laser frequency. For pressures less than 10 mb, a Voigt profile was used in the calculations (see Young, 1965). The laser frequency (ν) was assumed monochromatic for the purposes of this calculation. In general, a large number of absorption lines belonging to different molecules contribute to the attenuation at any specific laser frequency, so the total optical depth (O.D.) must be evaluated and is given by Equation (2).

$$\text{O.D.} = \sum_j \sum_i \frac{S_{ij} \alpha_{ij} m_j}{\pi [(\nu - \nu_{ij})^2 + \alpha_{ij}^2]} \quad (2)$$

where m_j represents the amount of the j^{th} absorbing gas.

Pressure broadening enters through the α_{ij} values in Equation (2). The Lorentz line width is given by

$$\alpha = \alpha_0 P/P_0 \sqrt{\frac{T_0}{T}}.$$

The line intensity (S) is also temperature dependent through the population of the lower state of the transition and through the partition functions. These pressure and temperature effects have been included for all lines. The wings of all lines within $\pm 20 \text{ cm}^{-1}$ of frequency, ν , were considered to contribute to the absorption coefficient at frequency ν .

In addition to this, absorption due to the water vapor continuum has been included based on the measurements of Burch et al, 1971 and Bignell, 1970, between $1250\text{-}320 \text{ cm}^{-1}$.

5. RESULTS

Figures 2a through 2h provide a high resolution (infinite resolution) transmittance spectrum for a 10-km horizontal path at sea level corresponding to the Midlatitude Winter model atmosphere. These curves cover the entire spectral region from 320 to 1400 wavenumbers. The resulting curves for frequencies in the range $320 \text{ to } 440 \text{ cm}^{-1}$ were entirely black (transmittance $\leq 10^{-3}$).

Figures 3a through 3i provide a high resolution transmittance spectrum for a 10-km horizontal path at a 12-km (approximately 40,000 ft) altitude.

Figures 2 and 3 are intended to provide the reader with an "infinite" resolution spectrum for estimating atmospheric transmittance in the middle infrared. These figures taken together with similar figures presented by McClatchey (1971) and McClatchey and Selby (1972), provide synthetic atmospheric spectra for sea level and 12-km altitude for the entire spectral region from $320 \text{ to } 3740 \text{ cm}^{-1}$ ($31.25\text{-}2.67 \mu\text{m}$).

The Appendix provides detailed quantitative information on attenuation for each of the CO_2 laser emission frequencies specified in Table 1 and for each of the mcJel atmospheres described above. The notations used in the column headings should be read as follows:

k_m = Molecular absorption coefficient,

σ_m = molecular scattering coefficient,

k_a = aerosol absorption coefficient,

σ_a = aerosol scattering coefficient.

All attenuation coefficients are given in units of km^{-1} . Zero entries indicate that the computed value is less than 10^{-6} . The total attenuation coefficient per kilometer is given by Equation (3).

$$\gamma = k_m + \sigma_m + k_a + \sigma_a. \quad (3)$$

For horizontal paths, γ can be simply multiplied by the range, R , in km in order to determine the total optical depth. The transmittance is then given by Equation (4).

$$\tau = \exp(-\gamma R). \quad (4)$$

If the atmospheric transmittance is required for a vertical or slant path, the entries in the Appendix must be summed (excluding the first entry) between the two altitude levels of interest and multiplied by the height increment ($\Delta H = 1$ km below 25 km). The result should be multiplied by the appropriate $\sec \theta$ (where θ is the zenith angle) value to determine the total optical depth. The transmittance is then given by Equation (5). The use of $\sec \theta$ in Equation (5) must be restricted to $\theta \leq 80^\circ$. For larger angles, curvature and refractive effects become increasingly important, and $\sec \theta$ must be replaced by an appropriate air mass parameter (see McClatchey et al, 1971).

$$\tau = \exp - (\sec \theta \sum_k \gamma_k \Delta H_k). \quad (5)$$

Special note should be made of the spectral region shown in Figures 2a-2g. Absorption due to the water vapor continuum is responsible for the continuous underlying absorption in this region. For example, at 992 cm^{-1} the sea level transmittance over a 10-km horizontal path (see Figure 2f) is about 0.70. However, due to the partial pressure of H_2O , the transmittance increases rapidly with height as can be seen in Figures 3a-3f.

An example of the use of the data presented in Figures 2 and 3 and the Appendix follows: An examination of Figure 2e shows, at a glance, the atmospheric absorption at the frequencies of the CO_2 laser lines. For example the transmittance over a 10 km horizontal path in the case of the Midlatitude Winter model for the P20 CO_2 line at 944.190 is seen to be about 0.40. Furthermore, it can be seen that about half the absorption at this frequency is due to the water vapor continuum and the other half is due to absorption by atmospheric CO_2 .

Reference can now be made to the appropriate page of the Appendix for more detailed information. Here, we can determine, for example, that the optical depth per kilometer at sea level corresponding to the Midlatitude Winter Model and neglecting aerosol scattering and absorption effects is 0.0958. For a 10-km horizontal path at sea level, the optical depth is thus 0.958 and the transmittance is

$\exp(-0.958) = 0.384$. If aerosol effects are to be included, the attenuation coefficients (or optical depths) must first be added and then transmittance determined according to $\tau = \exp(-\text{optical depth})$. The resulting transmittance for a 10-km horizontal path at sea level including aerosol effects is 0.347 for the "clear" aerosol model and 0.236 for the "hazy" model.

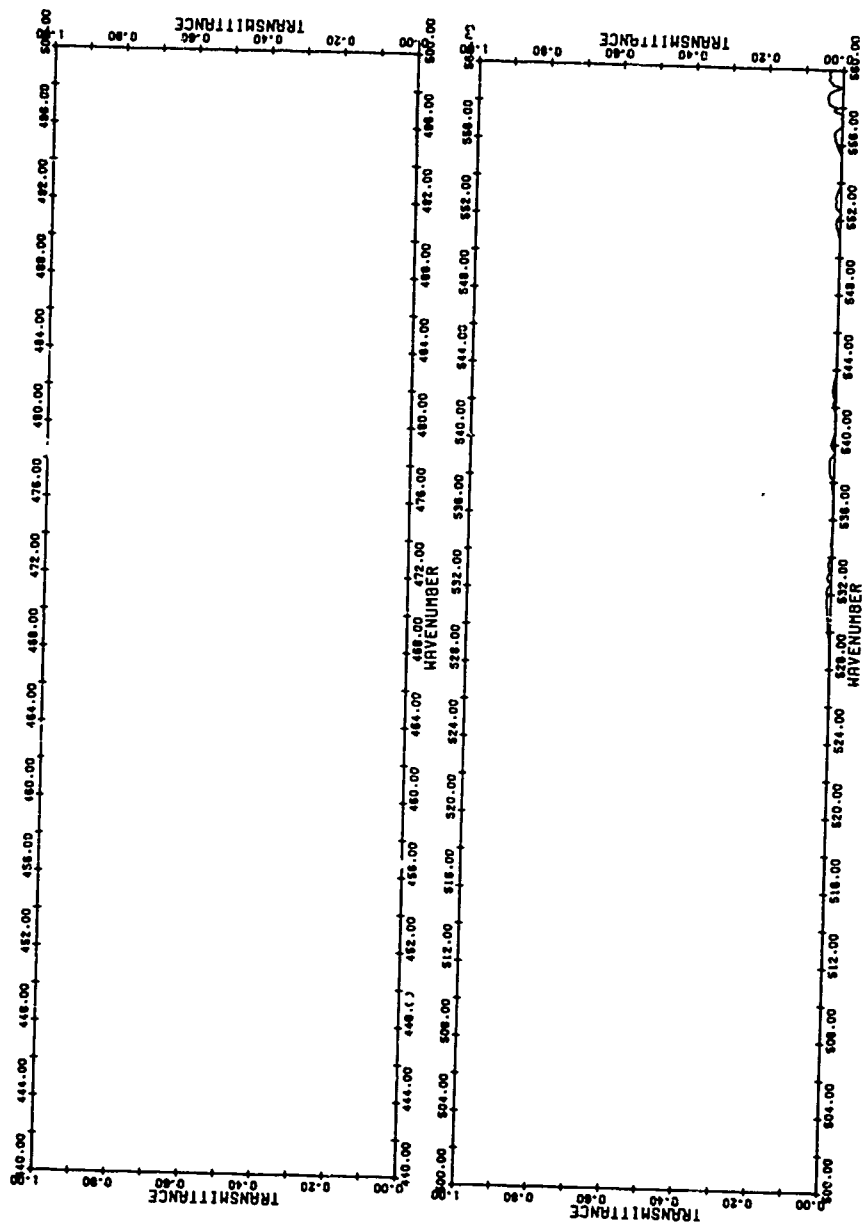


Figure 2a. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at Sea Level

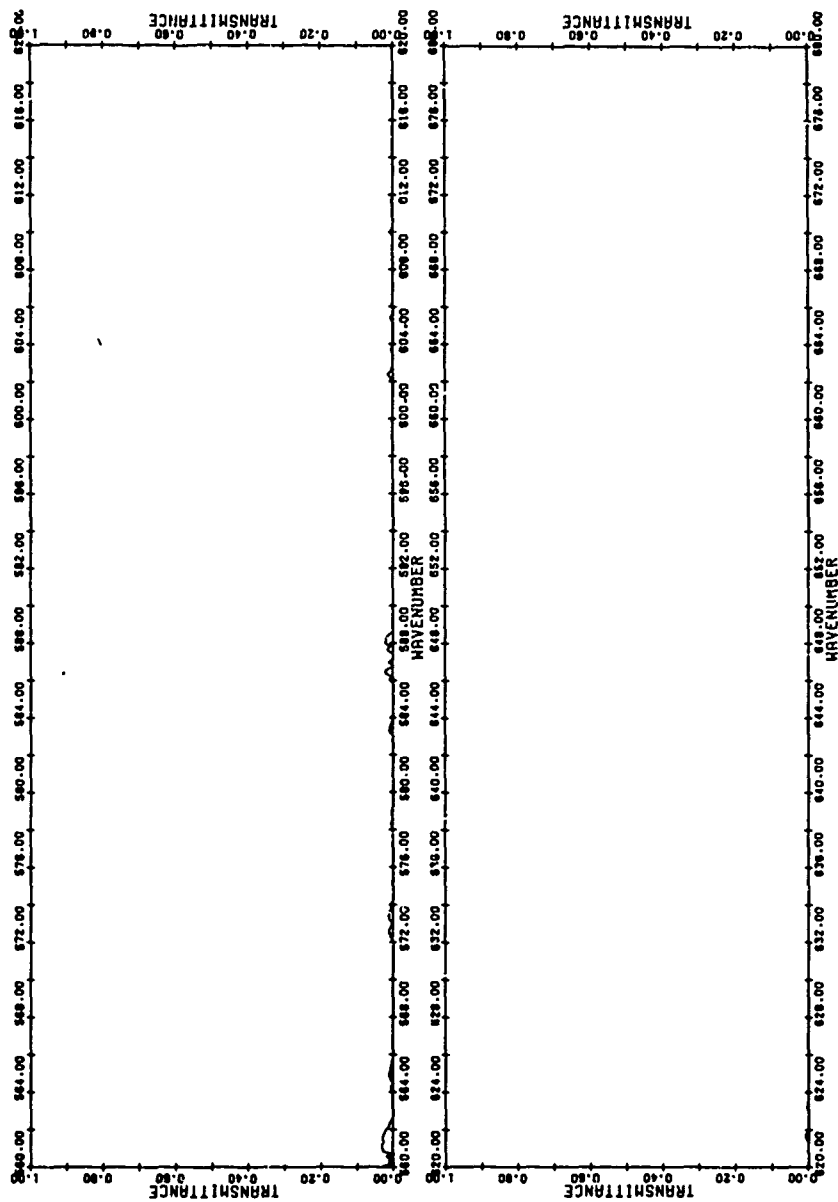


Figure 2b. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at Sea Level

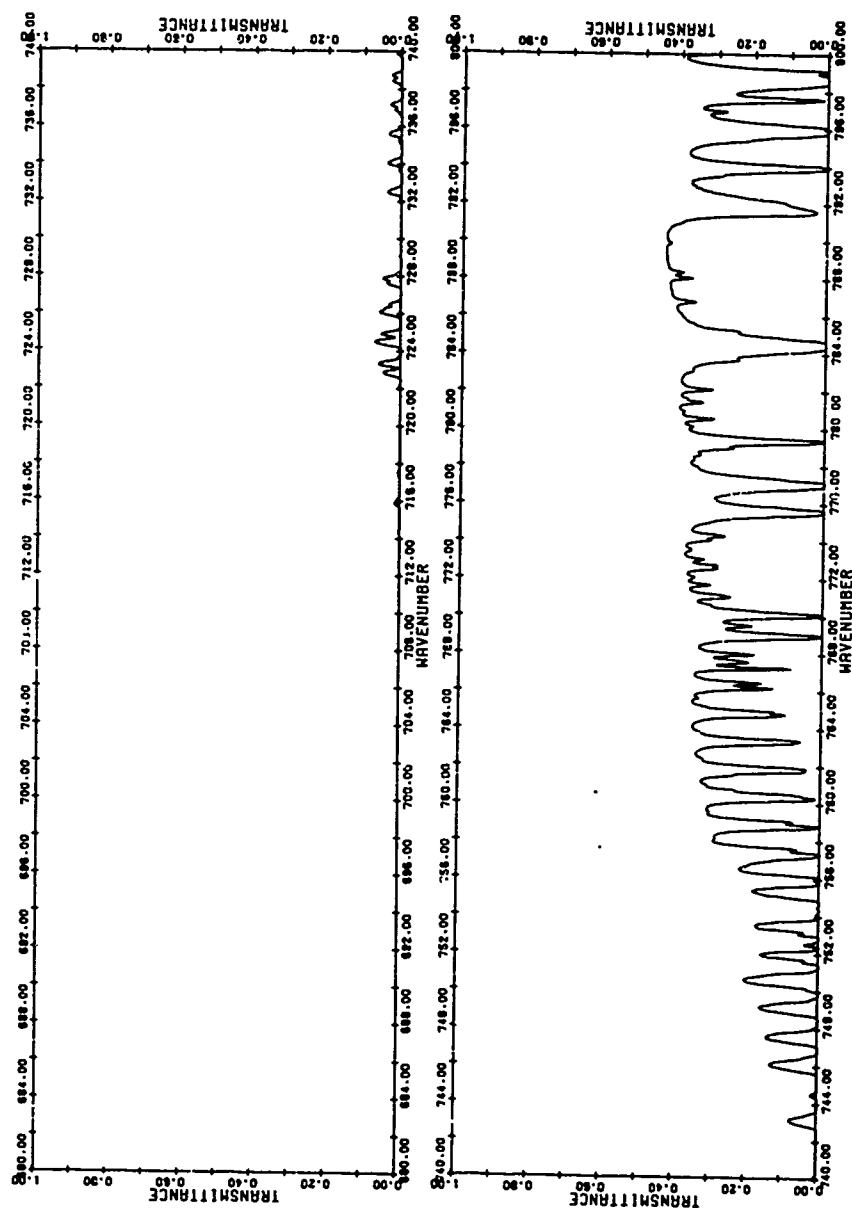


Figure 2c. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at Sea Level

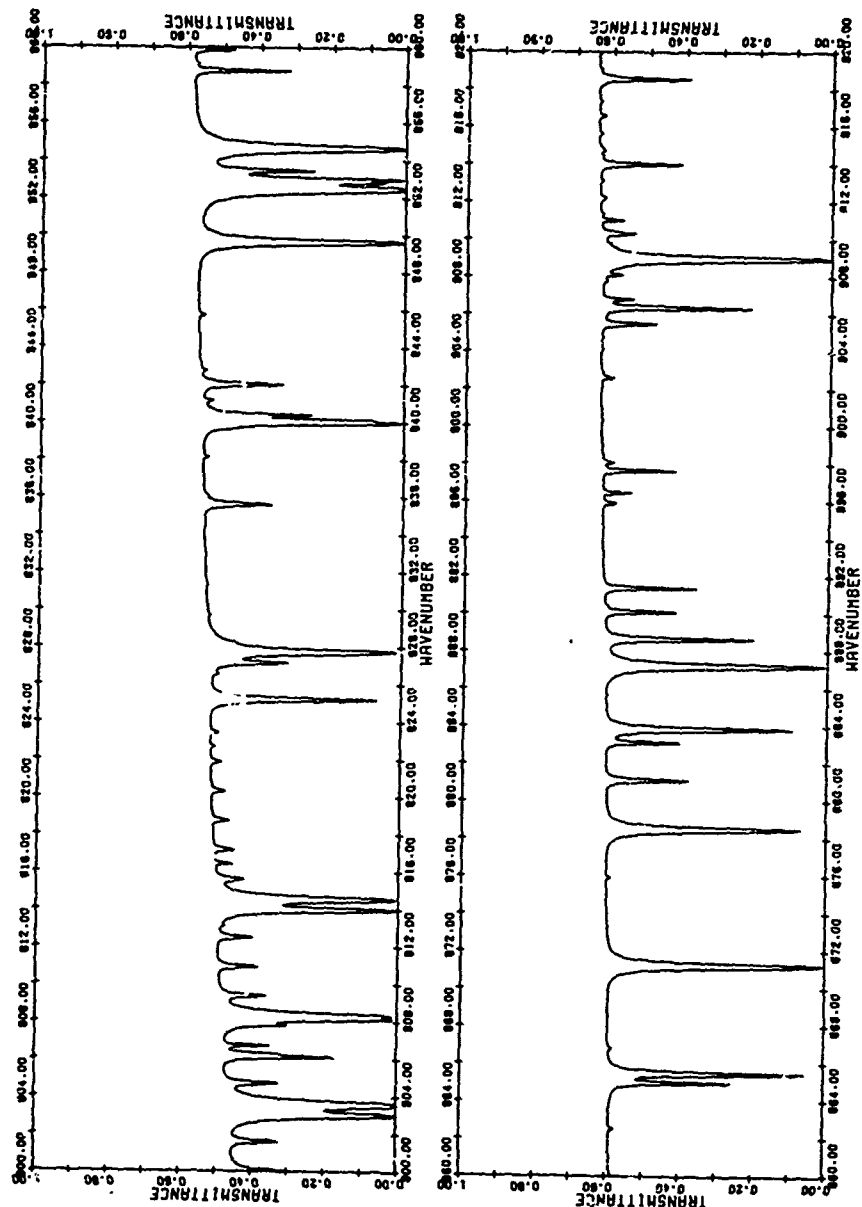


Figure 2d. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at Sea Level

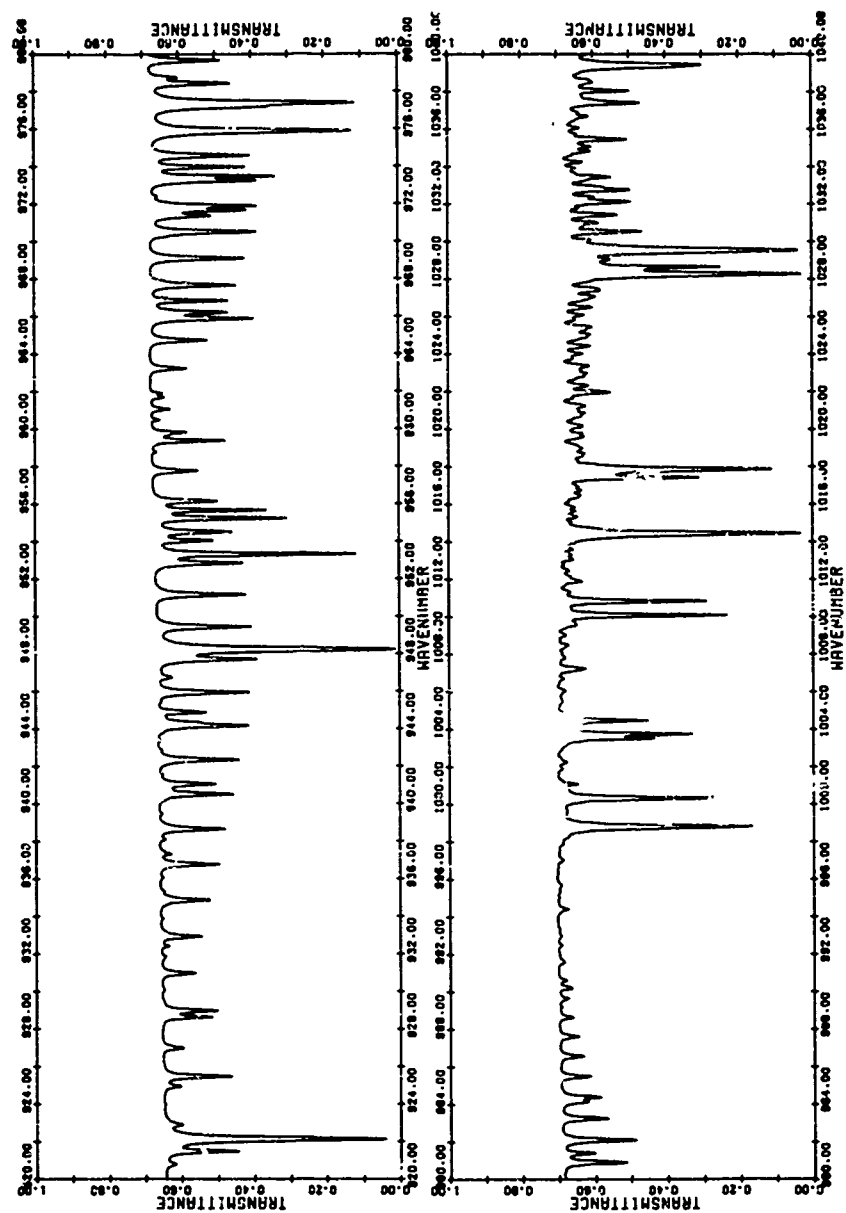


Figure 2e. Atmospheric Transmittance due to Molecular Absorption Through a
10-km Horizontal Path at Sea Level

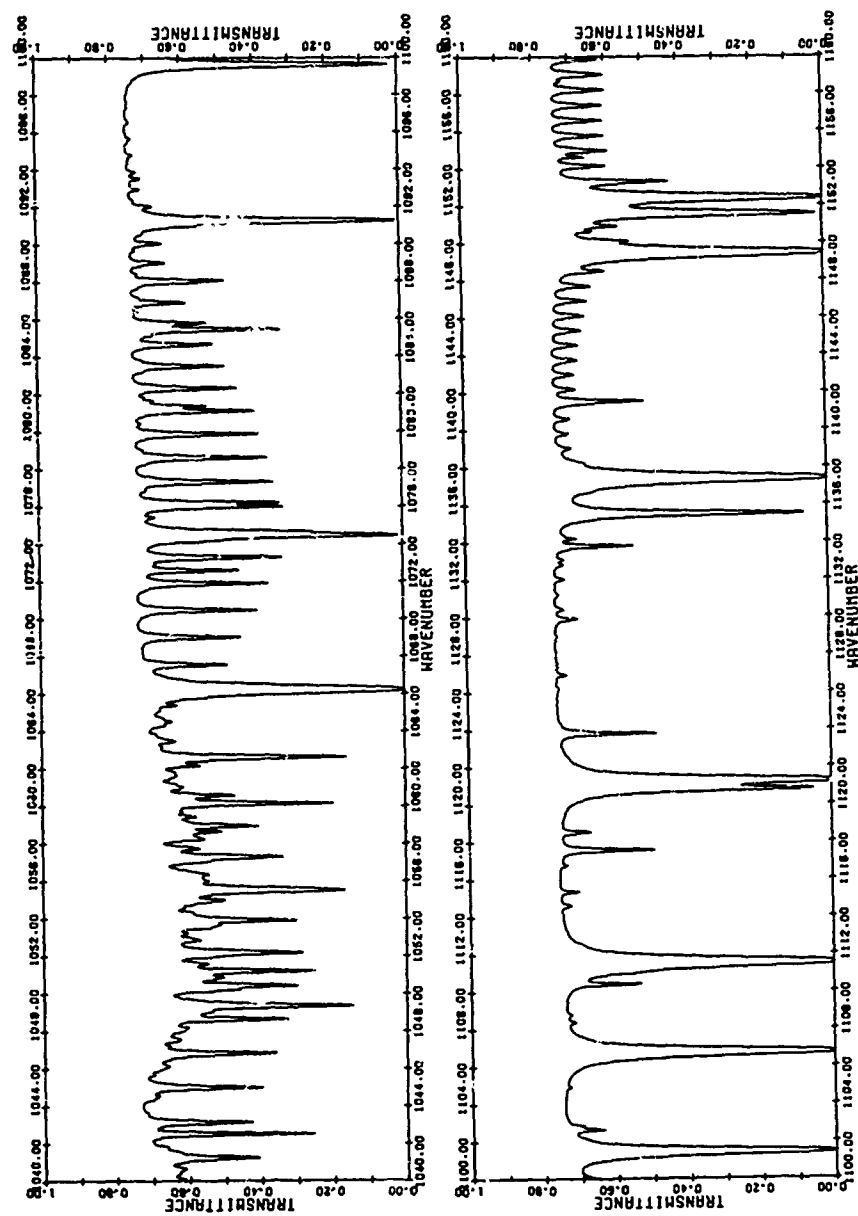


Figure 2f. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at Sea Level

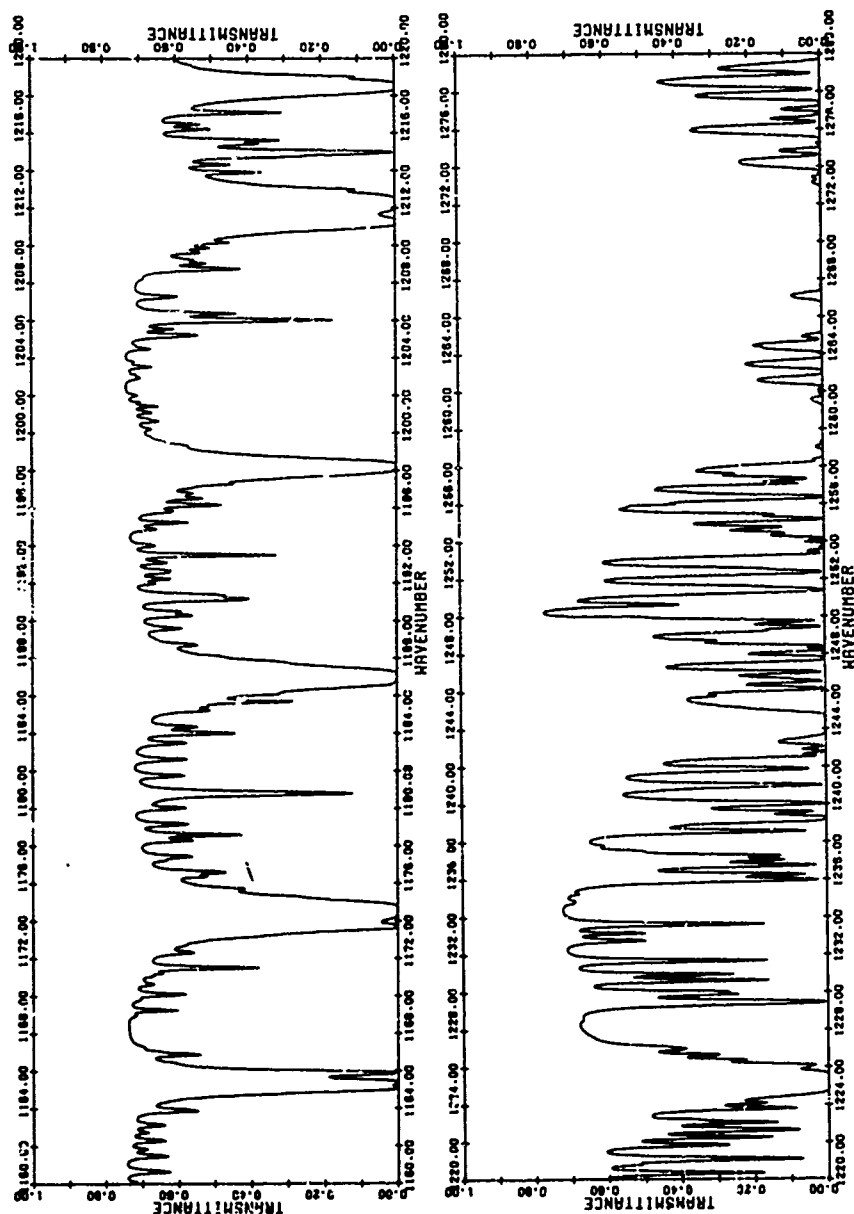


Figure 2g. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at Sea Level

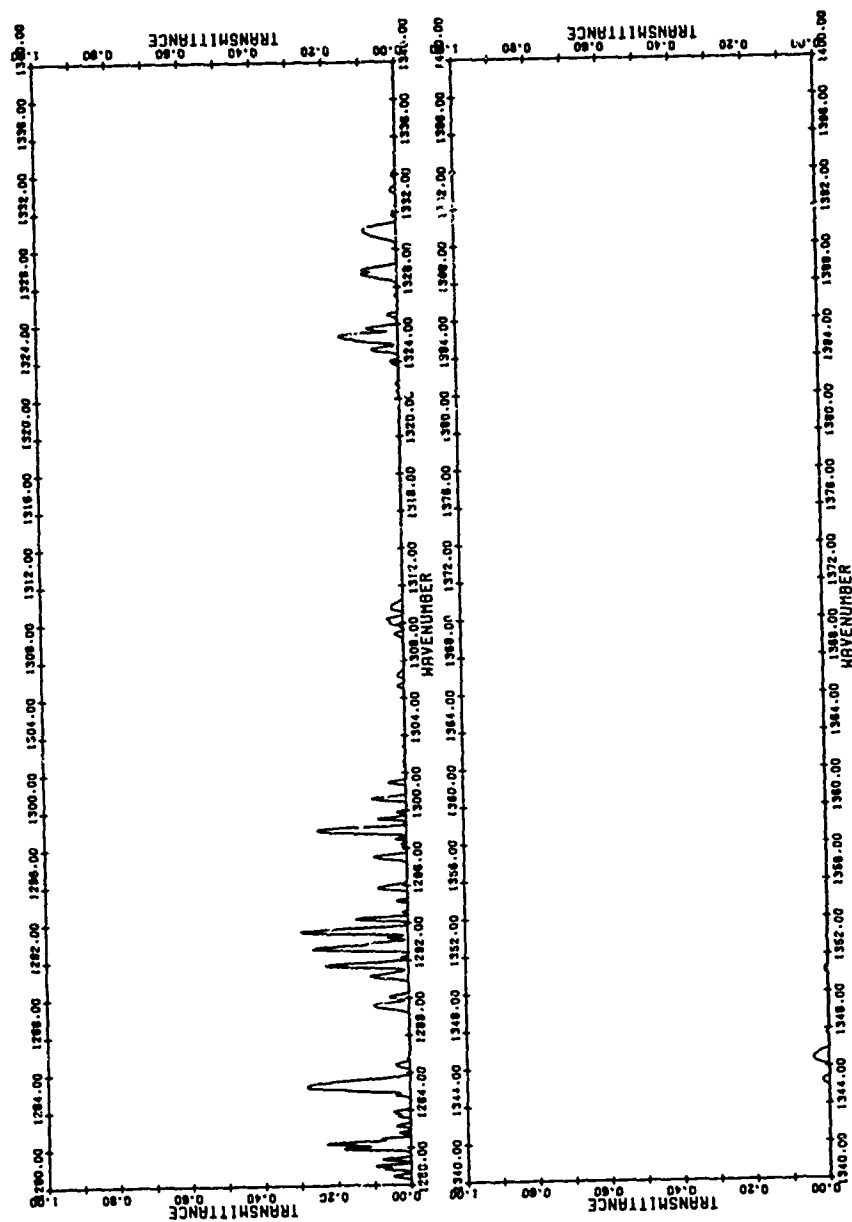


Figure 2h. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at Sea Level

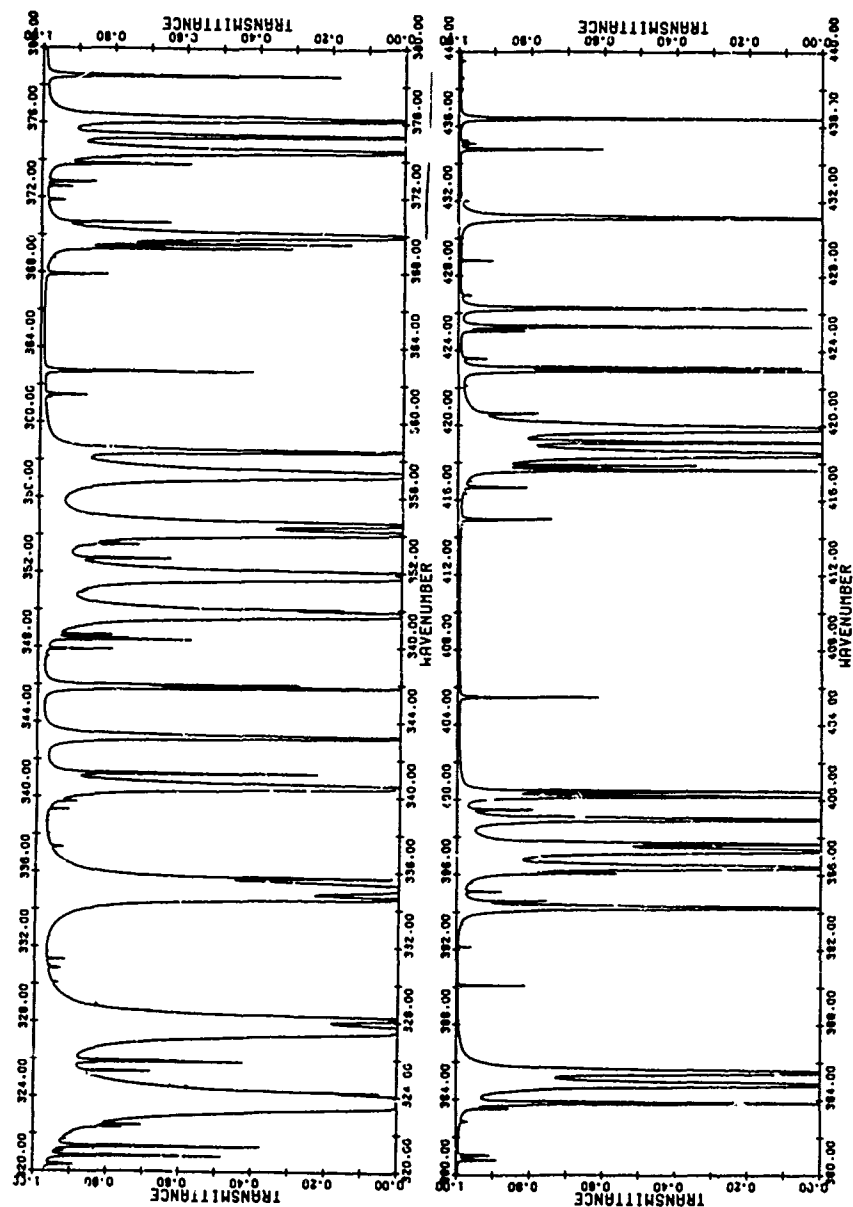


Figure 3a. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

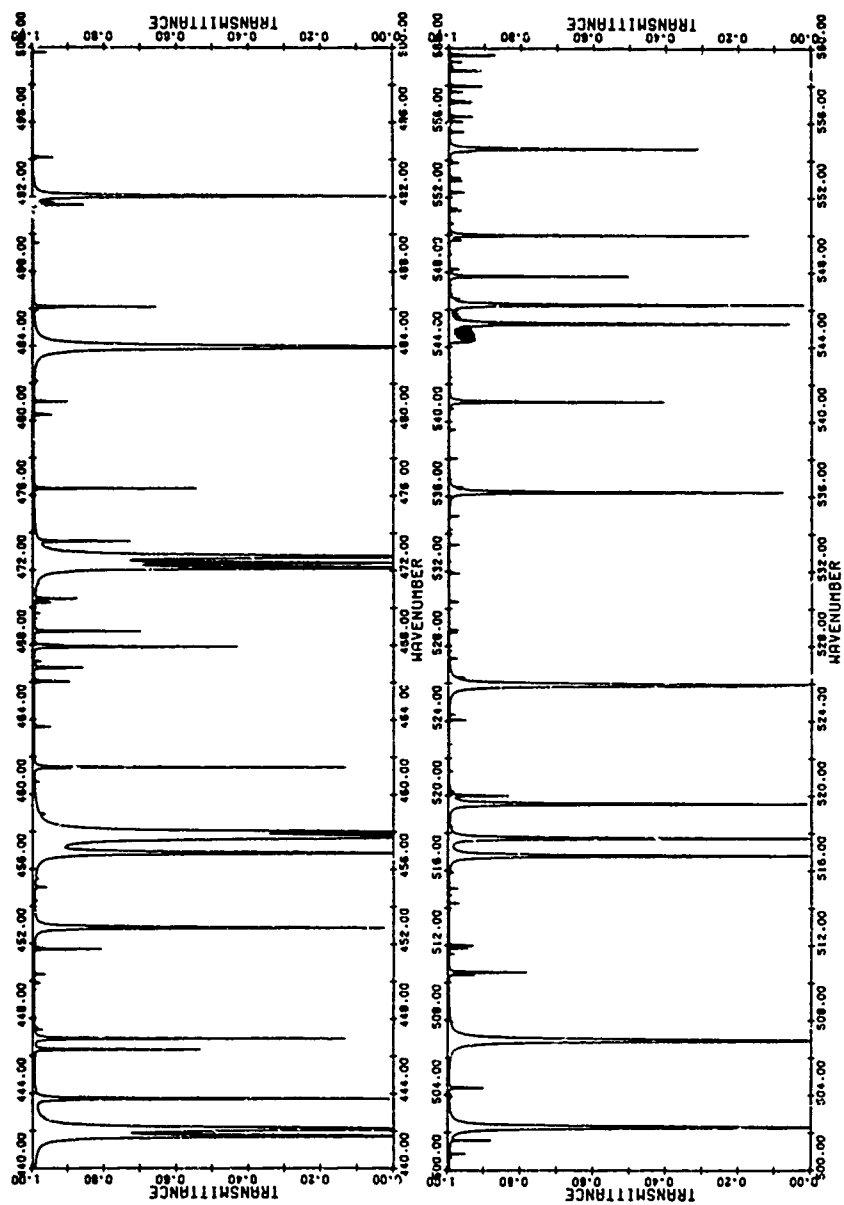


Figure 3b. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

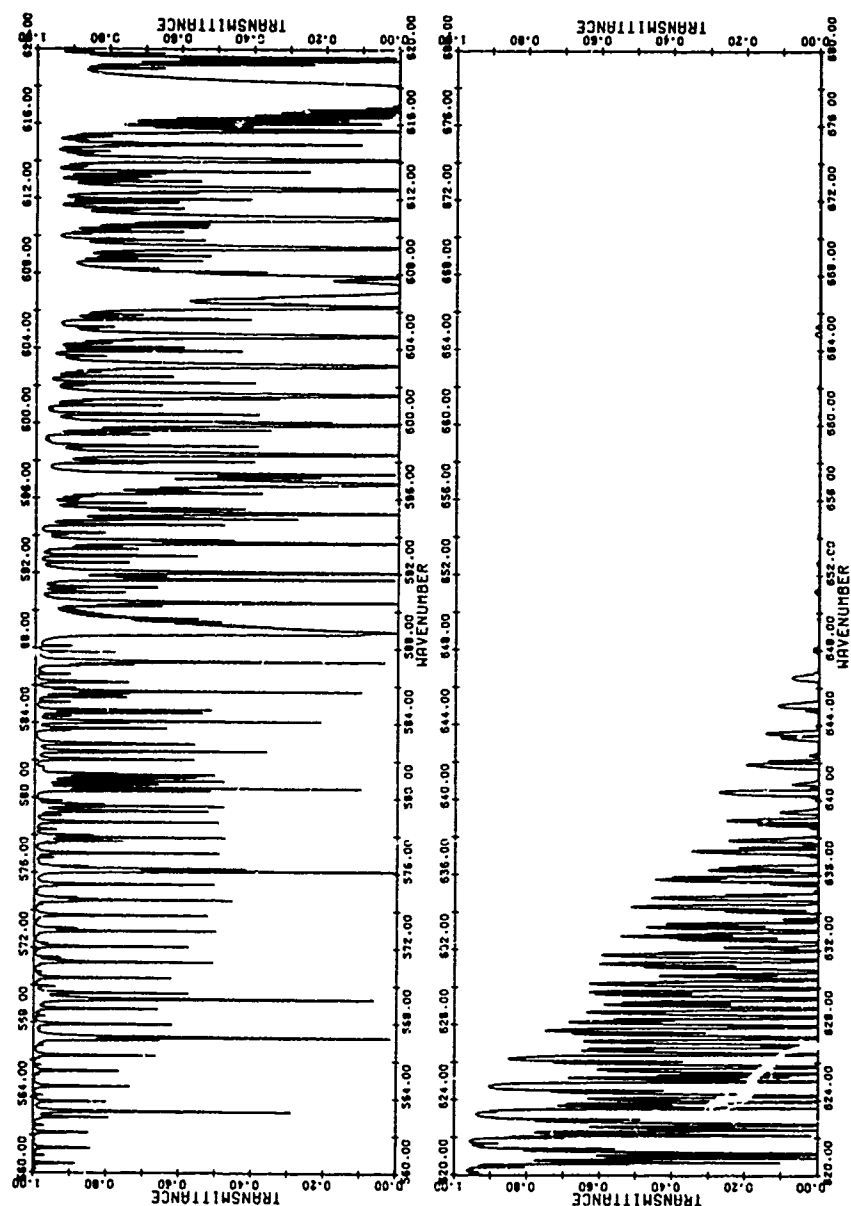


Figure 3c. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

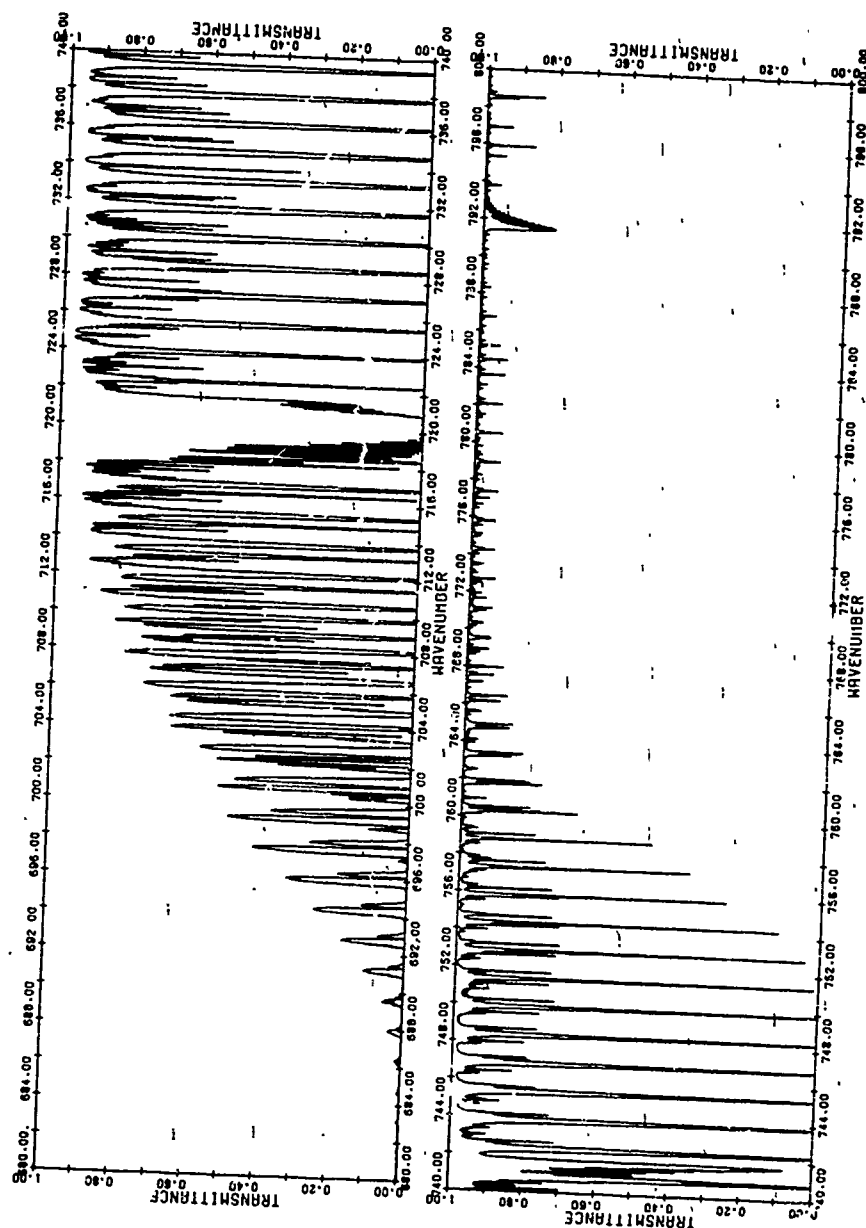


Figure 3d. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

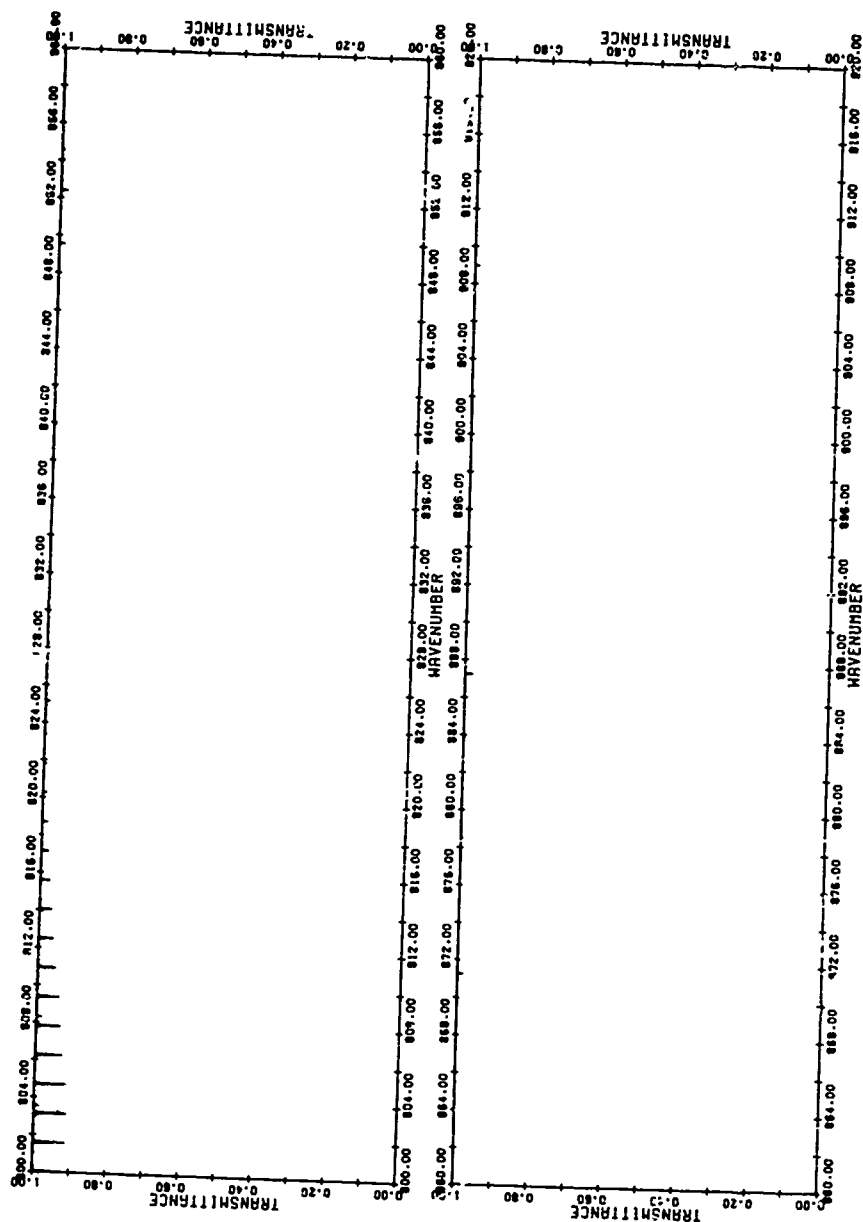


Figure 3e. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

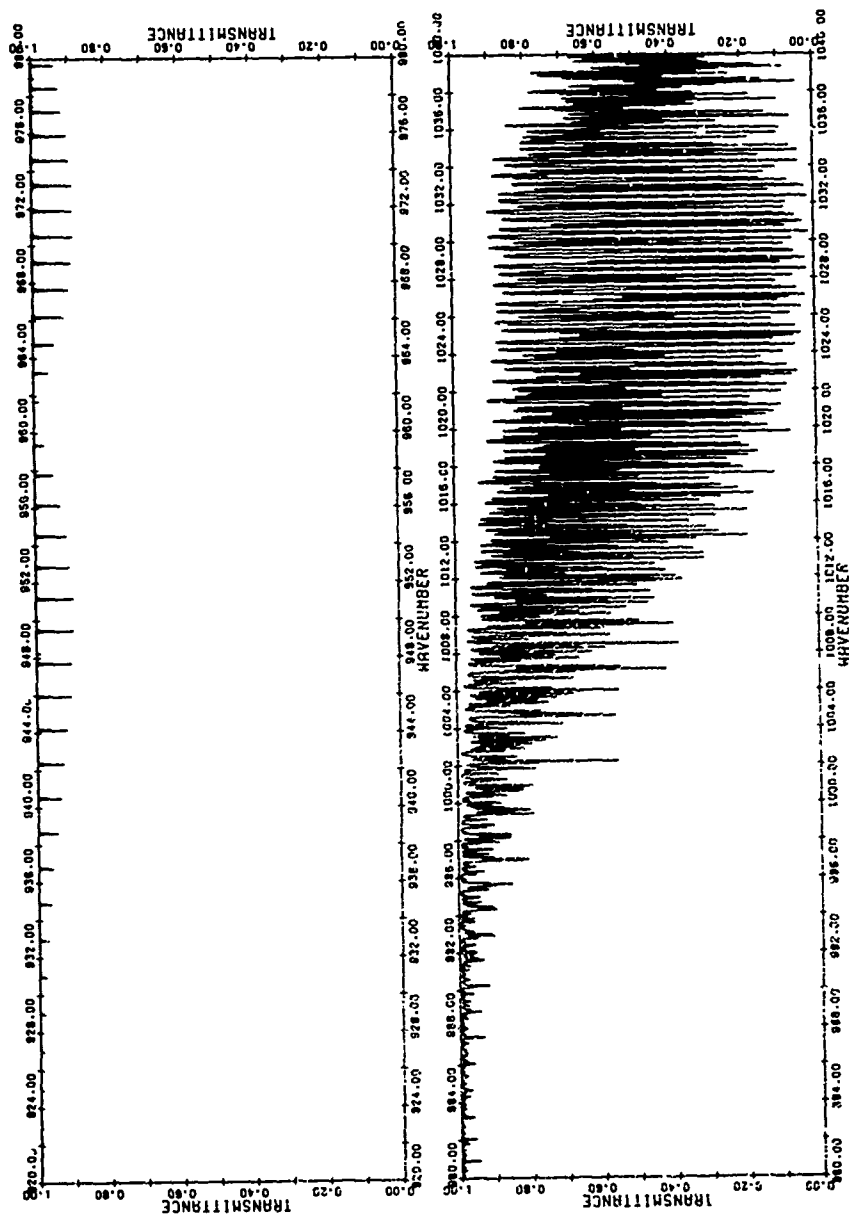


Figure 3f. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

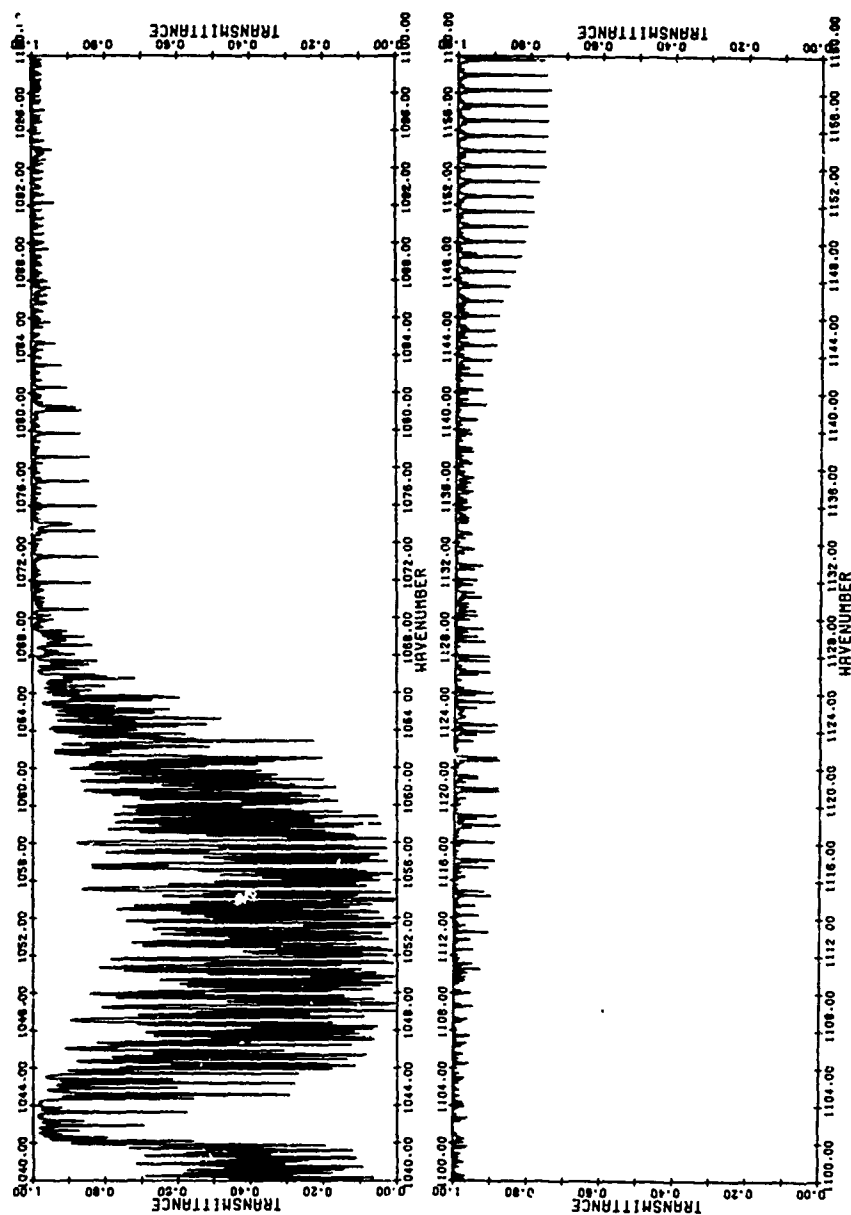


Figure 3g. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

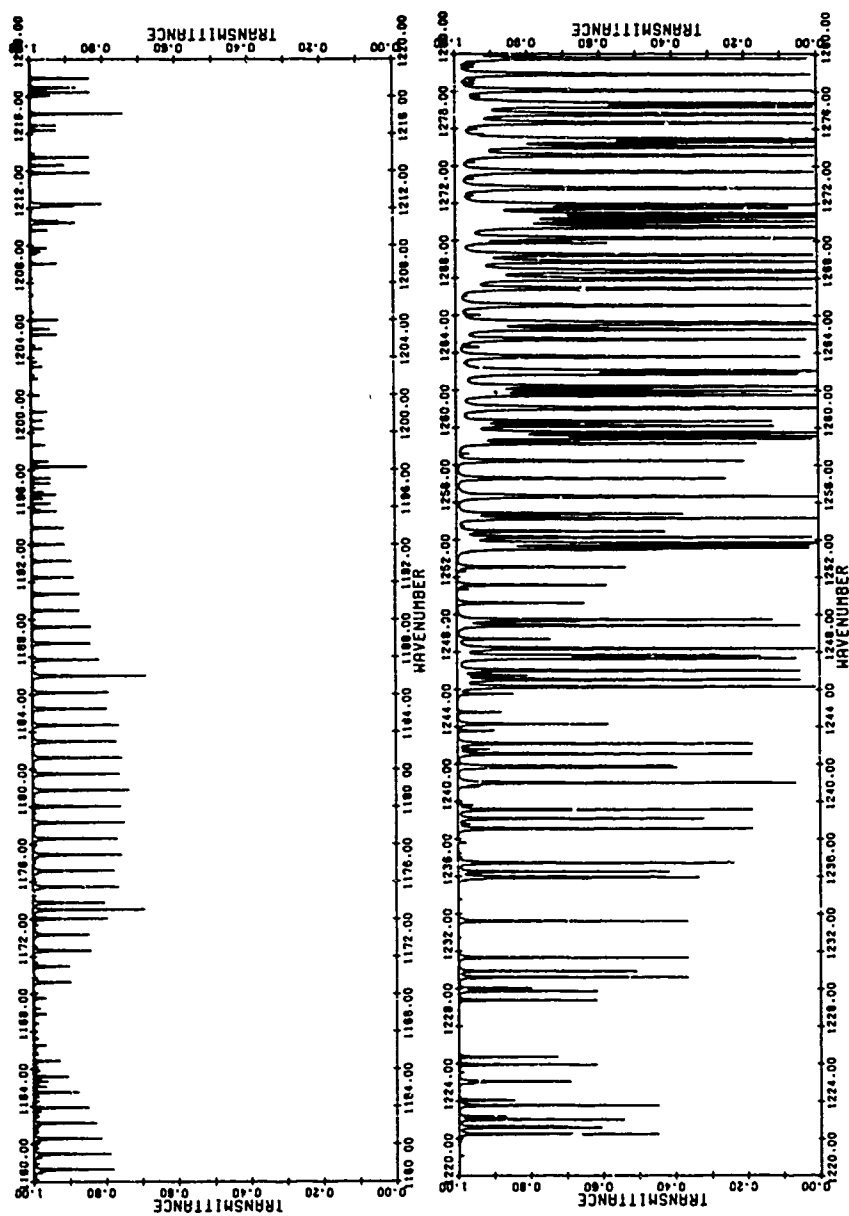


Figure 3h. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

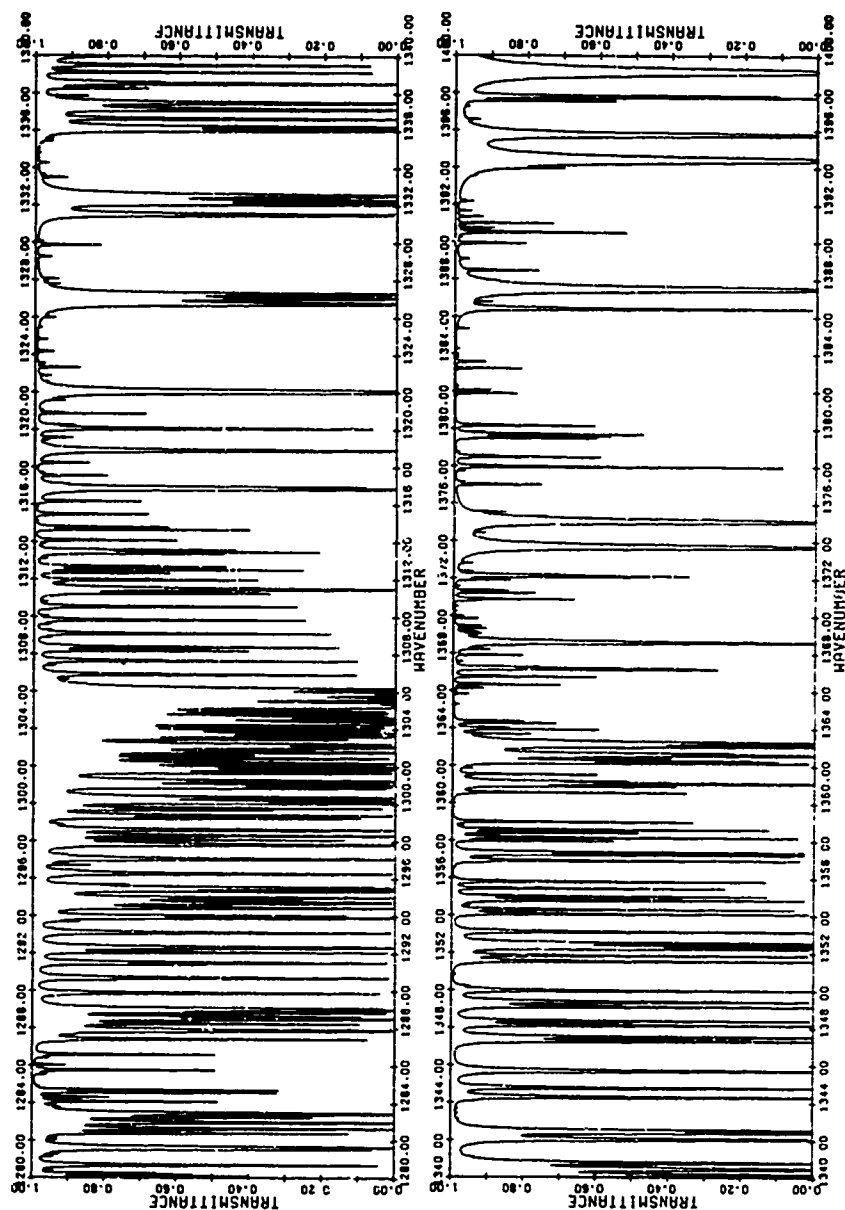


Figure 3i. Atmospheric Transmittance due to Molecular Absorption Through a 10-km Horizontal Path at an Elevation of 12 km

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Appendix

Attenuation Coefficients (km^{-1}) for a
Selected List of CO_2 Laser Frequencies
for Five Geographical Model Atmospheres
and Two Aerosol Models

WAVELENGTH = 0.811161 MICROMETERS												
FREQUENCY = 924.970 WAVELENGTHS												
HT (KM)	TROPICAL		MIDLATITUDE SUMMER		MIDLATITUDE WINTER		SUBARCTIC SUMMER		SUBARCTIC WINTER		HAZY	
	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}
0 - 1	5.138E-01	0.00	2.949E-01	0.00	3.594E-02	0.00	1.624E-01	0.00	1.125E-02	0.00	5.287E-03	4.454E-03
1 - 2	3.659E-01	0.00	2.093E-01	0.00	2.876E-02	0.00	1.023E-01	0.00	1.111E-02	0.00	3.609E-03	3.040E-03
2 - 3	1.908E-01	0.00	1.017E-01	0.00	1.890E-02	0.00	5.524E-02	0.00	9.586E-03	0.00	1.575E-03	1.326E-03
3 - 4	8.391E-02	0.00	4.685E-02	0.00	1.274E-02	0.00	3.115E-02	0.00	7.265E-03	0.00	5.718E-04	5.659E-04
4 - 5	3.160E-02	0.00	2.317E-02	0.00	8.228E-03	0.00	1.790E-02	0.00	5.255E-03	0.00	3.120E-04	2.628E-04
5 - 6	1.645E-02	0.00	1.281E-02	0.00	5.390E-03	0.00	1.071E-02	0.00	3.516E-03	0.00	1.943E-04	1.637E-04
6 - 7	1.058E-02	0.00	8.363E-03	0.00	3.729E-03	0.00	6.750E-03	0.00	2.355E-03	0.00	1.419E-04	1.195E-04
7 - 8	6.897E-03	0.00	6.036E-03	0.00	2.637E-03	0.00	4.306E-03	0.00	1.619E-03	0.00	1.143E-04	9.630E-05
8 - 9	4.717E-03	0.00	4.283E-03	0.00	1.885E-03	0.00	2.913E-03	0.00	1.101E-03	0.00	1.119E-04	9.423E-05
9 - 10	3.420E-03	0.00	3.026E-03	0.00	1.392E-03	0.00	1.983E-03	0.00	8.265E-04	0.00	1.112E-04	9.365E-05
10 - 11	2.414E-03	0.00	2.239E-03	0.00	9.812E-04	0.00	1.358E-03	0.00	7.478E-04	0.00	1.075E-04	9.056E-05
11 - 12	1.738E-03	0.00	1.628E-03	0.00	8.469E-04	0.00	1.115E-03	0.00	7.439E-04	0.00	1.028E-04	8.658E-05
12 - 13	1.229E-03	0.00	1.164E-03	0.00	8.115E-04	0.00	1.142E-03	0.00	7.412E-04	0.00	1.020E-04	8.589E-05
13 - 14	9.016E-04	0.00	8.137E-04	0.00	7.924E-04	0.00	1.093E-03	0.00	7.257E-04	0.00	1.004E-04	8.459E-05
14 - 15	5.810E-04	0.00	6.805E-04	0.00	7.838E-04	0.00	1.136E-03	0.00	7.563E-04	0.00	9.545E-05	8.040E-05
15 - 16	4.168E-04	0.00	7.097E-04	0.00	7.498E-04	0.00	1.129E-03	0.00	7.382E-04	0.00	9.157E-05	7.713E-05
16 - 17	2.774E-04	0.00	5.926E-04	0.00	7.235E-04	0.00	1.078E-03	0.00	7.250E-04	0.00	9.555E-05	7.291E-05
17 - 18	1.966E-04	0.00	6.822E-04	0.00	7.039E-04	0.00	1.124E-03	0.00	7.012E-04	0.00	8.390E-05	7.067E-05
18 - 19	2.145E-04	0.00	6.907E-04	0.00	6.975E-04	0.00	1.112E-03	0.00	6.765E-04	0.00	8.205E-05	6.912E-05
19 - 20	2.810E-04	0.00	7.034E-04	0.00	6.677E-04	0.00	1.109E-03	0.00	6.612E-04	0.00	7.416E-05	6.248E-05
20 - 21	3.583E-04	0.00	7.446E-04	0.00	6.463E-04	0.00	1.125E-03	0.00	6.295E-04	0.00	5.947E-05	4.926E-05
21 - 22	4.611E-04	0.00	7.772E-04	0.00	6.606E-04	0.00	1.097E-03	0.00	6.160E-04	0.00	4.265E-05	3.594E-05
22 - 23	5.838E-04	0.00	8.344E-04	0.00	6.616E-04	0.00	1.118E-03	0.00	5.908E-04	0.00	3.148E-05	2.652E-05
23 - 24	6.825E-04	0.00	8.861E-04	0.00	6.594E-04	0.00	1.118E-03	0.00	5.514E-04	0.00	2.389E-05	2.012E-05
24 - 25	7.609E-04	0.00	9.982E-04	0.00	6.554E-04	0.00	1.119E-03	0.00	5.655E-04	0.00	1.859E-05	1.565E-05
25 - 26	8.585E-04	0.00	1.010E-03	0.00	6.777E-04	0.00	1.215E-03	0.00	5.235E-04	0.00	1.517E-05	1.278E-05
26 - 27	1.141E-03	0.00	1.300E-03	0.00	6.659E-04	0.00	1.470E-03	0.00	5.725E-04	0.00	9.094E-06	8.818E-06
27 - 28	1.297E-03	0.00	1.471E-03	0.00	6.154E-04	0.00	2.268E-03	0.00	4.877E-04	0.00	2.311E-06	1.947E-06
28 - 29	1.363E-03	0.00	1.623E-03	0.00	7.132E-04	0.00	1.842E-03	0.00	4.955E-04	0.00	0.00	0.00
29 - 30	1.333E-03	0.00	1.547E-03	0.00	7.641E-04	0.00	1.797E-03	0.00	4.651E-04	0.00	0.00	0.00
30 - 31	9.085E-04	0.00	1.191E-03	0.00	6.288E-04	0.00	1.326E-03	0.00	4.013E-04	0.00	0.00	0.00
31 - 32	1.065E-04	0.00	1.311E-04	0.00	3.385E-05	0.00	1.326E-04	0.00	1.003E-04	0.00	0.00	0.00
32 - 33	1.228E-06	0.00	1.384E-06	0.00	1.378E-06	0.00	1.378E-06	0.00	1.721E-05	0.00	0.00	0.00

WAVELENGTH = 10.787440 MICROMETERS															
FREQUENCY = 927.004 WAVENUMBERS															
HT(MV)	TROPICAL	MIDLATITUDE		MIDLATITUDE		SUBARCTIC		SUBARCTIC		CLEAR		AEROSOL		HAZY	
		SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$
0		5.214E-01	0.00	3.033E-01	0.00	4.233E-02	0.00	1.508E-01	0.00	1.535E-02	0.00	5.300E-03	4.468E-03	2.592E-02	2.177E-02
0 - 1		3.743E-01	0.00	2.182E-01	0.00	3.488E-02	0.00	1.106E-01	0.00	1.539E-02	0.00	3.517E-03	3.049E-03	1.429E-02	1.373E-02
1 - 2		1.998E-01	0.00	1.109E-01	0.00	2.453E-02	0.00	6.288E-02	0.00	1.378E-02	0.00	1.574E-03	1.331E-03	5.237E-03	4.415E-03
2 - 3		9.298E-02	0.00	5.549E-02	0.00	1.785E-02	0.00	3.794E-02	0.00	1.100E-02	0.00	5.734E-04	5.677E-04	1.419E-03	1.334E-03
3 - 4		4.015E-02	0.00	3.074E-02	0.00	1.244E-02	0.00	2.394E-02	0.00	8.535E-03	0.00	3.129E-04	2.637E-04	7.944E-04	5.700E-04
4 - 5		2.950E-02	0.00	1.905E-02	0.00	8.944E-03	0.00	1.574E-02	0.00	6.113E-03	0.00	1.947E-04	1.642E-04	2.903E-04	2.447E-04
5 - 6		1.638E-02	0.00	1.367E-02	0.00	6.585E-03	0.00	1.091E-02	0.00	4.331E-03	0.00	1.422E-04	1.199E-04	1.422E-04	1.199E-04
6 - 7		1.158E-02	0.00	1.045E-02	0.00	4.899E-03	0.00	7.454E-03	0.00	3.085E-03	0.00	1.144E-04	9.661E-05	1.146E-04	9.551E-05
7 - 8		8.397E-03	0.00	7.725E-03	0.00	3.611E-03	0.00	5.334E-03	0.00	2.171E-03	0.00	1.121E-04	9.453E-05	1.121E-04	9.453E-05
8 - 9		6.343E-03	0.00	5.628E-03	0.00	2.740E-03	0.00	3.795E-03	0.00	1.663E-03	0.00	1.114E-04	9.395E-05	1.114E-04	9.395E-05
9 - 10		4.614E-03	0.00	4.272E-03	0.00	1.941E-03	0.00	2.673E-03	0.00	1.512E-03	0.00	1.074E-04	9.084E-05	1.074E-04	9.084E-05
10 - 11		3.384E-03	0.00	3.180E-03	0.00	1.706E-03	0.00	2.222E-03	0.00	1.505E-03	0.00	1.030E-04	8.686E-05	1.030E-04	8.686E-05
11 - 12		2.443E-03	0.00	2.317E-03	0.00	1.637E-03	0.00	2.279E-03	0.00	1.502E-03	0.00	1.022E-04	8.616E-05	1.022E-04	8.616E-05
12 - 13		1.816E-03	0.00	1.644E-03	0.00	1.602E-03	0.00	2.145E-03	0.00	1.471E-03	0.00	1.007E-04	8.486E-05	1.007E-04	8.486E-05
13 - 14		1.186E-03	0.00	1.383E-03	0.00	1.547E-03	0.00	2.271E-03	0.00	1.533E-03	0.00	9.567E-05	8.066E-05	9.567E-05	9.056E-05
14 - 15		9.820E-04	0.00	1.442E-03	0.00	1.519E-03	0.00	2.258E-03	0.00	1.496E-03	0.00	9.174E-05	7.734E-05	9.174E-05	7.734E-05
15 - 16		5.815E-04	0.00	1.407E-03	0.00	1.467E-03	0.00	2.154E-03	0.00	1.470E-03	0.00	8.674E-05	7.314E-05	8.674E-05	7.314E-05
16 - 17		4.161E-04	0.00	1.386E-03	0.00	1.428E-03	0.00	2.246E-03	0.00	1.423E-03	0.00	8.410E-05	7.090E-05	8.410E-05	7.090E-05
17 - 18		4.529E-04	0.00	1.403E-03	0.00	1.416E-03	0.00	2.222E-03	0.00	1.374E-03	0.00	8.224E-05	6.933E-05	8.224E-05	6.933E-05
18 - 19		5.981E-04	0.00	1.427E-03	0.00	1.357E-03	0.00	2.215E-03	0.00	1.345E-03	0.00	7.434E-05	6.267E-05	7.434E-05	6.267E-05
19 - 20		7.435E-04	0.00	1.507E-03	0.00	1.314E-03	0.00	2.247E-03	0.00	1.281E-03	0.00	5.861E-05	4.941E-05	5.861E-05	4.941E-05
20 - 21		9.489E-04	0.00	1.570E-03	0.00	1.343E-03	0.00	2.191E-03	0.00	1.255E-03	0.00	4.276E-05	3.605E-05	4.276E-05	3.605E-05
21 - 22		1.192E-03	0.00	1.682E-03	0.00	1.345E-03	0.00	2.233E-03	0.00	1.205E-03	0.00	3.154E-05	2.660E-05	3.154E-05	2.660E-05
22 - 23		1.385E-03	0.00	1.782E-03	0.00	1.340E-03	0.00	2.233E-03	0.00	1.147E-03	0.00	2.394E-05	2.014E-05	2.394E-05	2.014E-05
23 - 24		1.538E-03	0.00	2.002E-03	0.00	1.322E-03	0.00	2.232E-03	0.00	1.157E-03	0.00	1.863E-05	1.570E-05	1.863E-05	1.570E-05
24 - 25		1.729E-03	0.00	2.023E-03	0.00	1.377E-03	0.00	2.417E-03	0.00	1.072E-03	0.00	1.520E-05	1.282E-05	1.520E-05	1.282E-05
25 - 30		2.273E-03	0.00	2.574E-03	0.00	1.351E-03	0.00	2.902E-03	0.00	1.168E-03	0.00	9.113E-06	6.840E-06	9.113E-06	6.840E-06
30 - 35		2.122E-03	0.00	2.420E-03	0.00	1.027E-03	0.00	4.450E-03	0.00	8.130E-04	0.00	2.317E-06	1.953E-06	2.317E-06	1.953E-06
35 - 40		2.043E-03	0.00	2.438E-03	0.00	1.085E-03	0.00	2.756E-03	0.00	7.568E-04	0.00	0.00	0.00	0.00	0.00
40 - 45		1.742E-03	0.00	2.180E-03	0.00	1.085E-03	0.00	2.521E-03	0.00	6.675E-04	0.00	0.00	0.00	0.00	0.00
45 - 50		1.240E-03	0.00	1.619E-03	0.00	8.603E-04	0.00	1.799E-03	0.00	5.541E-04	0.00	0.00	0.00	0.00	0.00
50 - 70		1.677E-04	0.00	1.812E-04	0.00	4.654E-05	0.00	1.838E-04	0.00	1.369E-04	0.00	0.00	0.00	0.00	0.00
70 - 100		1.769E-06	0.00	1.996E-06	0.00	1.944E-05	0.00	1.992E-06	0.00	2.421E-06	0.00	0.00	0.00	0.00	0.00

		10.764112 MICROWATERS									
		FREQUENCY = 929.013 WAVELENGTHS									
HT (KM)		TROPICAL		MIDLATITUDE		MIDLATITUDE		SUBARCTIC		SUBARCTIC	
		SUMMER		WINTER		SUMMER		WINTER		CLEAR	
		k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}
0	0	7.744E-01	0.00	4.514E-01	0.00	5.842E-02	0.00	2.244E-01	0.00	1.901E-02	0.00
0	1	5.674E-01	0.00	3.343E-01	0.00	4.816E-02	0.00	1.669E-01	0.00	1.929E-02	0.00
1	2	3.129E-01	0.00	1.783E-01	0.00	3.360E-02	0.00	9.557E-02	0.00	1.745E-02	0.00
2	3	1.530E-01	0.00	9.017E-02	0.00	2.399E-02	0.00	5.673E-02	0.00	1.380E-02	0.00
3	4	6.566E-02	0.00	4.751E-02	0.00	1.634E-02	0.00	3.458E-02	0.00	1.054E-02	0.00
4	5	3.523E-02	0.00	2.723E-02	0.00	1.118E-02	0.00	2.157E-02	0.00	7.417E-03	0.00
5	6	2.272E-02	0.00	1.806E-02	0.00	8.021E-03	0.00	1.407E-02	0.00	5.221E-03	0.00
6	7	1.498E-02	0.00	1.315E-02	0.00	5.915E-03	0.00	9.234E-03	0.00	3.735E-03	0.00
7	8	1.038E-02	0.00	9.455E-03	0.00	4.378E-03	0.00	6.472E-03	0.00	2.652E-03	0.00
8	9	7.669E-03	0.00	6.804E-03	0.00	3.328E-03	0.00	4.593E-03	0.00	2.051E-03	0.00
9	10	5.549E-03	0.00	5.153E-03	0.00	2.495E-03	0.00	3.249E-03	0.00	1.872E-03	0.00
10	11	4.088E-03	0.00	3.853E-03	0.00	2.105E-03	0.00	2.716E-03	0.00	1.867E-03	0.00
11	12	2.978E-03	0.00	2.832E-03	0.00	2.023E-03	0.00	2.788E-03	0.00	1.863E-03	0.00
12	13	2.240E-03	0.00	2.032E-03	0.00	1.983E-03	0.00	2.674E-03	0.00	1.826E-03	0.00
13	14	1.482E-03	0.00	1.720E-03	0.00	1.967E-03	0.00	2.782E-03	0.00	1.904E-03	0.00
14	15	1.091E-03	0.00	1.795E-03	0.00	1.886E-03	0.00	2.766E-03	0.00	1.858E-03	0.00
15	16	7.460E-04	0.00	1.752E-03	0.00	1.823E-03	0.00	2.640E-03	0.00	1.828E-03	0.00
16	17	5.392E-04	0.00	1.726E-03	0.00	1.778E-03	0.00	2.754E-03	0.00	1.772E-03	0.00
17	18	5.858E-04	0.00	1.747E-03	0.00	1.755E-03	0.00	2.725E-03	0.00	1.713E-03	0.00
18	19	7.543E-04	0.00	1.776E-03	0.00	1.693E-03	0.00	2.717E-03	0.00	1.678E-03	0.00
19	20	9.462E-04	0.00	1.873E-03	0.00	1.640E-03	0.00	2.757E-03	0.00	1.601E-03	0.00
20	21	1.198E-03	0.00	1.948E-03	0.00	1.676E-03	0.00	2.688E-03	0.00	1.571E-03	0.00
21	22	1.494E-03	0.00	2.084E-03	0.00	1.679E-03	0.00	2.741E-03	0.00	1.510E-03	0.00
22	23	1.727E-03	0.00	2.202E-03	0.00	1.673E-03	0.00	2.740E-03	0.00	1.438E-03	0.00
23	24	1.911E-03	0.00	2.467E-03	0.00	1.663E-03	0.00	2.737E-03	0.00	1.453E-03	0.00
24	25	2.141E-03	0.00	2.489E-03	0.00	1.720E-03	0.00	2.957E-03	0.00	1.347E-03	0.00
25	30	2.783E-03	0.00	3.143E-03	0.00	1.683E-03	0.00	3.526E-03	0.00	1.463E-03	0.00
30	35	2.727E-03	0.00	3.091E-03	0.00	1.354E-03	0.00	5.329E-03	0.00	1.081E-03	0.00
35	40	2.645E-03	0.00	3.137E-03	0.00	1.431E-03	0.00	3.532E-03	0.00	1.014E-03	0.00
40	45	2.254E-03	0.00	2.802E-03	0.00	1.423E-03	0.00	3.225E-03	0.00	8.886E-04	0.00
45	50	1.601E-03	0.00	2.076E-03	0.00	1.200E-03	0.00	2.299E-03	0.00	7.299E-04	0.00
50	70	1.974E-04	0.00	2.412E-04	0.00	6.193E-05	0.00	2.448E-04	0.00	1.812E-04	0.00
70	100	2.490E-06	0.00	2.812E-06	0.00	2.735E-05	0.00	2.811E-06	0.00	3.330E-05	0.00

HAZY

AEROSOL

CLEAR

WAVELENGTH = 10.741173 MICROMETERS		FREQUENCY = 930.997 WAVELENGTHS											
HT (KM)		TROPICAL		MIDLATITUDE		MIDLATITUDE		SUBARCTIC		SUBARCTIC		WINTER	
		$k_p(km^{-1})$	$\sigma_p(km^{-1})$	$k_p(km^{-1})$	$\sigma_p(km^{-1})$	$k_p(km^{-1})$	$\sigma_p(km^{-1})$	$k_p(km^{-1})$	$\sigma_p(km^{-1})$	$k_p(km^{-1})$	$\sigma_p(km^{-1})$	$k_p(km^{-1})$	$\sigma_p(km^{-1})$
0	0	5.376E-01	0.00	3.195E-01	0.00	5.360E-02	0.00	1.660E-01	0.00	2.274E-02	0.00	5.324E-03	4.495E-03
1	1	3.908E-01	0.00	2.346E-01	0.00	4.560E-02	0.00	1.254E-01	0.00	2.300E-02	0.00	3.634E-03	3.068E-03
2	2	2.159E-01	0.00	1.267E-01	0.00	3.432E-02	0.00	7.615E-02	0.00	2.123E-02	0.00	1.584E-03	1.339E-03
3	3	1.085E-01	0.00	7.003E-02	0.00	2.675E-02	0.00	4.961E-02	0.00	1.770E-02	0.00	6.766E-04	5.712E-04
4	4	5.434E-02	0.00	4.341E-02	0.00	2.036E-02	0.00	3.430E-02	0.00	1.444E-02	0.00	3.142E-04	2.652E-04
5	5	3.527E-02	0.00	2.956E-02	0.00	1.538E-02	0.00	2.442E-02	0.00	1.088E-02	0.00	1.956E-04	1.652E-04
6	6	2.623E-02	0.00	2.270E-02	0.00	1.177E-02	0.00	1.821E-02	0.00	8.052E-03	0.00	1.429E-04	1.207E-04
7	7	1.963E-02	0.00	1.610E-02	0.00	9.091E-03	0.00	1.310E-02	0.00	5.922E-03	0.00	1.151E-04	9.721E-05
8	8	1.487E-02	0.00	1.382E-02	0.00	6.943E-03	0.00	9.780E-03	0.00	4.302E-03	0.00	1.129E-04	9.511E-05
9	9	1.160E-02	0.00	1.035E-02	0.00	5.363E-03	0.00	7.215E-03	0.00	3.365E-03	0.00	1.120E-04	9.453E-05
10	10	8.679E-03	0.00	8.055E-03	0.00	3.918E-03	0.00	5.230E-03	0.00	3.079E-03	0.00	1.083E-04	9.141E-05
11	11	6.523E-03	0.00	6.147E-03	0.00	3.447E-03	0.00	4.405E-03	0.00	3.069E-03	0.00	1.035E-04	8.740E-05
12	12	4.814E-03	0.00	4.586E-03	0.00	3.312E-03	0.00	4.522E-03	0.00	3.050E-03	0.00	1.027E-04	8.669E-05
13	13	3.659E-03	0.00	3.327E-03	0.00	3.248E-03	0.00	4.336E-03	0.00	2.996E-03	0.00	1.011E-04	8.538E-05
14	14	2.449E-03	0.00	2.830E-03	0.00	3.224E-03	0.00	4.509E-03	0.00	3.123E-03	0.00	9.612E-05	8.119E-05
15	15	1.822E-03	0.00	2.951E-03	0.00	3.092E-03	0.00	4.481E-03	0.00	3.047E-03	0.00	9.221E-05	7.705E-05
16	16	1.261E-03	0.00	2.878E-03	0.00	2.991E-03	0.00	4.274E-03	0.00	2.997E-03	0.00	8.717E-05	7.340E-05
17	17	9.194E-04	0.00	2.834E-03	0.00	2.917E-03	0.00	4.458E-03	0.00	2.908E-03	0.00	8.442E-05	7.134E-05
18	18	9.965E-04	0.00	2.869E-03	0.00	2.897E-03	0.00	4.409E-03	0.00	2.813E-03	0.00	8.263E-05	6.975E-05
19	19	1.273E-03	0.00	2.913E-03	0.00	2.781E-03	0.00	4.394E-03	0.00	2.759E-03	0.00	7.469E-05	6.305E-05
20	20	1.584E-03	0.00	3.067E-03	0.00	2.695E-03	0.00	4.458E-03	0.00	2.634E-03	0.00	5.889E-05	4.972E-05
21	21	1.991E-03	0.00	3.184E-03	0.00	2.755E-03	0.00	4.347E-03	0.00	2.587E-03	0.00	4.296E-05	3.627E-05
22	22	2.464E-03	0.00	3.400E-03	0.00	2.758E-03	0.00	4.431E-03	0.00	2.589E-03	0.00	3.170E-05	2.677E-05
23	23	2.833E-03	0.00	3.582E-03	0.00	2.749E-03	0.00	4.431E-03	0.00	2.373E-03	0.00	2.405E-05	2.030E-05
24	24	3.155E-03	0.00	4.005E-03	0.00	2.732E-03	0.00	4.421E-03	0.00	2.400E-03	0.00	1.872E-05	1.580E-05
25	25	3.489E-03	0.00	4.033E-03	0.00	2.825E-03	0.00	4.765E-03	0.00	2.227E-03	0.00	1.527E-05	1.290E-05
26	26	4.488E-03	0.00	5.050E-03	0.00	2.760E-03	0.00	5.643E-03	0.00	2.049E-03	0.00	9.151E-06	6.882E-06
27	27	3.911E-03	0.00	4.439E-03	0.00	1.981E-03	0.00	8.414E-03	0.00	1.584E-03	0.00	2.327E-06	1.955E-06
28	28	3.610E-03	0.00	4.277E-03	0.00	1.981E-03	0.00	4.798E-03	0.00	1.414E-03	0.00	0.00	0.00
29	29	2.972E-03	0.00	3.683E-03	0.00	1.690E-03	0.00	4.220E-03	0.00	1.194E-03	0.00	0.00	0.00
30	30	2.069E-03	0.00	2.670E-03	0.00	1.453E-03	0.00	2.594E-03	0.00	9.563E-04	0.00	0.00	0.00
31	31	2.605E-04	0.00	3.174E-04	0.00	8.123E-05	0.00	3.224E-04	0.00	2.362E-04	0.00	0.00	0.00
32	32	3.420E-06	0.00	3.866E-06	0.00	3.719E-05	0.00	3.872E-06	0.00	4.476E-06	0.00	0.00	0.00

HT (KM)	TROPICAL				MIDLATITUDE				MIDLATITUDE				FREQUENCY =				10.719619 MICROMETERS				AEROSOL				HAZY			
	SUMMER		WINTER		SUMMER		WINTER		SUBARCTIC		SUBARCTIC		SUBARCTIC		SUBARCTIC		SUBARCTIC		SUBARCTIC		SUBARCTIC		SUBARCTIC		SUBARCTIC			
	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$		
0	5.566E-01	0.00	3.373E-01	0.00	6.495E-02	0.00	1.819E-01	0.00	3.019E-02	0.00	5.337E-03	4.509E-03	2.600E-02	2.197E-02														
1	4.039E-01	0.00	2.521E-01	0.00	5.639E-02	0.00	1.405E-01	0.00	3.069E-02	0.00	3.642E-03	3.077E-03	1.640E-02	1.395E-02														
2	2.923E-01	0.00	1.430E-01	0.00	4.422E-02	0.00	8.962E-02	0.00	2.879E-02	0.00	1.589E-03	1.343E-03	5.274E-03	4.455E-03														
3	1.244E-01	0.00	8.478E-02	0.00	3.580E-02	0.00	6.148E-02	0.00	2.456E-02	0.00	5.781E-04	5.730E-04	1.832E-03	1.549E-03														
4	6.875E-02	0.00	4.029E-02	0.00	2.830E-02	0.00	4.490E-02	0.00	2.056E-02	0.00	3.149E-04	2.661E-04	8.003E-04	5.752E-04														
5	4.732E-02	0.00	5.634E-02	0.00	2.240E-02	0.00	3.340E-02	0.00	1.599E-02	0.00	1.961E-04	1.667E-04	2.923E-04	2.470E-04														
6	3.643E-02	0.00	3.208E-02	0.00	1.724E-02	0.00	2.585E-02	0.00	1.202E-02	0.00	1.432E-04	1.210E-04	1.432E-04	1.210E-04														
7	2.608E-02	0.00	2.635E-02	0.00	1.357E-02	0.00	1.908E-02	0.00	8.992E-03	0.00	1.159E-04	9.750E-05	1.129E-04	9.750E-05														
8	1.727E-02	0.00	1.546E-02	0.00	8.243E-03	0.00	1.094E-02	0.00	5.259E-03	0.00	1.125E-04	9.482E-05	1.122E-04	9.482E-05														
9	1.309E-02	0.00	1.219E-02	0.00	6.095E-03	0.00	8.053E-03	0.00	4.835E-03	0.00	1.037E-04	9.168E-05	1.035E-04	9.154E-05														
10	9.985E-03	0.00	9.426E-03	0.00	5.400E-03	0.00	6.838E-03	0.00	4.859E-03	0.00	1.087E-04	8.766E-05	1.037E-04	9.756E-05														
11	7.458E-03	0.00	7.120E-03	0.00	5.201E-03	0.00	7.033E-03	0.00	4.821E-03	0.00	1.029E-04	8.695E-05	1.029E-04	8.695E-05														
12	5.735E-03	0.00	5.228E-03	0.00	5.111E-03	0.00	6.745E-03	0.00	4.727E-03	0.00	1.014E-04	8.564E-05	1.014E-04	8.564E-05														
13	3.886E-03	0.00	4.472E-03	0.00	5.083E-03	0.00	7.029E-03	0.00	4.931E-03	0.00	9.634E-05	8.140E-05	9.634E-05	8.140E-05														
14	2.926E-03	0.00	4.667E-03	0.00	4.882E-03	0.00	6.991E-03	0.00	4.813E-03	0.00	9.242E-05	7.809E-05	9.242E-05	7.809E-05														
15	2.050E-03	0.00	4.556E-03	0.00	4.728E-03	0.00	6.962E-03	0.00	4.739E-03	0.00	8.738E-05	7.382E-05	8.738E-05	7.382E-05														
16	1.509E-03	0.00	4.489E-03	0.00	4.618E-03	0.00	6.962E-03	0.00	4.604E-03	0.00	8.468E-05	7.155E-05	8.468E-05	7.155E-05														
17	1.032E-03	0.00	4.544E-03	0.00	4.591E-03	0.00	6.888E-03	0.00	4.459E-03	0.00	8.282E-05	6.987E-05	8.282E-05	6.987E-05														
18	2.070E-03	0.00	4.612E-03	0.00	4.411E-03	0.00	6.867E-03	0.00	4.378E-03																			

FREQUENCY = 936.800 HAVENVY3ERS

HT (km)	TROPICAL			MID-LATITUDE SUMMER			MID-LATITUDE WINTER			SUBARCTIC SUMMER			SUBARCTIC WINTER			CLEAR			AEROSOL			HAZY		
	k_m^{-1}	σ_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	
0	5.984E-01	0.00	3.674E-01	0.00	8.520E-02	0.00	2.093E-01	0.00	4.396E-02	0.00	5.360E-03	4.536E-03	2.612E-02	2.210E-02										
1	4.001E-01	0.00	2.816E-01	0.00	7.563E-02	0.00	1.667E-01	0.00	4.491E-02	0.00	3.658E-03	3.096E-03	1.647E-02	1.393E-02										
2	2.615E-01	0.00	1.703E-01	0.00	6.180E-02	0.00	1.129E-01	0.00	4.255E-02	0.00	1.596E-03	1.351E-03	5.299E-03	4.492E-03										
3	1.510E-01	0.00	1.097E-01	0.00	5.185E-02	0.00	8.199E-02	0.00	3.703E-02	0.00	6.812E-04	5.763E-04	1.840E-03	1.557E-03										
4	9.234E-02	0.00	7.819E-02	0.00	4.241E-02	0.00	6.324E-02	0.00	3.170E-02	0.00	3.163E-04	2.677E-04	9.039E-04	5.802E-04										
5	6.771E-02	0.00	5.875E-02	0.00	3.397E-02	0.00	4.901E-02	0.00	2.509E-02	0.00	1.970E-04	1.667E-04	2.935E-04	2.494E-04										
6	4.265E-02	0.00	4.823E-02	0.00	2.713E-02	0.00	3.927E-02	0.00	1.941E-02	0.00	1.439E-04	1.217E-04	1.439E-04	1.217E-04										
7	3.391E-02	0.00	3.172E-02	0.00	2.179E-02	0.00	2.974E-02	0.00	1.481E-02	0.00	1.159E-04	9.807E-05	1.159E-04	9.807E-05										
8	2.732E-02	0.00	2.450E-02	0.00	1.369E-02	0.00	1.782E-02	0.00	8.973E-03	0.00	1.127E-04	9.538E-05	1.127E-04	9.538E-05										
9	2.108E-02	0.00	1.970E-02	0.00	1.029E-02	0.00	1.337E-02	0.00	8.289E-03	0.00	1.090E-04	9.222E-05	1.090E-04	9.222E-05										
10	1.637E-02	0.00	1.551E-02	0.00	9.197E-03	0.00	1.147E-02	0.00	8.277E-03	0.00	1.042E-04	8.818E-05	1.042E-04	8.818E-05										
11	1.244E-02	0.00	1.192E-02	0.00	8.867E-03	0.00	1.179E-02	0.00	8.264E-03	0.00	1.034E-04	8.747E-05	1.034E-04	8.747E-05										
12	9.739E-03	0.00	8.915E-03	0.00	8.729E-03	0.00	1.133E-02	0.00	8.101E-03	0.00	1.018E-04	8.615E-05	1.018E-04	8.615E-05										
13	6.734E-03	0.00	7.692E-03	0.00	8.693E-03	0.00	1.179E-02	0.00	8.450E-03	0.00	9.677E-05	9.677E-05	9.677E-05	9.677E-05										
14	5.173E-03	0.00	8.027E-03	0.00	8.359E-03	0.00	1.172E-02	0.00	8.288E-03	0.00	9.284E-05	7.855E-05	9.284E-05	7.855E-05										
15	3.702E-03	0.00	7.834E-03	0.00	8.107E-03	0.00	1.119E-02	0.00	8.128E-03	0.00	9.775E-05	7.425E-05	8.775E-05	7.425E-05										
16	2.767E-03	0.00	7.717E-03	0.00	7.927E-03	0.00	1.167E-02	0.00	7.909E-03	0.00	9.506E-05	7.197E-05	8.506E-05	7.197E-05										
17	2.984E-03	0.00	7.813E-03	0.00	7.895E-03	0.00	1.155E-02	0.00	7.673E-03	0.00	8.319E-05	7.039E-05	8.319E-05	7.039E-05										
18	3.731E-03	0.00	7.919E-03	0.00	7.546E-03	0.00	1.151E-02	0.00	7.589E-03	0.00	7.519E-05	6.362E-05	7.519E-05	6.362E-05										
19	4.549E-03	0.00	8.300E-03	0.00	7.371E-03	0.00	1.168E-02	0.00	7.230E-03	0.00	5.929E-05	5.016E-05	5.929E-05	5.016E-05										
20	5.606E-03	0.00	8.579E-03	0.00	7.534E-03	0.00	1.139E-02	0.00	7.121E-03	0.00	4.325E-05	3.660E-05	4.325E-05	3.660E-05										
21	6.988E-03	0.00	9.122E-03	0.00	7.545E-03	0.00	1.161E-02	0.00	6.895E-03	0.00	3.192E-05	2.701E-05	3.192E-05	2.701E-05										
22	7.722E-03	0.00	9.549E-03	0.00	7.520E-03	0.00	1.161E-02	0.00	6.567E-03	0.00	2.421E-05	2.048E-05	2.421E-05	2.048E-05										
23	8.441E-03	0.00	1.061E-02	0.00	7.474E-03	0.00	1.156E-02	0.00	6.661E-03	0.00	1.884E-05	1.594E-05	1.884E-05	1.594E-05										
24	9.341E-03	0.00	1.106E-02	0.00	7.729E-03	0.00	1.239E-02	0.00	6.200E-03	0.00	1.538E-05	1.301E-05	1.538E-05	1.301E-05										
25	1.169E-02	0.00	1.305E-02	0.00	7.512E-03	0.00	1.440E-02	0.00	6.641E-03	0.00	9.206E-06	6.944E-06	9.206E-06	6.944E-06										
30	8.585E-03	0.00	9.713E-03	0.00	4.604E-03	0.00	2.071E-02	0.00	3.723E-03	0.00	2.343E-06	1.983E-06	2.343E-06	1.983E-06										
35	7.349E-03	0.00	8.644E-03	0.00	4.212E-03	0.00	9.603E-03	0.00	3.083E-03	0.00	0.00	0.00	0.00	0.00										
40	5.718E-03	0.00	6.998E-03	0.00	3.730E-03	0.00	7.924E-03	0.00	2.436E-03	0.00	0.00	0.00	0.00	0.00										
45	3.844E-03	0.00	4.885E-03	0.00	2.737E-03	0.00	5.360E-03	0.00	1.852E-03	0.00	0.00	0.00	0.00	0.00										
50	5.76E-04	0.00	6.255E-04	0.00	1.592E-04	0.00	8.366E-04	0.00	4.559E-04	0.00	0.00	0.00	0.00	0.00										
55	7.635E-06	0.00	8.650E-06	0.00	8.084E-05	0.00	6.705E-06	0.00	9.429E-06	0.00	0.00	0.00	0.00	0.00										
70																								
100																								

WAVELENGTH = 10.653212 MICROMETERS

FREQUENCY = 938.694 #AVENUMBERS

WAVELENGTH = 0.632145 MICROMETERS

FREQUENCY = 940.544 HAVENYU43E3S

DE SUBARCTIC SUBARCTIC

[illegible]

WAVELENGTH = 10.551439 MICROMETERS

FREQUENCY = 947.738 WAVELENGTHS

HT(M)	TROPICAL		MIDLATITUDE SUMMER		MIDLATITUDE WINTER		SUBARCTIC SUMMER		SUBARCTIC WINTER		CLEAR		AEROSOL		HAZY	
	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$
0	5.722E-01	0.00	3.527E-01	0.00	7.466E-02	0.00	1.953E-01	0.00	3.782E-02	0.00	5.429E-03	4.610E-03	2.645E-02	2.245E-02		
1	4.233E-01	0.00	2.656E-01	0.00	6.544E-02	0.00	1.523E-01	0.00	3.831E-02	0.00	3.705E-03	3.146E-03	1.658E-02	1.415E-02		
2	2.444E-01	0.00	1.535E-01	0.00	5.240E-02	0.00	9.934E-02	0.00	3.615E-02	0.00	1.517E-03	1.373E-03	5.355E-03	4.555E-03		
3	1.338E-01	0.00	9.348E-02	0.00	4.343E-02	0.00	7.002E-02	0.00	3.157E-02	0.00	5.899E-04	5.859E-04	1.954E-03	1.533E-03		
4	7.652E-02	0.00	6.400E-02	0.00	3.548E-02	0.00	5.276E-02	0.00	2.727E-02	0.00	3.204E-04	2.720E-04	9.141E-04	5.913E-04		
5	4.459E-02	0.00	4.746E-02	0.00	2.848E-02	0.00	4.059E-02	0.00	2.205E-02	0.00	1.995E-04	1.694E-04	2.973E-04	2.525E-04		
6	4.359E-02	0.00	3.915E-02	0.00	2.357E-02	0.00	3.294E-02	0.00	1.762E-02	0.00	1.457E-04	1.237E-04	1.437E-04	1.237E-04		
7	3.502E-02	0.00	3.317E-02	0.00	1.945E-02	0.00	2.555E-02	0.00	1.395E-02	0.00	1.174E-04	9.967E-05	1.174E-04	9.967E-05		
8	2.844E-02	0.00	2.694E-02	0.00	1.585E-02	0.00	2.057E-02	0.00	1.094E-02	0.00	1.149E-04	9.753E-05	1.149E-04	9.753E-05		
9	2.365E-02	0.00	2.145E-02	0.00	1.304E-02	0.00	1.635E-02	0.00	9.072E-03	0.00	1.141E-04	9.693E-05	1.141E-04	9.693E-05		
10	1.884E-02	0.00	1.780E-02	0.00	1.016E-02	0.00	1.276E-02	0.00	8.475E-03	0.00	1.104E-04	9.373E-05	1.104E-04	9.373E-05		
11	1.519E-02	0.00	1.451E-02	0.00	9.272E-03	0.00	1.117E-02	0.00	8.465E-03	0.00	1.055E-04	8.962E-05	1.055E-04	8.962E-05		
12	1.198E-02	0.00	1.158E-02	0.00	8.970E-03	0.00	1.143E-02	0.00	8.454E-03	0.00	1.047E-04	8.809E-05	1.047E-04	8.809E-05		
13	9.756E-03	0.00	9.015E-03	0.00	8.859E-03	0.00	1.104E-02	0.00	8.289E-03	0.00	1.031E-04	8.755E-05	1.031E-04	8.755E-05		
14	7.058E-03	0.00	7.931E-03	0.00	8.852E-03	0.00	1.149E-02	0.00	8.645E-03	0.00	9.800E-05	8.322E-05	9.800E-05	8.322E-05		
15	5.670E-03	0.00	8.277E-03	0.00	8.541E-03	0.00	1.143E-02	0.00	8.441E-03	0.00	9.402E-05	7.983E-05	9.402E-05	7.983E-05		
16	4.256E-03	0.00	8.079E-03	0.00	8.310E-03	0.00	1.091E-02	0.00	8.334E-03	0.00	9.897E-05	7.546E-05	9.897E-05	7.546E-05		
17	3.293E-03	0.00	7.959E-03	0.00	8.152E-03	0.00	1.138E-02	0.00	8.142E-03	0.00	9.514E-05	7.315E-05	9.514E-05	7.315E-05		
18	1.523E-03	0.00	8.059E-03	0.00	8.146E-03	0.00	1.126E-02	0.00	7.930E-03	0.00	9.424E-05	7.153E-05	9.424E-05	7.153E-05		
19	4.273E-03	0.00	8.141E-03	0.00	7.863E-03	0.00	1.123E-02	0.00	7.832E-03	0.00	7.515E-05	6.466E-05	7.515E-05	6.466E-05		
20	3.059E-03	0.00	8.479E-03	0.00	7.643E-03	0.00	1.133E-02	0.00	7.534E-03	0.00	5.004E-05	5.098E-05	5.004E-05	5.098E-05		
21	6.061E-03	0.00	8.709E-03	0.00	7.812E-03	0.00	1.111E-02	0.00	7.450E-03	0.00	4.380E-05	3.720E-05	4.380E-05	3.720E-05		
22	7.163E-03	0.00	9.202E-03	0.00	7.824E-03	0.00	1.132E-02	0.00	7.212E-03	0.00	3.232E-05	2.745E-05	3.232E-05	2.745E-05		
23	7.966E-03	0.00	9.543E-03	0.00	7.798E-03	0.00	1.132E-02	0.00	6.923E-03	0.00	2.452E-05	2.082E-05	2.452E-05	2.082E-05		
24	8.596E-03	0.00	1.050E-02	0.00	7.751E-03	0.00	1.124E-02	0.00	7.051E-03	0.00	1.308E-05	1.620E-05	1.308E-05	1.620E-05		
25	9.393E-03	0.00	1.047E-02	0.00	8.015E-03	0.00	1.194E-02	0.00	6.589E-03	0.00	1.557E-05	1.322E-05	1.557E-05	1.322E-05		
30	1.300E-02	0.00	1.240E-02	0.00	7.734E-03	0.00	1.353E-02	0.00	6.959E-03	0.00	9.311E-05	7.057E-05	9.311E-05	7.057E-05		
35	1.200E-02	0.00	1.312E-02	0.00	7.095E-03	0.00	1.847E-02	0.00	5.971E-03	0.00	2.373E-05	2.015E-05	2.373E-05	2.015E-05		
40	1.147E-02	0.00	1.312E-02	0.00	7.171E-03	0.00	1.847E-02	0.00	5.971E-03	0.00	2.373E-05	2.015E-05	2.373E-05	2.015E-05		
45	9.407E-03	0.00	1.119E-02	0.00	6.499E-03	0.00	1.244E-02	0.00	4.498E-03	0.00	0.00	0.00	0.00	0.00		
50	6.464E-03	0.00	7.987E-03	0.00	4.764E-03	0.00	8.663E-03	0.00	3.379E-03	0.00	0.00	0.00	0.00	0.00		
55	1.006E-03	0.00	1.197E-03	0.00	3.055E-04	0.00	1.220E-03	0.00	8.601E-04	0.00	0.00	0.00	0.00	0.00		
70	1.814E-05	0.00	2.062E-05	0.00	1.869E-04	0.00	2.089E-05	0.00	2.053E-05	0.00	0.00	0.00	0.00	0.00		

#WAVELENGTH = 10.532125 MICROMETERS

FREQUENCY = 949.476 #WAVELENGTHS

HT (KM)	TROPICAL		MIDLATITUDE SUMMER		MIDLATITUDE WINTER		SUBARCTIC SUMMER		SUBARCTIC WINTER		CLEAR		AEROSOL		HAZY	
	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}
0 - 1	6.066E-01	0.00	3.914E-01	0.00	1.101E-01	0.00	2.360E-01	0.00	6.417E-02	0.00	5.439E-03	4.621E-03	2.650E-02	2.252E-02		
1 - 2	4.620E-01	0.00	3.074E-01	0.00	9.990E-02	0.00	1.937E-01	0.00	6.538E-02	0.00	3.712E-03	3.154E-03	1.671E-02	1.420E-02		
2 - 3	2.873E-01	0.00	1.980E-01	0.00	8.515E-02	0.00	1.394E-01	0.00	6.222E-02	0.00	1.520E-03	1.376E-03	5.375E-03	4.557E-03		
3 - 4	1.787E-01	0.00	1.375E-01	0.00	7.424E-02	0.00	1.074E-01	0.00	5.632E-02	0.00	5.912E-04	5.872E-04	1.857E-03	1.595E-03		
4 - 5	1.207E-01	0.00	1.047E-01	0.00	6.333E-02	0.00	8.758E-02	0.00	4.983E-02	0.00	3.210E-04	2.727E-04	9.157E-04	5.930E-04		
5 - 6	9.342E-02	0.00	8.293E-02	0.00	5.298E-02	0.00	7.123E-02	0.00	4.114E-02	0.00	1.995E-04	1.698E-04	2.979E-04	2.531E-04		
6 - 7	7.764E-02	0.00	7.104E-02	0.00	4.404E-02	0.00	5.990E-02	0.00	3.333E-02	0.00	1.460E-04	1.240E-04	1.450E-04	1.240E-04		
7 - 8	6.417E-02	0.00	6.133E-02	0.00	3.680E-02	0.00	4.748E-02	0.00	2.662E-02	0.00	1.175E-04	9.992E-05	1.175E-04	9.992E-05		
8 - 9	5.304E-02	0.00	5.043E-02	0.00	3.024E-02	0.00	3.879E-02	0.00	2.104E-02	0.00	1.151E-04	9.776E-05	1.151E-04	9.776E-05		
9 - 10	4.460E-02	0.00	4.052E-02	0.00	2.502E-02	0.00	3.116E-02	0.00	1.753E-02	0.00	1.144E-04	9.717E-05	1.144E-04	9.717E-05		
10 - 11	3.580E-02	0.00	3.385E-02	0.00	1.959E-02	0.00	2.448E-02	0.00	1.641E-02	0.00	1.105E-04	9.396E-05	1.105E-04	9.396E-05		
11 - 12	2.905E-02	0.00	2.776E-02	0.00	1.792E-02	0.00	2.150E-02	0.00	1.639E-02	0.00	1.057E-04	8.983E-05	1.057E-04	8.983E-05		
12 - 13	2.303E-02	0.00	2.229E-02	0.00	1.734E-02	0.00	2.213E-02	0.00	1.637E-02	0.00	1.049E-04	8.911E-05	1.049E-04	8.911E-05		
13 - 14	1.885E-02	0.00	1.743E-02	0.00	1.714E-02	0.00	2.126E-02	0.00	1.605E-02	0.00	1.039E-04	8.777E-05	1.039E-04	8.777E-05		
14 - 15	1.371E-02	0.00	1.537E-02	0.00	1.713E-02	0.00	2.213E-02	0.00	1.674E-02	0.00	9.820E-05	8.342E-05	9.820E-05	8.342E-05		
15 - 16	1.107E-02	0.00	1.604E-02	0.00	1.654E-02	0.00	2.201E-02	0.00	1.635E-02	0.00	9.420E-05	8.003E-05	9.420E-05	8.003E-05		
16 - 17	8.352E-03	0.00	1.566E-02	0.00	1.610E-02	0.00	2.101E-02	0.00	1.614E-02	0.00	9.905E-05	7.565E-05	9.905E-05	7.565E-05		
17 - 18	6.489E-03	0.00	1.543E-02	0.00	1.580E-02	0.00	2.192E-02	0.00	1.578E-02	0.00	8.531E-05	7.332E-05	8.531E-05	7.332E-05		
18 - 19	6.936E-03	0.00	1.582E-02	0.00	1.579E-02	0.00	2.169E-02	0.00	1.537E-02	0.00	9.441E-05	7.171E-05	9.441E-05	7.171E-05		
19 - 20	8.382E-03	0.00	1.577E-02	0.00	1.525E-02	0.00	2.162E-02	0.00	1.519E-02	0.00	7.630E-05	6.482E-05	7.630E-05	6.482E-05		
20 - 21	9.892E-03	0.00	1.642E-02	0.00	1.482E-02	0.00	2.194E-02	0.00	1.462E-02	0.00	5.015E-05	5.111E-05	5.015E-05	5.111E-05		
21 - 22	1.181E-02	0.00	1.685E-02	0.00	1.515E-02	0.00	2.139E-02	0.00	1.446E-02	0.00	4.389E-05	3.729E-05	4.389E-05	3.729E-05		
22 - 23	1.544E-02	0.00	1.779E-02	0.00	1.517E-02	0.00	2.181E-02	0.00	1.401E-02	0.00	3.239E-05	2.751E-05	3.239E-05	2.751E-05		
23 - 24	1.664E-02	0.00	2.026E-02	0.00	1.512E-02	0.00	2.181E-02	0.00	1.365E-02	0.00	2.457E-05	2.087E-05	2.457E-05	2.087E-05		
24 - 25	1.815E-02	0.00	2.018E-02	0.00	1.555E-02	0.00	2.165E-02	0.00	1.371E-02	0.00	1.912E-05	1.624E-05	1.912E-05	1.624E-05		
25 - 30	2.174E-02	0.00	2.382E-02	0.00	1.499E-02	0.00	2.296E-02	0.00	1.262E-02	0.00	1.560E-05	1.326E-05	1.560E-05	1.326E-05		
30 - 35	1.678E-02	0.00	1.868E-02	0.00	9.920E-03	0.00	3.522E-02	0.00	1.351E-02	0.00	9.327E-05	8.327E-05	9.327E-05	8.327E-05		
35 - 40	1.394E-02	0.00	1.609E-02	0.00	8.647E-03	0.00	1.759E-02	0.00	6.626E-03	0.00	2.379E-05	2.020E-05	2.379E-05	2.020E-05		
40 - 45	1.043E-02	0.00	1.247E-02	0.00	7.143E-03	0.00	1.385E-02	0.00	4.937E-03	0.00	0.00	0.00	0.00	0.00		
45 - 50	6.811E-03	0.00	8.432E-03	0.00	4.987E-03	0.00	9.146E-03	0.00	3.535E-03	0.00	0.00	0.00	0.00	0.00		
50 - 70	1.040E-03	0.00	1.238E-03	0.00	3.135E-04	0.00	1.264E-03	0.00	8.779E-04	0.00	0.00	0.00	0.00	0.00		
70 - 100	1.869E-05	0.00	2.125E-05	0.00	1.896E-04	0.00	2.155E-05	0.00	2.105E-05	0.00	0.00	0.00	0.00	0.00		

FREQUENCY = 951.139 WAVENUMBERS

HT (km)	TROPICAL			MIDLATITUDE SUMMER			MIDLATITUDE WINTER			SUBARCTIC SUMMER			SUBARCTIC WINTER			CLEAR			AEROSOL			HAZY		
	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$	$k(km^{-1})$	$\sigma_m(km^{-1})$		
0	5.911E-01	0.00	3.797E-01	0.00	1.058E-01	0.00	2.277E-01	0.00	6.194E-02	0.00	5.450E-03	4.632E-03	2.655E-02	2.257E-02										
0 - 1	4.991E-01	0.00	2.975E-01	0.00	9.601E-02	0.00	1.866E-01	0.00	6.309E-02	0.00	3.720E-03	3.161E-03	1.674E-02	1.423E-02										
1 - 2	2.781E-01	0.00	1.905E-01	0.00	8.193E-02	0.00	1.340E-01	0.00	6.075E-02	0.00	1.623E-03	1.379E-03	5.336E-03	4.573E-03										
2 - 3	1.719E-01	0.00	1.319E-01	0.00	7.153E-02	0.00	1.033E-01	0.00	5.448E-02	0.00	5.925E-04	5.886E-04	1.871E-03	1.590E-03										
3 - 4	1.157E-01	0.00	1.005E-01	0.00	6.115E-02	0.00	8.428E-02	0.00	4.832E-02	0.00	3.216E-04	2.734E-04	9.173E-04	5.945E-04										
4 - 5	9.969E-02	0.00	7.971E-02	0.00	5.132E-02	0.00	6.868E-02	0.00	4.002E-02	0.00	2.003E-04	1.702E-04	2.935E-04	2.537E-04										
5 - 6	8.747E-02	0.00	6.847E-02	0.00	4.279E-02	0.00	5.793E-02	0.00	3.235E-02	0.00	1.463E-04	1.243E-04	1.453E-04	1.243E-04										
6 - 7	6.195E-02	0.00	5.925E-02	0.00	3.588E-02	0.00	4.608E-02	0.00	2.610E-02	0.00	1.178E-04	1.002E-04	1.178E-04	1.002E-04										
7 - 8	5.139E-02	0.00	4.940E-02	0.00	2.958E-02	0.00	3.779E-02	0.00	2.071E-02	0.00	1.153E-04	9.800E-05	1.153E-04	9.800E-05										
8 - 9	4.335E-02	0.00	3.949E-02	0.00	2.455E-02	0.00	3.047E-02	0.00	1.732E-02	0.00	1.145E-04	9.740E-05	1.145E-04	9.740E-05										
9 - 10	3.691E-02	0.00	3.305E-02	0.00	1.930E-02	0.00	2.404E-02	0.00	1.622E-02	0.00	1.108E-04	9.418E-05	1.108E-04	9.418E-05										
10 - 11	2.846E-02	0.00	2.720E-02	0.00	1.769E-02	0.00	2.116E-02	0.00	1.620E-02	0.00	1.050E-04	9.005E-05	1.050E-04	9.005E-05										
11 - 12	2.263E-02	0.00	2.192E-02	0.00	1.713E-02	0.00	2.177E-02	0.00	1.619E-02	0.00	1.051E-04	8.932E-05	1.051E-04	8.932E-05										
12 - 13	1.859E-02	0.00	1.723E-02	0.00	1.693E-02	0.00	2.092E-02	0.00	1.587E-02	0.00	1.035E-04	8.798E-05	1.035E-04	8.798E-05										
13 - 14	1.588E-02	0.00	1.521E-02	0.00	1.693E-02	0.00	2.178E-02	0.00	1.656E-02	0.00	9.939E-05	8.362E-05	9.939E-05	8.362E-05										
14 - 15	1.102E-02	0.00	1.589E-02	0.00	1.635E-02	0.00	2.166E-02	0.00	1.615E-02	0.00	9.439E-05	8.022E-05	9.439E-05	8.022E-05										
15 - 16	9.355E-03	0.00	1.550E-02	0.00	1.592E-02	0.00	2.057E-02	0.00	1.597E-02	0.00	9.922E-05	7.583E-05	9.922E-05	7.583E-05										
16 - 17	5.514E-03	0.00	1.527E-02	0.00	1.563E-02	0.00	2.157E-02	0.00	1.581E-02	0.00	8.648E-05	7.350E-05	8.648E-05	7.350E-05										
17 - 18	6.957E-03	0.00	1.546E-02	0.00	1.563E-02	0.00	2.134E-02	0.00	1.522E-02	0.00	9.459E-05	7.188E-05	9.459E-05	7.188E-05										
18 - 19	9.382E-03	0.00	1.560E-02	0.00	1.509E-02																			

WAVELENGTH = 10.494534 MICROMETERS

FREQUENCY = 952.977 HAVENUM33S

E SUBARCTIC SUBARCTIC

HT(km)	k_{m}^{-1}	σ_{m}^{-1}	k_{km}^{-1}	σ_{km}^{-1}	k_{m}^{-1}	σ_{m}^{-1}	k_{km}^{-1}	σ_{km}^{-1}	k_{m}^{-1}	σ_{m}^{-1}	k_{km}^{-1}	σ_{km}^{-1}
0	5.960E-01	0.00	3.799E-01	0.00	1.008E-01	0.00	2.244E-01	0.00	5.802E-02	0.00	5.451E-03	4.643E-03
1	4.503E-01	0.00	2.952E-01	0.00	9.120E-02	0.00	1.821E-01	0.00	5.903E-02	0.00	3.727E-03	3.169E-03
2	2.748E-01	0.00	1.555E-01	0.00	7.649E-02	0.00	1.286E-01	0.00	5.671E-02	0.00	1.625E-03	1.383E-03
3	1.661E-01	0.00	1.256E-01	0.00	6.679E-02	0.00	9.768E-02	0.00	5.075E-02	0.00	5.939E-04	5.990E-04
4	1.089E-01	0.00	9.409E-02	0.00	5.686E-02	0.00	7.888E-02	0.00	4.493E-02	0.00	3.223E-04	2.740E-04
5	8.348E-02	0.00	7.405E-02	0.00	4.766E-02	0.00	6.392E-02	0.00	3.725E-02	0.00	2.007E-04	1.706E-04
6	5.930E-02	0.00	6.340E-02	0.00	3.977E-02	0.00	5.378E-02	0.00	3.034E-02	0.00	1.466E-04	1.246E-04
7	5.371E-02	0.00	5.489E-02	0.00	3.340E-02	0.00	4.280E-02	0.00	2.440E-02	0.00	1.181E-04	1.004E-04
8	4.761E-02	0.00	4.533E-02	0.00	2.759E-02	0.00	3.515E-02	0.00	1.942E-02	0.00	1.155E-04	9.823E-05
9	4.029E-02	0.00	3.662E-02	0.00	2.297E-02	0.00	2.841E-02	0.00	1.688E-02	0.00	1.148E-04	9.763E-05
10	3.265E-02	0.00	3.078E-02	0.00	1.810E-02	0.00	2.249E-02	0.00	1.535E-02	0.00	1.110E-04	9.440E-05
11	2.659E-02	0.00	2.541E-02	0.00	1.663E-02	0.00	1.983E-02	0.00	1.535E-02	0.00	1.052E-04	9.026E-05
12	2.119E-02	0.00	2.054E-02	0.00	1.610E-02	0.00	2.040E-02	0.00	1.533E-02	0.00	1.053E-04	8.953E-05
13	1.748E-02	0.00	1.618E-02	0.00	1.592E-02	0.00	1.960E-02	0.00	1.493E-02	0.00	1.037E-04	8.818E-05
14	1.432E-02	0.00	1.432E-02	0.00	1.592E-02	0.00	2.040E-02	0.00	1.538E-02	0.00	9.858E-05	8.382E-05
15	1.043E-02	0.00	1.495E-02	0.00	1.539E-02	0.00	2.029E-02	0.00	1.521E-02	0.00	9.457E-05	8.041E-05
16	7.939E-03	0.00	1.459E-02	0.00	1.498E-02	0.00	1.937E-02	0.00	1.502E-02	0.00	9.940E-05	8.940E-05
17	6.200E-03	0.00	1.471E-02	0.00	1.471E-02	0.00	2.021E-02	0.00	1.463E-02	0.00	9.655E-05	7.367E-05
18	6.625E-03	0.00	1.455E-02	0.00	1.471E-02	0.00	2.000E-02	0.00	1.433E-02	0.00	9.475E-05	7.205E-05
19	7.963E-03	0.00	1.469E-02	0.00	1.422E-02	0.00	1.993E-02	0.00	1.477E-02	0.00	7.660E-05	6.513E-05
20	9.345E-03	0.00	1.527E-02	0.00	1.382E-02	0.00	2.023E-02	0.00	1.365E-02	0.00	5.039E-05	5.135E-05
21	1.110E-02	0.00	1.565E-02	0.00	1.413E-02	0.00	1.972E-02	0.00	1.351E-02	0.00	4.405E-05	3.746E-05
22	1.301E-02	0.00	1.651E-02	0.00	1.415E-02	0.00	2.011E-02	0.00	1.309E-02	0.00	3.251E-05	2.764E-05
23	1.438E-02	0.00	1.707E-02	0.00	1.410E-02	0.00	2.011E-02	0.00	1.259E-02	0.00	2.465E-05	2.097E-05
24	1.546E-02	0.00	1.873E-02	0.00	1.402E-02	0.00	1.995E-02	0.00	1.283E-02	0.00	1.919E-05	1.532E-05
25	1.683E-02	0.00	1.864E-02	0.00	1.450E-02	0.00	2.112E-02	0.00	1.201E-02	0.00	1.332E-05	1.157E-05
30	2.001E-02	0.00	2.187E-02	0.00	1.396E-02	0.00	2.375E-02	0.00	1.263E-02	0.00	9.360E-05	7.108E-05
35	1.529E-02	0.00	1.693E-02	0.00	9.152E-03	0.00	3.134E-02	0.00	7.641E-03	0.00	2.387E-05	2.029E-05
40	1.252E-02	0.00	1.441E-02	0.00	7.863E-03	0.00	1.571E-02	0.00	6.093E-03	0.00	0.0	0.0
45	9.275E-03	0.00	1.105E-02	0.00	6.399E-03	0.00	1.223E-02	0.00	4.464E-03	0.00	0.0	0.0
50	6.016E-03	0.00	7.416E-03	0.00	4.424E-03	0.00	8.030E-03	0.00	3.160E-03	0.00	0.0	0.0
55	3.646E-04	0.00	1.113E-03	0.00	2.814E-04	0.00	1.136E-03	0.00	7.849E-04	0.00	0.0	0.0
60	1.739E-05	0.00	1.751E-05	0.00	1.751E-05	0.00	2.007E-05	0.00	1.928E-05	0.00	0.0	0.0

WAVELENGTH = 10.476239 MICROMETERS		FREQUENCY = 954.541 WAVENUMBERS												
HT (KM)		TROPICAL				MIDLATITUDE SUMMER				MIDLATITUDE WINTER				
		$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	
		SUBARCTIC SUMMER				SUBARCTIC WINTER				CLEAR				
		AEROSOL				HAZY								
		$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	
0	1	5.530E-01	0.00	3.445E-01	0.00	8.169E-02	0.00	1.958E-01	0.00	4.519E-02	0.00	5.471E-03	4.653E-03	
0	2	4.123E-01	0.00	2.628E-01	0.00	7.295E-02	0.00	1.558E-01	0.00	4.588E-02	0.00	3.734E-03	3.176E-03	
1	1	2.438E-01	0.00	1.579E-01	0.00	6.053E-02	0.00	1.061E-01	0.00	4.383E-02	0.00	1.529E-03	1.386E-03	
2	3	1.398E-01	0.00	1.017E-01	0.00	5.177E-02	0.00	7.824E-02	0.00	3.900E-02	0.00	5.952E-04	5.913E-04	
3	4	8.610E-02	0.00	7.359E-02	0.00	4.359E-02	0.00	6.163E-02	0.00	3.435E-02	0.00	3.229E-04	2.746E-04	
4	5	6.441E-02	0.00	5.693E-02	0.00	3.633E-02	0.00	4.921E-02	0.00	2.839E-02	0.00	2.010E-04	1.710E-04	
5	6	5.296E-02	0.00	4.823E-02	0.00	3.026E-02	0.00	4.105E-02	0.00	2.312E-02	0.00	1.469E-04	1.249E-04	
6	7	4.359E-02	0.00	4.165E-02	0.00	2.540E-02	0.00	3.257E-02	0.00	1.861E-02	0.00	1.183E-04	1.006E-04	
7	8	3.612E-02	0.00	3.439E-02	0.00	2.100E-02	0.00	2.673E-02	0.00	1.484E-02	0.00	1.158E-04	9.845E-05	
8	9	3.053E-02	0.00	2.780E-02	0.00	1.752E-02	0.00	2.163E-02	0.00	1.245E-02	0.00	1.150E-04	9.785E-05	
9	10	2.668E-02	0.00	2.340E-02	0.00	1.384E-02	0.00	1.715E-02	0.00	1.163E-02	0.00	1.112E-04	9.462E-05	
10	11	2.020E-02	0.00	1.935E-02	0.00	1.273E-02	0.00	1.514E-02	0.00	1.169E-02	0.00	1.064E-04	9.047E-05	
11	12	1.616E-02	0.00	1.568E-02	0.00	1.233E-02	0.00	1.558E-02	0.00	1.167E-02	0.00	1.055E-04	8.974E-05	
12	13	1.336E-02	0.00	1.295E-02	0.00	1.219E-02	0.00	1.497E-02	0.00	1.145E-02	0.00	1.039E-04	8.839E-05	
13	14	9.829E-03	0.00	1.098E-02	0.00	1.220E-02	0.00	1.558E-02	0.00	1.193E-02	0.00	9.877E-05	8.401E-05	
14	15	8.028E-03	0.00	1.146E-02	0.00	1.178E-02	0.00	1.549E-02	0.00	1.165E-02	0.00	9.475E-05	8.059E-05	
15	16	6.133E-03	0.00	1.118E-02	0.00	1.148E-02	0.00	1.479E-02	0.00	1.153E-02	0.00	9.957E-05	7.618E-05	
16	17	4.807E-03	0.00	1.102E-02	0.00	1.127E-02	0.00	1.543E-02	0.00	1.125E-02	0.00	9.682E-05	7.384E-05	
17	18	5.128E-03	0.00	1.116E-02	0.00	1.128E-02	0.00	1.522E-02	0.00	1.099E-02	0.00	9.490E-05	7.222E-05	
18	19	6.142E-03	0.00	1.126E-02	0.00	1.090E-02	0.00	1.522E-02	0.00	1.083E-02	0.00	7.575E-05	6.528E-05	
19	20	7.202E-03	0.00	1.159E-02	0.00	1.060E-02	0.00	1.544E-02	0.00	1.047E-02	0.00	5.051E-05	5.147E-05	
20	21	8.538E-03	0.00	1.198E-02	0.00	1.084E-02	0.00	1.506E-02	0.00	1.037E-02	0.00	4.415E-05	3.755E-05	
21	22	9.989E-03	0.00	1.263E-02	0.00	1.085E-02	0.00	1.535E-02	0.00	1.005E-02	0.00	3.258E-05	2.771E-05	
22	23	1.103E-02	0.00	1.365E-02	0.00	1.082E-02	0.00	1.535E-02	0.00	9.661E-03	0.00	2.471E-05	2.102E-05	
23	24	1.184E-02	0.00	1.432E-02	0.00	1.112E-02	0.00	1.611E-02	0.00	9.854E-03	0.00	1.923E-05	1.636E-05	
24	25	1.288E-02	0.00	1.426E-02	0.00	1.112E-02	0.00	1.611E-02	0.00	9.223E-03	0.00	1.570E-05	1.335E-05	
25	30	1.527E-02	0.00	1.667E-02	0.00	1.070E-02	0.00	1.808E-02	0.00	9.692E-03	0.00	9.376E-05	7.124E-05	
30	35	1.256E-02	0.00	1.390E-02	0.00	7.602E-03	0.00	2.423E-02	0.00	6.375E-03	0.00	2.391E-05	2.034E-05	
35	40	1.055E-02	0.00	1.211E-02	0.00	6.681E-03	0.00	1.319E-02	0.00	5.181E-03	0.00	0.00	0.00	
40	45	7.917E-03	0.00	9.403E-03	0.00	5.491E-03	0.00	1.040E-02	0.00	3.842E-03	0.00	0.00	0.00	
45	50	5.166E-03	0.00	6.353E-03	0.00	3.811E-03	0.00	6.872E-03	0.00	2.733E-03	0.00	0.00	0.00	
50	70	8.146E-04	0.00	9.669E-04	0.00	2.447E-04	0.00	9.870E-04	0.00	6.813E-04	0.00	0.00	0.00	
70	100	1.537E-05	0.00	1.749E-05	0.00	1.544E-04	0.00	1.776E-05	0.00	1.695E-05	0.00	0.00	0.00	

WAVELENGTH = 10.440526 MICROMETERS

FREQUENCY = 957.797 WAVENUMBERS

HT (KM)	TROPICAL		MIDLATITUDE SUMMER		MIDLATITUDE WINTER		SUBARCTIC SUMMER		SUBARCTIC WINTER		CLEAR		AEROSOL		HAZY	
	$k_p(km^{-1})$	$\sigma_m(km^{-1})$	$k_p(km^{-1})$	$\sigma_m(km^{-1})$	$k_p(km^{-1})$	$\sigma_m(km^{-1})$	$k_p(km^{-1})$	$\sigma_m(km^{-1})$	$k_p(km^{-1})$	$\sigma_m(km^{-1})$	$k_p(km^{-1})$	$\sigma_m(km^{-1})$	$k_p(km^{-1})$	$\sigma_m(km^{-1})$	$k_p(km^{-1})$	$\sigma_m(km^{-1})$
0	4.840E-01	0.00	2.869E-01	0.00	4.979E-02	0.00	1.488E-01	0.00	2.359E-02	0.00	5.491E-03	4.675E-03	2.675E-02	2.279E-02	2.675E-02	2.279E-02
1	3.510E-01	0.00	2.099E-01	0.00	4.280E-02	0.00	1.124E-01	0.00	2.375E-02	0.00	3.748E-03	3.190E-03	1.637E-02	1.435E-02	1.637E-02	1.435E-02
2	1.931E-01	0.00	1.127E-01	0.00	3.308E-02	0.00	6.893E-02	0.00	2.219E-02	0.00	1.535E-03	1.392E-03	5.427E-03	4.520E-03	5.427E-03	4.520E-03
3	9.848E-02	0.00	6.249E-02	0.00	2.668E-02	0.00	4.595E-02	0.00	1.921E-02	0.00	5.978E-04	5.940E-04	1.835E-03	1.505E-03	1.835E-03	1.505E-03
4	4.858E-02	0.00	3.973E-02	0.00	2.135E-02	0.00	3.291E-02	0.00	1.649E-02	0.00	3.241E-04	2.759E-04	8.235E-04	7.010E-04	8.235E-04	7.010E-04
5	3.287E-02	0.00	2.829E-02	0.00	1.726E-02	0.00	2.464E-02	0.00	1.335E-02	0.00	2.018E-04	1.718E-04	3.008E-04	2.550E-04	3.008E-04	2.550E-04
6	2.580E-02	0.00	2.299E-02	0.00	1.416E-02	0.00	1.969E-02	0.00	1.077E-02	0.00	1.474E-04	1.255E-04	1.474E-04	1.255E-04	1.474E-04	1.255E-04
7	2.059E-02	0.00	1.949E-02	0.00	1.179E-02	0.00	1.531E-02	0.00	8.653E-03	0.00	1.187E-04	1.011E-04	1.187E-04	1.011E-04	1.187E-04	1.011E-04
8	1.680E-02	0.00	1.596E-02	0.00	9.716E-03	0.00	1.243E-02	0.00	6.895E-03	0.00	1.162E-04	9.850E-05	1.162E-04	9.850E-05	1.162E-04	9.850E-05
9	1.411E-02	0.00	1.286E-02	0.00	8.111E-03	0.00	1.001E-02	0.00	5.799E-03	0.00	1.155E-04	9.830E-05	1.155E-04	9.830E-05	1.155E-04	9.830E-05
10	1.138E-02	0.00	1.081E-02	0.00	6.422E-03	0.00	7.941E-03	0.00	5.443E-03	0.00	1.117E-04	9.505E-05	1.117E-04	9.505E-05	1.117E-04	9.505E-05
11	9.327E-03	0.00	8.946E-03	0.00	5.975E-03	0.00	7.016E-03	0.00	5.436E-03	0.00	1.069E-04	9.088E-05	1.069E-04	9.088E-05	1.069E-04	9.088E-05
12	7.481E-03	0.00	7.264E-03	0.00	5.730E-03	0.00	7.216E-03	0.00	5.429E-03	0.00	1.059E-04	9.015E-05	1.059E-04	9.015E-05	1.059E-04	9.015E-05
13	6.204E-03	0.00	5.758E-03	0.00	5.667E-03	0.00	6.930E-03	0.00	5.322E-03	0.00	1.043E-04	8.878E-05	1.043E-04	8.878E-05	1.043E-04	8.878E-05
14	4.583E-03	0.00	5.111E-03	0.00	5.671E-03	0.00	7.213E-03	0.00	5.552E-03	0.00	9.914E-05	8.439E-05	9.914E-05	8.439E-05	9.914E-05	8.439E-05
15	3.759E-03	0.00	5.334E-03	0.00	5.479E-03	0.00	7.174E-03	0.00	5.419E-03	0.00	9.511E-05	8.096E-05	9.511E-05	8.096E-05	9.511E-05	8.096E-05
16	2.885E-03	0.00	5.206E-03	0.00	5.340E-03	0.00	6.847E-03	0.00	5.355E-03	0.00	8.990E-05	7.653E-05	8.990E-05	7.653E-05	8.990E-05	7.653E-05
17	2.269E-03	0.00	5.129E-03	0.00	5.246E-03	0.00	7.144E-03	0.00	5.242E-03	0.00	9.714E-05	7.418E-05	9.714E-05	7.418E-05	9.714E-05	7.418E-05
18	2.418E-03	0.00	5.193E-03	0.00	5.250E-03	0.00	7.068E-03	0.00	5.115E-03	0.00	9.522E-05	7.254E-05	9.522E-05	7.254E-05	9.522E-05	7.254E-05
19	2.891E-03	0.00	5.238E-03	0.00	5.075E-03	0.00	7.047E-03	0.00	5.060E-03	0.00	7.703E-05	6.557E-05	7.703E-05	6.557E-05	7.703E-05	6.557E-05
20	3.777E-03	0.00	5.439E-03	0.00	4.937E-03	0.00	7.150E-03	0.00	4.872E-03	0.00	5.074E-05	5.170E-05	5.074E-05	5.170E-05	5.074E-05	5.170E-05
21	3.992E-03	0.00	5.570E-03	0.00	5.066E-03	0.00	6.972E-03	0.00	4.832E-03	0.00	4.431E-05	3.772E-05	4.431E-05	3.772E-05	4.431E-05	3.772E-05
22	4.659E-03	0.00	5.868E-03	0.00	5.054E-03	0.00	7.108E-03	0.00	4.685E-03	0.00	3.270E-05	2.783E-05	3.270E-05	2.783E-05	3.270E-05	2.783E-05
23	5.133E-03	0.00	6.059E-03	0.00	5.037E-03	0.00	7.109E-03	0.00	4.507E-03	0.00	2.490E-05	2.111E-05	2.490E-05	2.111E-05	2.490E-05	2.111E-05
24	5.506E-03	0.00	6.639E-03	0.00	5.005E-03	0.00	7.048E-03	0.00	4.592E-03	0.00	1.930E-05	1.643E-05	1.930E-05	1.643E-05	1.930E-05	1.643E-05
25	5.981E-03	0.00	6.599E-03	0.00	5.177E-03	0.00	7.451E-03	0.00	4.305E-03	0.00	1.575E-05	1.341E-05	1.575E-05	1.341E-05	1.575E-05	1.341E-05
30	7.064E-03	0.00	7.701E-03	0.00	4.979E-03	0.00	8.342E-03	0.00	4.519E-03	0.00	9.407E-05	7.156E-05	9.407E-05	7.156E-05	9.407E-05	7.156E-05
35	6.431E-03	0.00	7.080E-03	0.00	3.938E-03	0.00	1.112E-02	0.00	3.325E-03	0.00	2.400E-05	2.400E-05	2.400E-05	2.400E-05	2.400E-05	2.400E-05
40	5.612E-03	0.00	6.409E-03	0.00	3.593E-03	0.00	6.970E-03	0.00	2.805E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	4.302E-03	0.00	5.089E-03	0.00	3.085E-03	0.00	5.616E-03	0.00	2.123E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	2.838E-03	0.00	3.478E-03	0.00	2.105E-03	0.00	3.757E-03	0.00	1.517E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	4.566E-04	0.00	5.409E-04	0.00	1.371E-04	0.00	5.521E-04	0.00	3.817E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	9.819E-06	0.00	1.004E-05	0.00	8.810E-05	0.00	1.020E-05	0.00	9.647E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00

WAVELENGTH = 10.423312 MICROMETERS																
FREQUENCY = 959.398 WAVENUMBERS																
HT(NH)	TROPICAL		MIDLATITUDE SUMMER		MIDLATITUDE WINTER		SUBARCTIC SUMMER		SUBARCTIC WINTER		CLEAR		AEROSOL		HAZY	
	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$
0	9.778E-01	0.00	5.667E-01	0.00	7.534E-02	0.00	2.818E-01	0.00	2.819E-02	0.00	5.501E-03	4.685E-03	2.631E-02	2.233E-02		
0	7.166E-01	0.00	4.235E-01	0.00	6.317E-02	0.00	2.110E-01	0.00	2.866E-02	0.00	3.755E-03	3.197E-03	1.690E-02	1.439E-02		
1	3.942E-01	0.00	2.292E-01	0.00	4.595E-02	0.00	1.221E-01	0.00	2.663E-02	0.00	1.639E-03	1.395E-03	5.437E-03	4.530E-03		
2	1.962E-01	0.00	1.180E-01	0.00	3.462E-02	0.00	7.408E-02	0.00	2.232E-02	0.00	5.991E-04	5.953E-04	1.839E-03	1.509E-03		
3	8.727E-02	0.00	6.405E-02	0.00	2.559E-02	0.00	4.737E-02	0.00	1.849E-02	0.00	3.247E-04	2.765E-04	8.250E-04	7.024E-04		
4	4.875E-02	0.00	3.883E-02	0.00	1.943E-02	0.00	3.172E-02	0.00	1.453E-02	0.00	2.022E-04	1.721E-04	3.013E-04	2.566E-04		
5	3.341E-02	0.00	2.789E-02	0.00	1.543E-02	0.00	2.299E-02	0.00	1.153E-02	0.00	1.477E-04	1.257E-04	1.477E-04	1.257E-04		
6	2.411E-02	0.00	2.212E-02	0.00	1.262E-02	0.00	1.694E-02	0.00	9.209E-03	0.00	1.190E-04	1.013E-04	1.190E-04	1.013E-04		
7	1.858E-02	0.00	1.746E-02	0.00	1.033E-02	0.00	1.338E-02	0.00	7.325E-03	0.00	1.164E-04	9.912E-05	1.164E-04	9.912E-05		
8	1.519E-02	0.00	1.382E-02	0.00	8.613E-03	0.00	1.066E-02	0.00	6.161E-03	0.00	1.157E-04	9.851E-05	1.157E-04	9.851E-05		
9	1.212E-02	0.00	1.152E-02	0.00	6.822E-03	0.00	8.434E-03	0.00	5.786E-03	0.00	1.119E-04	9.526E-05	1.119E-04	9.526E-05		
10	9.902E-03	0.00	9.503E-03	0.00	6.285E-03	0.00	7.450E-03	0.00	5.779E-03	0.00	1.070E-04	9.108E-05	1.070E-04	9.108E-05		
11	7.940E-03	0.00	7.712E-03	0.00	6.090E-03	0.00	7.662E-03	0.00	5.771E-03	0.00	1.061E-04	9.034E-05	1.061E-04	9.034E-05		
12	6.589E-03	0.00	6.118E-03	0.00	6.023E-03	0.00	7.358E-03	0.00	5.658E-03	0.00	1.045E-04	8.898E-05	1.045E-04	8.898E-05		
13	4.873E-03	0.00	5.433E-03	0.00	6.027E-03	0.00	7.658E-03	0.00	5.903E-03	0.00	9.932E-05	8.457E-05	9.932E-05	8.457E-05		
14	4.002E-03	0.00	5.670E-03	0.00	5.824E-03	0.00	7.616E-03	0.00	5.761E-03	0.00	9.528E-05	8.114E-05	9.528E-05	8.114E-05		
15	3.075E-03	0.00	5.534E-03	0.00	5.676E-03	0.00	7.269E-03	0.00	5.694E-03	0.00	9.006E-05	7.669E-05	9.006E-05	7.669E-05		
16	2.428E-03	0.00	5.452E-03	0.00	5.577E-03	0.00	7.584E-03	0.00	5.735E-03	0.00	8.730E-05	7.434E-05	8.730E-05	7.434E-05		
17	2.579E-03	0.00	5.520E-03	0.00	5.581E-03	0.00	7.504E-03	0.00	5.435E-03	0.00	8.537E-05	7.270E-05	8.537E-05	7.270E-05		
18	3.081E-03	0.00	5.568E-03	0.00	5.396E-03	0.00	7.480E-03	0.00	5.381E-03	0.00	7.717E-05	6.572E-05	7.717E-05	6.572E-05		
19	3.596E-03	0.00	5.780E-03	0.00	5.249E-03	0.00	7.590E-03	0.00	5.185E-03	0.00	5.085E-05	5.181E-05	5.085E-05	5.181E-05		
20	4.249E-03	0.00	5.918E-03	0.00	5.365E-03	0.00	7.401E-03	0.00	5.135E-03	0.00	4.439E-05	3.780E-05	4.439E-05	3.780E-05		
21	4.954E-03	0.00	6.234E-03	0.00	5.373E-03	0.00	7.545E-03	0.00	4.983E-03	0.00	3.276E-05	2.789E-05	3.276E-05	2.789E-05		
22	5.456E-03	0.00	6.435E-03	0.00	5.355E-03	0.00	7.544E-03	0.00	4.793E-03	0.00	2.485E-05	2.116E-05	2.485E-05	2.116E-05		
23	5.851E-03	0.00	7.049E-03	0.00	5.322E-03	0.00	7.480E-03	0.00	4.891E-03	0.00	1.934E-05	1.647E-05	1.934E-05	1.647E-05		
24	6.353E-03	0.00	7.005E-03	0.00	5.504E-03	0.00	7.906E-03	0.00	4.802E-03	0.00	1.579E-05	1.344E-05	1.579E-05	1.344E-05		
25	7.495E-03	0.00	8.168E-03	0.00	5.292E-03	0.00	8.845E-03	0.00	4.803E-03	0.00	9.422E-06	7.172E-06	9.422E-06	7.172E-06		
30	4.448E-03	0.00	4.971E-03	0.00	2.704E-03	0.00	1.178E-02	0.00	2.251E-03	0.00	2.405E-06	2.048E-06	2.405E-06	2.048E-06		
35	3.404E-03	0.00	3.927E-03	0.00	2.153E-03	0.00	4.271E-03	0.00	1.668E-03	0.00	0.00	0.00	0.00	0.00		
40	2.415E-03	0.00	2.873E-03	0.00	1.671E-03	0.00	3.171E-03	0.00	1.174E-03	0.00	0.00	0.00	0.00	0.00		
45	1.529E-03	0.00	1.880E-03	0.00	1.126E-03	0.00	2.032E-03	0.00	8.090E-04	0.00	0.00	0.00	0.00	0.00		
50	2.402E-04	0.00	2.850E-04	0.00	7.181E-05	0.00	2.912E-04	0.00	1.993E-04	0.00	0.00	0.00	0.00	0.00		
70	4.573E-06	0.00	5.206E-06	0.00	4.574E-05	0.00	5.292E-06	0.00	4.991E-05	0.00	0.00	0.00	0.00	0.00		

WAVELENGTH = 10.397940 MICROMETERS														
FREQUENCY = 961.729 WAVENUMBERS														
HT (KM)	TROPICAL		MIDLATITUDE		MIDLATITUDE		SUBARCTIC		SUBARCTIC		HAZY			
	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}	k_m^{-1}	σ_m^{-1}				
0	4.564E-01	0.00	2.629E-01	0.00	3.473E-02	0.00	1.282E-01	0.00	1.298E-02	0.00	5.515E-03	4.700E-03	2.638E-02	2.230E-02
1	3.256E-01	0.00	1.871E-01	0.00	2.842E-02	0.00	9.297E-02	0.00	1.299E-02	0.00	3.765E-03	3.209E-03	1.695E-02	1.444E-02
2	1.709E-01	0.00	9.227E-02	0.00	1.979E-02	0.00	5.160E-02	0.00	1.153E-02	0.00	1.643E-03	1.400E-03	5.451E-03	4.545E-03
3	7.600E-02	0.00	4.407E-02	0.00	1.438E-02	0.00	3.053E-02	0.00	9.403E-03	0.00	7.009E-04	5.972E-04	1.834E-03	1.513E-03
4	3.089E-02	0.00	2.343E-02	0.00	1.037E-02	0.00	1.896E-02	0.00	7.573E-03	0.00	3.255E-04	2.774E-04	9.272E-04	7.089E-04
5	1.756E-02	0.00	1.436E-02	0.00	7.745E-03	0.00	1.598E-02	0.00	5.823E-03	0.00	2.027E-04	1.727E-04	3.021E-04	2.574E-04
6	1.248E-02	0.00	1.055E-02	0.00	6.103E-03	0.00	9.095E-03	0.00	4.542E-03	0.00	1.491E-04	1.261E-04	1.431E-04	1.251E-04
7	9.213E-03	0.00	8.501E-03	0.00	4.930E-03	0.00	6.883E-03	0.00	3.593E-03	0.00	1.193E-04	1.016E-04	1.193E-04	1.015E-04
8	7.178E-03	0.00	6.762E-03	0.00	4.001E-03	0.00	5.236E-03	0.00	2.833E-03	0.00	1.167E-04	9.943E-05	1.157E-04	9.943E-05
9	5.880E-03	0.00	5.356E-03	0.00	3.322E-03	0.00	4.132E-03	0.00	2.374E-03	0.00	1.150E-04	9.883E-05	1.150E-04	9.883E-05
10	4.682E-03	0.00	4.458E-03	0.00	2.627E-03	0.00	3.252E-03	0.00	2.221E-03	0.00	1.122E-04	9.556E-05	1.122E-04	9.556E-05
11	3.814E-03	0.00	3.665E-03	0.00	2.418E-03	0.00	2.847E-03	0.00	2.225E-03	0.00	1.072E-04	9.137E-05	1.072E-04	9.137E-05
12	3.053E-03	0.00	2.967E-03	0.00	2.342E-03	0.00	2.945E-03	0.00	2.218E-03	0.00	1.064E-04	9.063E-05	1.054E-04	9.053E-05
13	2.533E-03	0.00	2.352E-03	0.00	2.315E-03	0.00	2.827E-03	0.00	2.175E-03	0.00	1.048E-04	8.927E-05	1.048E-04	8.927E-05
14	1.874E-03	0.00	2.094E-03	0.00	2.316E-03	0.00	2.941E-03	0.00	2.269E-03	0.00	9.958E-05	8.485E-05	9.958E-05	8.485E-05
15	1.539E-03	0.00	2.179E-03	0.00	2.238E-03	0.00	2.925E-03	0.00	2.213E-03	0.00	9.553E-05	8.140E-05	9.553E-05	8.140E-05
16	1.183E-03	0.00	2.127E-03	0.00	2.181E-03	0.00	2.791E-03	0.00	2.187E-03	0.00	9.030E-05	7.694E-05	9.030E-05	7.594E-05
17	9.317E-04	0.00	2.095E-03	0.00	2.143E-03	0.00	2.912E-03	0.00	2.141E-03	0.00	9.753E-05	7.458E-05	9.753E-05	7.458E-05
18	9.928E-04	0.00	2.121E-03	0.00	2.144E-03	0.00	2.981E-03	0.00	2.089E-03	0.00	9.540E-05	7.293E-05	9.550E-05	7.293E-05
19	1.186E-03	0.00	2.139E-03	0.00	2.073E-03	0.00	2.872E-03	0.00	2.063E-03	0.00	7.738E-05	6.593E-05	7.738E-05	6.593E-05
20	1.333E-03	0.00	2.221E-03	0.00	2.017E-03	0.00	2.914E-03	0.00	1.993E-03	0.00	5.101E-05	5.194E-05	5.101E-05	5.194E-05
21	1.634E-03	0.00	2.274E-03	0.00	2.042E-03	0.00	2.842E-03	0.00	1.973E-03	0.00	4.451E-05	3.792E-05	4.451E-05	3.792E-05
22	1.904E-03	0.00	2.395E-03	0.00	2.045E-03	0.00	2.897E-03	0.00	1.913E-03	0.00	3.284E-05	2.794E-05	3.284E-05	2.794E-05
23	2.066E-03	0.00	2.472E-03	0.00	2.058E-03	0.00	2.897E-03	0.00	1.843E-03	0.00	2.491E-05	2.123E-05	2.491E-05	2.123E-05
24	2.248E-03	0.00	2.708E-03	0.00	2.045E-03	0.00	2.872E-03	0.00	1.880E-03	0.00	1.938E-05	1.652E-05	1.938E-05	1.652E-05
25	2.441E-03	0.00	2.690E-03	0.00	2.115E-03	0.00	3.035E-03	0.00	1.760E-03	0.00	1.582E-05	1.348E-05	1.582E-05	1.348E-05
26	2.878E-03	0.00	3.136E-03	0.00	2.034E-03	0.00	3.395E-03	0.00	1.842E-03	0.00	9.445E-06	7.195E-06	9.445E-06	7.195E-06
27	2.050E-03	0.00	2.278E-03	0.00	1.252E-03	0.00	4.519E-03	0.00	1.049E-03	0.00	2.411E-06	2.054E-06	2.411E-06	2.054E-06
28	1.911E-03	0.00	1.884E-03	0.00	1.042E-03	0.00	2.049E-03	0.00	8.101E-04	0.00	0.00	0.00	0.00	0.00
29	1.391E-03	0.00	1.414E-03	0.00	8.274E-04	0.00	1.560E-03	0.00	5.927E-04	0.00	0.00	0.00	0.00	0.00
30	7.635E-04	0.00	9.372E-04	0.00	5.616E-04	0.00	1.013E-03	0.00	4.057E-04	0.00	0.00	0.00	0.00	0.00
31	1.211E-04	0.00	1.436E-04	0.00	3.623E-05	0.00	1.666E-04	0.00	1.005E-04	0.00	0.00	0.00	0.00	0.00
32	2.323E-06	0.00	2.645E-06	0.00	2.322E-05	0.00	2.688E-06	0.00	2.533E-05	0.00	0.00	0.00	0.00	0.00

10.381413 MICROMETERS												
WAVELENGTH = 10.381413 MICROMETERS												
FREQUENCY = 963.260 WAVENUMBERS												
HT(KM)	TROPICAL		MIDLATITUDE		MIDLATITUDE		SUBARCTIC		SUBARCTIC		HAZY	
	SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER	
	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$
0	4.610E-01	0.00	2.686E-01	0.00	4.018E-02	0.00	1.345E-01	0.00	1.702E-02	0.00	5.525E-03	4.710E-03
1	3.311E-01	0.00	1.934E-01	0.00	3.370E-02	0.00	9.919E-02	0.00	1.703E-02	0.00	3.771E-03	3.214E-03
2	1.773E-01	0.00	9.890E-02	0.00	2.478E-02	0.00	5.759E-02	0.00	1.551E-02	0.00	1.546E-03	1.403E-03
3	8.333E-02	0.00	5.068E-02	0.00	1.906E-02	0.00	3.619E-02	0.00	1.318E-02	0.00	7.022E-04	5.985E-04
4	3.730E-02	0.00	2.954E-02	0.00	1.460E-02	0.00	2.422E-02	0.00	1.103E-02	0.00	3.261E-04	2.779E-04
5	2.338E-02	0.00	1.968E-02	0.00	1.144E-02	0.00	1.720E-02	0.00	8.755E-03	0.00	2.030E-04	1.731E-04
6	1.760E-02	0.00	1.535E-02	0.00	9.237E-03	0.00	1.319E-02	0.00	6.972E-03	0.00	1.483E-04	1.264E-04
7	1.361E-02	0.00	1.276E-02	0.00	7.602E-03	0.00	1.003E-02	0.00	5.570E-03	0.00	1.195E-04	1.018E-04
8	1.091E-02	0.00	1.034E-02	0.00	6.233E-03	0.00	8.038E-03	0.00	4.423E-03	0.00	1.169E-04	9.964E-05
9	9.083E-03	0.00	8.279E-03	0.00	5.195E-03	0.00	6.427E-03	0.00	3.716E-03	0.00	1.102E-04	9.904E-05
10	7.294E-03	0.00	6.937E-03	0.00	4.114E-03	0.00	5.086E-03	0.00	3.489E-03	0.00	1.124E-04	9.576E-05
11	5.967E-03	0.00	5.729E-03	0.00	3.789E-03	0.00	4.492E-03	0.00	3.484E-03	0.00	1.074E-04	9.156E-05
12	4.785E-03	0.00	4.649E-03	0.00	3.672E-03	0.00	4.619E-03	0.00	3.480E-03	0.00	1.066E-04	9.082E-05
13	3.970E-03	0.00	3.687E-03	0.00	3.631E-03	0.00	4.435E-03	0.00	3.412E-03	0.00	1.050E-04	8.945E-05
14	2.936E-03	0.00	3.274E-03	0.00	3.633E-03	0.00	4.616E-03	0.00	3.559E-03	0.00	9.976E-05	8.502E-05
15	2.411E-03	0.00	3.417E-03	0.00	3.511E-03	0.00	4.591E-03	0.00	3.474E-03	0.00	9.570E-05	8.157E-05
16	1.852E-03	0.00	3.335E-03	0.00	3.421E-03	0.00	4.382E-03	0.00	3.434E-03	0.00	9.046E-05	7.710E-05
17	1.458E-03	0.00	3.285E-03	0.00	3.361E-03	0.00	4.572E-03	0.00	3.360E-03	0.00	8.768E-05	7.473E-05
18	1.554E-03	0.00	3.327E-03	0.00	3.364E-03	0.00	4.523E-03	0.00	3.279E-03	0.00	8.575E-05	7.309E-05
19	1.856E-03	0.00	3.355E-03	0.00	3.252E-03	0.00	4.509E-03	0.00	3.244E-03	0.00	7.751E-05	6.607E-05
20	2.167E-03	0.00	3.483E-03	0.00	3.163E-03	0.00	4.575E-03	0.00	3.126E-03	0.00	5.111E-05	5.209E-05
21	2.560E-03	0.00	3.566E-03	0.00	3.233E-03	0.00	4.460E-03	0.00	3.097E-03	0.00	4.459E-05	4.459E-05
22	2.985E-03	0.00	3.756E-03	0.00	3.238E-03	0.00	4.547E-03	0.00	3.003E-03	0.00	3.290E-05	3.290E-05
23	3.287E-03	0.00	3.877E-03	0.00	3.236E-03	0.00	4.545E-03	0.00	2.888E-03	0.00	2.496E-05	2.127E-05
24	3.525E-03	0.00	4.247E-03	0.00	3.207E-03	0.00	4.507E-03	0.00	2.947E-03	0.00	1.942E-05	1.655E-05
25	3.828E-03	0.00	4.221E-03	0.00	3.166E-03	0.00	4.763E-03	0.00	2.759E-03	0.00	1.585E-05	1.351E-05
26	4.515E-03	0.00	4.921E-03	0.00	3.188E-03	0.00	5.328E-03	0.00	2.894E-03	0.00	9.460E-06	7.210E-06
27	4.481E-03	0.00	4.909E-03	0.00	2.759E-03	0.00	7.094E-03	0.00	2.341E-03	0.00	2.415E-06	2.059E-06
28	4.077E-03	0.00	4.637E-03	0.00	2.629E-03	0.00	5.040E-03	0.00	2.062E-03	0.00	0.00	0.00
29	3.211E-03	0.00	3.787E-03	0.00	2.258E-03	0.00	4.177E-03	0.00	1.600E-03	0.00	0.00	0.00
30	2.151E-03	0.00	2.630E-03	0.00	1.601E-03	0.00	2.833E-03	0.00	1.157E-03	0.00	0.00	0.00
31	3.507E-04	0.00	4.150E-04	0.00	1.254E-04	0.00	4.234E-04	0.00	2.937E-04	0.00	0.00	0.00
32	5.859E-06	0.00	7.809E-06	0.00	6.860E-06	0.00	7.937E-06	0.00	7.485E-06	0.00	0.00	0.00

WAVELENGTH = 10.365218 MICROMETERS

FREQUENCY = 964.765 WAVELENGTHS

HT(M)	TROPICAL		MIDLATITUDE		SUBARCTIC		SUBARCTIC		WINTER		CLEAR		AEROSOL		HAZY	
	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$
0	4.781E-01	0.00	2.041E-01	0.00	5.021E-02	0.00	1.481E-01	0.00	2.403E-02	0.00	5.533E-03	4.715E-03	2.697E-02	2.300E-02		
1	3.472E-01	0.00	2.083E-01	0.00	4.326E-02	0.00	1.122E-01	0.00	2.423E-02	0.00	3.779E-03	3.221E-03	1.701E-02	1.450E-02		
2	1.917E-01	0.00	1.125E-01	0.00	3.360E-02	0.00	6.921E-02	0.00	2.267E-02	0.00	1.549E-03	1.406E-03	5.470E-03	4.554E-03		
3	7.651E-02	0.00	6.295E-02	0.00	2.720E-02	0.00	4.633E-02	0.00	1.547E-02	0.00	7.034E-04	5.997E-04	1.900E-03	1.520E-03		
4	4.921E-02	0.00	4.038E-02	0.00	2.187E-02	0.00	3.388E-02	0.00	1.542E-02	0.00	3.267E-04	2.785E-04	3.311E-04	7.073E-04		
5	3.355E-02	0.00	2.893E-02	0.00	1.772E-02	0.00	2.520E-02	0.00	1.374E-02	0.00	2.034E-04	1.734E-04	3.032E-04	2.595E-04		
6	2.643E-02	0.00	2.360E-02	0.00	1.457E-02	0.00	2.020E-02	0.00	1.103E-02	0.00	1.485E-04	1.267E-04	1.436E-04	1.257E-04		
7	2.115E-02	0.00	2.004E-02	0.00	1.213E-02	0.00	1.573E-02	0.00	8.913E-03	0.00	1.197E-04	1.020E-04	1.137E-04	1.023E-04		
8	1.728E-02	0.00	1.642E-02	0.00	1.001E-02	0.00	1.279E-02	0.00	7.103E-03	0.00	1.171E-04	9.985E-05	1.171E-04	9.995E-05		
9	1.453E-02	0.00	1.324E-02	0.00	8.357E-03	0.00	1.031E-02	0.00	5.974E-03	0.00	1.164E-04	9.924E-05	1.154E-04	9.924E-05		
10	1.172E-02	0.00	1.113E-02	0.00	6.617E-03	0.00	8.181E-03	0.00	5.605E-03	0.00	1.125E-04	9.596E-05	1.125E-04	9.596E-05		
11	9.609E-03	0.00	9.216E-03	0.00	6.094E-03	0.00	7.228E-03	0.00	5.601E-03	0.00	1.076E-04	9.175E-05	1.076E-04	9.175E-05		
12	7.707E-03	0.00	7.484E-03	0.00	5.904E-03	0.00	7.435E-03	0.00	5.593E-03	0.00	1.057E-04	9.101E-05	1.057E-04	9.101E-05		
13	6.322E-03	0.00	5.932E-03	0.00	5.839E-03	0.00	7.141E-03	0.00	5.485E-03	0.00	1.051E-04	8.964E-05	1.051E-04	8.964E-05		
14	4.722E-03	0.00	5.266E-03	0.00	5.843E-03	0.00	7.323E-03	0.00	5.720E-03	0.00	9.993E-05	8.520E-05	9.993E-05	8.520E-05		
15	3.873E-03	0.00	5.496E-03	0.00	5.646E-03	0.00	7.392E-03	0.00	5.585E-03	0.00	9.586E-05	8.174E-05	9.586E-05	8.174E-05		
16	2.972E-03	0.00	5.365E-03	0.00	5.502E-03	0.00	7.055E-03	0.00	5.518E-03	0.00	9.062E-05	7.726E-05	9.062E-05	7.726E-05		
17	2.338E-03	0.00	5.285E-03	0.00	5.405E-03	0.00	7.361E-03	0.00	5.401E-03	0.00	8.783E-05	7.489E-05	8.783E-05	7.489E-05		
18	2.492E-03	0.00	5.351E-03	0.00	5.409E-03	0.00	7.293E-03	0.00	5.270E-03	0.00	8.590E-05	7.324E-05	8.590E-05	7.324E-05		
19	2.973E-03	0.00	5.397E-03	0.00	5.229E-03	0.00	7.260E-03	0.00	5.214E-03	0.00	7.753E-05	6.620E-05	7.753E-05	6.620E-05		
20	3.479E-03	0.00	5.604E-03	0.00	5.087E-03	0.00	7.367E-03	0.00	5.025E-03	0.00	5.122E-05	5.220E-05	5.122E-05	5.220E-05		
21	4.114E-03	0.00	5.739E-03	0.00	5.200E-03	0.00	7.184E-03	0.00	4.979E-03	0.00	4.466E-05	3.808E-05	4.466E-05	3.808E-05		
22	4.800E-03	0.00	6.045E-03	0.00	5.207E-03	0.00	7.324E-03	0.00	4.825E-03	0.00	3.295E-05	2.810E-05	3.295E-05	2.810E-05		
23	5.289E-03	0.00	6.243E-03	0.00	5.190E-03	0.00	7.262E-03	0.00	4.643E-03	0.00	2.500E-05	2.132E-05	2.500E-05	2.132E-05		
24	5.673E-03	0.00	6.840E-03	0.00	5.158E-03	0.00	7.262E-03	0.00	4.739E-03	0.00	1.946E-05	1.659E-05	1.946E-05	1.659E-05		
25	6.163E-03	0.00	6.799E-03	0.00	5.334E-03	0.00	7.677E-03	0.00	4.435E-03	0.00	1.588E-05	1.354E-05	1.588E-05	1.354E-05		
30	7.278E-03	0.00	7.934E-03	0.00	5.130E-03	0.00	8.595E-03	0.00	4.655E-03	0.00	9.474E-06	7.225E-06	9.474E-06	7.225E-06		
35	7.231E-03	0.00	7.924E-03	0.00	4.441E-03	0.00	1.146E-02	0.00	3.767E-03	0.00	2.419E-05	2.063E-05	2.419E-05	2.063E-05		
40	6.586E-03	0.00	7.493E-03	0.00	4.239E-03	0.00	8.147E-03	0.00	3.321E-03	0.00	0.00	0.00	0.00	0.00		
45	5.193E-03	0.00	6.128E-03	0.00	3.648E-03	0.00	6.761E-03	0.00	2.581E-03	0.00	0.00	0.00	0.00	0.00		
50	3.431E-03	0.00	4.259E-03	0.00	2.589E-03	0.00	4.599E-03	0.00	1.870E-03	0.00	0.00	0.00	0.00	0.00		
55	5.659E-04	0.00	6.699E-04	0.00	1.702E-04	0.00	6.836E-04	0.00	4.744E-04	0.00	0.00	0.00	0.00	0.00		
70	1.102E-05	0.00	1.254E-05	0.00	1.103E-04	0.00	1.275E-05	0.00	1.205E-05	0.00	0.00	0.00	0.00	0.00		

10.349321 MICROMETERS

966.247 WAVENUMBERS

WAVELENGTH =

FREQUENCY #

HT (KM)	TROPICAL			MIDLATITUDE SUMMER			MIDLATITUDE WINTER			SUBARCTIC SUMMER			SUBARCTIC WINTER			CLEAR			AEROSOL			HAZY		
	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$		
0	5.187E-01	0.00	3.141E-01	0.00	6.143E-02	0.00	1.691E-01	0.00	3.075E-02	0.00	5.544E-03	4.729E-03	2.702E-02	2.304E-02										
0 - 1	3.802E-01	0.00	2.336E-01	0.00	5.351E-02	0.00	1.302E-01	0.00	3.107E-02	0.00	3.784E-03	3.228E-03	1.703E-02	1.453E-02										
1 - 2	2.148E-01	0.00	1.309E-01	0.00	4.242E-02	0.00	8.284E-02	0.00	2.927E-02	0.00	1.651E-03	1.408E-03	5.473E-03	4.674E-03										
2 - 3	1.132E-01	0.00	7.681E-02	0.00	3.496E-02	0.00	5.726E-02	0.00	2.560E-02	0.00	7.045E-04	6.009E-04	1.903E-03	1.623E-03										
3 - 4	6.167E-02	0.00	5.121E-02	0.00	2.854E-02	0.00	4.252E-02	0.00	2.250E-02	0.00	3.275E-04	2.791E-04	9.315E-04	7.092E-04										
4 - 5	4.333E-02	0.00	3.765E-02	0.00	2.334E-02	0.00	3.264E-02	0.00	1.814E-02	0.00	2.037E-04	1.738E-04	3.037E-04	2.590E-04										
5 - 6	3.360E-02	0.00	3.110E-02	0.00	1.927E-02	0.00	2.654E-02	0.00	1.468E-02	0.00	1.488E-04	1.269E-04	1.438E-04	1.259E-04										
6 - 7	2.794E-02	0.00	2.654E-02	0.00	1.610E-02	0.00	2.079E-02	0.00	1.181E-02	0.00	1.198E-04	1.023E-04	1.199E-04	1.023E-04										
7 - 8	2.293E-02	0.00	2.180E-02	0.00	1.329E-02	0.00	1.696E-02	0.00	9.413E-03	0.00	1.173E-04	1.001E-04	1.173E-04	1.001E-04										
8 - 9	1.930E-02	0.00	1.759E-02	0.00	1.109E-02	0.00	1.369E-02	0.00	7.914E-03	0.00	1.165E-04	9.944E-05	1.165E-04	9.944E-05										
9 - 10	1.558E-02	0.00	1.479E-02	0.00	8.777E-03	0.00	1.086E-02	0.00	7.431E-03	0.00	1.127E-04	9.615E-05	1.127E-04	9.615E-05										
10 - 11	1.277E-02	0.00	1.224E-02	0.00	8.081E-03	0.00	9.595E-03	0.00	7.429E-03	0.00	1.079E-04	9.193E-05	1.079E-04	9.193E-05										
11 - 12	1.023E-02	0.00	9.934E-03	0.00	7.832E-03	0.00	9.677E-03	0.00	7.425E-03	0.00	1.069E-04	9.120E-05	1.069E-04	9.120E-05										
12 - 13	8.571E-03	0.00	7.864E-03	0.00	7.750E-03	0.00	9.491E-03	0.00	7.237E-03	0.00	1.053E-04	8.982E-05	1.053E-04	8.982E-05										
13 - 14	6.247E-03	0.00	6.978E-03	0.00	7.757E-03	0.00	9.868E-03	0.00	7.606E-03	0.00	1.001E-04	8.537E-05	1.001E-04	8.537E-05										
14 - 15	5.114E-03	0.00	7.284E-03	0.00	7.498E-03	0.00	9.834E-03	0.00	7.430E-03	0.00	9.609E-05	8.190E-05	9.609E-05	8.190E-05										
15 - 16	3.917E-03	0.00	7.115E-03	0.00	7.309E-03	0.00	9.393E-03	0.00	7.369E-03	0.00	9.077E-05	7.742E-05	9.077E-05	7.742E-05										
16 - 17	3.076E-03	0.00	7.009E-03	0.00	7.192E-03	0.00	9.804E-03	0.00	7.155E-03	0.00	8.798E-05	7.504E-05	8.798E-05	7.504E-05										
17 - 18	3.281E-03	0.00	7.100E-03	0.00	7.188E-03	0.00	9.705E-03	0.00	7.020E-03	0.00	9.604E-05	7.339E-05	9.604E-05	7.339E-05										
18 - 19	3.929E-03	0.00	7.166E-03	0.00	6.950E-03	0.00	9.677E-03	0.00	6.942E-03	0.00	9.634E-05	7.779E-05	9.634E-05	7.779E-05										
19 - 20	4.597E-03	0.00	7.464E-03	0.00	6.762E-03	0.00	9.817E-03	0.00	6.687E-03	0.00	5.132E-05	5.230E-05	6.132E-05	5.230E-05										
20 - 21	5.444E-03	0.00	7.623E-03	0.00	6.910E-03	0.00	9.571E-03	0.00	6.650E-03	0.00	4.474E-05	3.816E-05	4.474E-05	3.816E-05										
21 - 22	6.362E-03	0.00	8.393E-03	0.00	6.918E-03	0.00	9.751E-03	0.00	6.413E-03	0.00	3.301E-05	2.816E-05	3.301E-05	2.816E-05										
22 - 23	7.018E-03	0.00	8.303E-03	0.00	6.891E-03	0.00	9.746E-03	0.00	6.163E-03	0.00	2.504E-05	2.136E-05	2.504E-05	2.136E-05										
23 - 24	7.533E-03	0.00	9.095E-03	0.00	6.846E-03	0.00	9.661E-03	0.00	6.281E-03	0.00	1.942E-05	1.662E-05	1.942E-05	1.662E-05										
24 - 25	8.186E-03	0.00	9.040E-03	0.00	7.076E-03	0.00	1.021E-02	0.00	5.877E-03	0.00	1.591E-05	1.351E-05	1.591E-05	1.351E-05										
25 - 30	9.675E-03	0.00	1.035E-02	0.00	6.800E-03	0.00	1.143E-02	0.00	6.163E-03	0.00	9.463E-06	7.240E-06	9.463E-06	7.240E-06										
30 - 35	9.620E-03	0.00	1.055E-02	0.00	5.886E-03	0.00	1.526E-02	0.00	4.988E-03	0.00	2.425E-05	2.067E-05	2.425E-05	2.067E-05										
35 - 40	8.774E-03	0.00	9.989E-03	0.00	5.631E-03	0.00	1.087E-02	0.00	4.405E-03	0.00	0.00	0.00	0.00	0.00										
40 - 45	6.730E-03	0.00	8.185E-03	0.00	4.860E-03	0.00	9.037E-03	0.00	3.431E-03	0.00	0.00	0.00	0.00	0.00										
45 - 50	4.651E-03	0.00	5.696E-03	0.00	3.456E-03	0.00	6.153E-03	0.00	2.431E-03	0.00	0.00	0.00	0.00	0.00										
50 - 60	7.528E-04	0.00	8.915E-04	0.00	2.265E-04	0.00	9.096E-04	0.00	6.350E-04	0.00	0.00	0.00	0.00	0.00										
60 - 70	1.455E-05	0.00	1.656E-05	0.00	1.459E-04	0.00	1.683E-05	0.00	1.597E-05	0.00	0.00	0.00	0.00	0.00										
70 - 100																								

WAVELENGTH = 10.274683 MICROMETERS

FREQUENCY = 973.285 WAVENUMBERS

HT (KM)	TROPICAL		MID-LATITUDE		MID-LATITUDE		SUBARCTIC		SUBARCTIC		CLEAR		AEROSOL		HAZY	
	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$
0	5.544E-01	0.00	3.461E-01	0.00	7.989E-02	0.00	1.964E-01	0.00	4.252E-02	0.00	5.589E-03	4.774E-03	2.723E-02	2.325E-02		
1	4.134E-01	0.00	2.640E-01	0.00	7.090E-02	0.00	1.557E-01	0.00	4.316E-02	0.00	3.814E-03	3.259E-03	1.717E-02	1.457E-02		
2	2.938E-01	0.00	1.578E-01	0.00	5.807E-02	0.00	1.047E-01	0.00	4.107E-02	0.00	1.664E-03	1.422E-03	5.523E-03	4.719E-03		
3	1.390E-01	0.00	1.004E-01	0.00	4.906E-02	0.00	7.608E-02	0.00	3.621E-02	0.00	7.101E-04	6.067E-04	1.913E-03	1.539E-03		
4	8.427E-02	0.00	7.137E-02	0.00	4.076E-02	0.00	5.901E-02	0.00	3.156E-02	0.00	3.238E-04	2.819E-04	3.331E-04	7.150E-04		
5	6.189E-02	0.00	5.423E-02	0.00	3.348E-02	0.00	4.642E-02	0.00	2.573E-02	0.00	2.054E-04	1.754E-04	3.051E-04	2.515E-04		
6	5.013E-02	0.00	4.537E-02	0.00	2.754E-02	0.00	3.813E-02	0.00	2.064E-02	0.00	1.500E-04	1.281E-04	1.500E-04	1.231E-04		
7	4.068E-02	0.00	3.869E-02	0.00	2.282E-02	0.00	2.981E-02	0.00	1.639E-02	0.00	1.209E-04	1.032E-04	1.209E-04	1.032E-04		
8	3.323E-02	0.00	3.154E-02	0.00	1.864E-02	0.00	2.411E-02	0.00	1.287E-02	0.00	1.192E-04	1.010E-04	1.192E-04	1.010E-04		
9	2.773E-02	0.00	2.518E-02	0.00	1.536E-02	0.00	1.503E-02	0.00	1.069E-02	0.00	1.175E-04	1.004E-04	1.175E-04	1.004E-04		
10	1.785E-02	0.00	1.707E-02	0.00	1.094E-02	0.00	1.317E-02	0.00	1.000E-02	0.00	1.086E-04	9.282E-05	1.036E-04	9.232E-05		
11	1.409E-02	0.00	1.364E-02	0.00	1.059E-02	0.00	1.355E-02	0.00	1.000E-02	0.00	1.079E-04	9.207E-05	1.079E-04	9.207E-05		
12	1.147E-02	0.00	1.062E-02	0.00	1.046E-02	0.00	1.303E-02	0.00	9.914E-03	0.00	1.051E-04	9.068E-05	1.051E-04	9.059E-05		
13	8.300E-03	0.00	9.346E-03	0.00	1.045E-02	0.00	1.356E-02	0.00	1.023E-02	0.00	1.009E-04	8.619E-05	1.009E-04	8.619E-05		
14	6.667E-03	0.00	9.753E-03	0.00	1.008E-02	0.00	1.349E-02	0.00	9.900E-03	0.00	9.679E-05	8.269E-05	9.679E-05	8.269E-05		
15	5.004E-03	0.00	9.520E-03	0.00	9.810E-03	0.00	1.288E-02	0.00	9.865E-03	0.00	9.149E-05	7.816E-05	9.149E-05	7.816E-05		
16	3.873E-03	0.00	9.379E-03	0.00	9.622E-03	0.00	1.343E-02	0.00	9.634E-03	0.00	9.958E-05	7.576E-05	9.958E-05	7.576E-05		
17	4.144E-03	0.00	9.491E-03	0.00	9.611E-03	0.00	1.329E-02	0.00	9.377E-03	0.00	9.673E-05	7.409E-05	9.673E-05	7.409E-05		
18	5.027E-03	0.00	9.596E-03	0.00	9.276E-03	0.00	1.324E-02	0.00	9.252E-03	0.00	7.839E-05	6.697E-05	7.839E-05	6.697E-05		
19	5.954E-03	0.00	9.993E-03	0.00	9.014E-03	0.00	1.343E-02	0.00	8.993E-03	0.00	5.131E-05	5.280E-05	5.131E-05	5.280E-05		
20	7.134E-03	0.00	1.026E-02	0.00	9.209E-03	0.00	1.309E-02	0.00	8.786E-03	0.00	4.509E-05	3.852E-05	4.509E-05	3.852E-05		
21	8.432E-03	0.00	1.084E-02	0.00	9.219E-03	0.00	1.334E-02	0.00	8.499E-03	0.00	3.328E-05	2.843E-05	3.328E-05	2.843E-05		
22	9.376E-03	0.00	1.124E-02	0.00	9.183E-03	0.00	1.333E-02	0.00	8.154E-03	0.00	2.524E-05	2.156E-05	2.524E-05	2.156E-05		
23	1.012E-02	0.00	1.236E-02	0.00	9.123E-03	0.00	1.323E-02	0.00	8.299E-03	0.00	1.944E-05	1.678E-05	1.944E-05	1.678E-05		
24	1.105E-02	0.00	1.232E-02	0.00	9.431E-03	0.00	1.404E-02	0.00	7.753E-03	0.00	1.603E-05	1.370E-05	1.603E-05	1.370E-05		
25	1.329E-02	0.00	1.459E-02	0.00	9.095E-03	0.00	1.590E-02	0.00	8.192E-03	0.00	3.556E-06	7.309E-06	3.556E-06	7.309E-06		
30	1.353E-02	0.00	1.491E-02	0.00	7.985E-03	0.00	2.171E-02	0.00	5.704E-03	0.00	2.443E-06	2.087E-06	2.443E-06	2.087E-06		
35	1.263E-02	0.00	1.447E-02	0.00	7.871E-03	0.00	1.584E-02	0.00	6.055E-03	0.00	0.00	0.00	0.00	0.00		
40	1.019E-02	0.00	1.213E-02	0.00	7.018E-03	0.00	1.349E-02	0.00	4.851E-03	0.00	0.00	0.00	0.00	0.00		
45	6.934E-03	0.00	8.575E-03	0.00	5.101E-03	0.00	9.303E-03	0.00	3.613E-03	0.00	0.00	0.00	0.00	0.00		
50	1.072E-03	0.00	1.277E-03	0.00	3.252E-04	0.00	1.301E-03	0.00	9.151E-04	0.00	0.00	0.00	0.00	0.00		
70	1.924E-05	0.00	2.187E-05	0.00	1.961E-04	0.00	2.216E-05	0.00	2.189E-05	0.00	0.00	0.00	0.00	0.00		

WAVELENGTH = 10.260430 MICROMETERS

FREQUENCY = 974.518 WAVENUMBERS

HT (KM)	TROPICAL		MIDLATITUDE SUMMER		MIDLATITUDE WINTER	SUBARCTIC SUMMER		SUBARCTIC WINTER		CLEAR	AEROSOL		HAZY	
	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$
0	5.217E-01	0.00	3.247E-01	0.00	7.551E-02	0.00	1.841E-01	0.00	4.050E-02	0.00	5.597E-03	4.783E-03	2.727E-02	2.331E-02
1	3.890E-01	0.00	2.477E-01	0.00	6.720E-02	0.00	1.462E-01	0.00	4.114E-02	0.00	3.820E-03	3.264E-03	1.720E-02	1.459E-02
2	2.298E-01	0.00	1.486E-01	0.00	5.530E-02	0.00	9.903E-02	0.00	3.919E-02	0.00	1.567E-03	1.624E-03	5.531E-03	4.727E-03
3	1.314E-01	0.00	9.524E-02	0.00	4.688E-02	0.00	7.233E-02	0.00	3.459E-02	0.00	7.112E-04	6.078E-04	1.921E-03	1.542E-03
4	8.037E-02	0.00	6.825E-02	0.00	3.903E-02	0.00	5.643E-02	0.00	3.013E-02	0.00	3.303E-04	2.923E-04	9.321E-04	7.173E-04
5	5.938E-02	0.00	5.211E-02	0.00	3.203E-02	0.00	4.451E-02	0.00	2.452E-02	0.00	2.057E-04	1.758E-04	3.056E-04	2.520E-04
6	4.817E-02	0.00	4.365E-02	0.00	2.630E-02	0.00	3.657E-02	0.00	1.959E-02	0.00	1.502E-04	1.284E-04	1.502E-04	1.294E-04
7	3.908E-02	0.00	3.719E-02	0.00	2.175E-02	0.00	2.854E-02	0.00	1.549E-02	0.00	1.210E-04	1.034E-04	1.210E-04	1.034E-04
8	3.184E-02	0.00	3.266E-02	0.00	1.770E-02	0.00	2.301E-02	0.00	1.214E-02	0.00	1.184E-04	1.012E-04	1.184E-04	1.012E-04
9	2.648E-02	0.00	2.409E-02	0.00	1.456E-02	0.00	1.235E-02	0.00	1.007E-02	0.00	1.177E-04	1.006E-04	1.177E-04	1.006E-04
10	2.105E-02	0.00	1.994E-02	0.00	1.134E-02	0.00	1.265E-02	0.00	9.461E-03	0.00	1.138E-04	9.725E-05	1.138E-04	9.725E-05
11	1.691E-02	0.00	1.622E-02	0.00	1.036E-02	0.00	1.250E-02	0.00	9.534E-03	0.00	1.099E-04	9.298E-05	1.099E-04	9.298E-05
12	1.328E-02	0.00	1.292E-02	0.00	1.007E-02	0.00	1.291E-02	0.00	9.610E-03	0.00	1.079E-04	9.224E-05	1.079E-04	9.224E-05
13	1.076E-02	0.00	1.003E-02	0.00	9.985E-03	0.00	1.246E-02	0.00	9.489E-03	0.00	1.063E-04	9.084E-05	1.063E-04	9.084E-05
14	7.744E-03	0.00	8.824E-03	0.00	9.991E-03	0.00	1.299E-02	0.00	9.904E-03	0.00	1.010E-04	8.635E-05	1.010E-04	8.635E-05
15	6.185E-03	0.00	9.216E-03	0.00	9.648E-03	0.00	1.295E-02	0.00	9.688E-03	0.00	9.693E-05	8.284E-05	9.693E-05	8.284E-05
16	4.614E-03	0.00	9.006E-03	0.00	9.387E-03	0.00	1.239E-02	0.00	9.587E-03	0.00	9.163E-05	7.830E-05	9.163E-05	7.830E-05
17	3.557E-03	0.00	8.880E-03	0.00	9.200E-03	0.00	1.292E-02	0.00	9.349E-03	0.00	8.981E-05	7.590E-05	8.981E-05	7.590E-05
18	3.815E-03	0.00	8.999E-03	0.00	9.175E-03	0.00	1.279E-02	0.00	9.064E-03	0.00	8.586E-05	7.422E-05	8.586E-05	7.422E-05
19	4.653E-03	0.00	9.107E-03	0.00	8.844E-03	0.00	1.272E-02	0.00	8.897E-03	0.00	7.851E-05	6.709E-05	7.851E-05	6.709E-05
20	5.543E-03	0.00	9.490E-03	0.00	8.584E-03	0.00	1.285E-02	0.00	8.507E-03	0.00	5.190E-05	5.290E-05	5.190E-05	5.290E-05
21	6.673E-03	0.00	9.746E-03	0.00	8.742E-03	0.00	1.250E-02	0.00	8.356E-03	0.00	4.515E-05	3.859E-05	4.515E-05	3.859E-05
22	7.917E-03	0.00	1.028E-02	0.00	8.726E-03	0.00	1.269E-02	0.00	8.045E-03	0.00	3.333E-05	2.848E-05	3.333E-05	2.848E-05
23	8.828E-03	0.00	1.065E-02	0.00	8.686E-03	0.00	1.265E-02	0.00	7.687E-03	0.00	2.529E-05	2.160E-05	2.529E-05	2.160E-05
24	9.538E-03	0.00	1.170E-02	0.00	8.588E-03	0.00	1.253E-02	0.00	7.789E-03	0.00	1.967E-05	1.681E-05	1.967E-05	1.681E-05
25	1.042E-02	0.00	1.165E-02	0.00	8.857E-03	0.00	1.329E-02	0.00	7.255E-03	0.00	1.506E-05	1.372E-05	1.506E-05	1.372E-05
26	1.255E-02	0.00	1.379E-02	0.00	8.514E-03	0.00	1.503E-02	0.00	7.635E-03	0.00	9.569E-06	7.322E-06	9.569E-06	7.322E-06
27	1.283E-02	0.00	1.415E-02	0.00	7.466E-03	0.00	2.063E-02	0.00	6.265E-03	0.00	2.446E-06	2.091E-06	2.446E-06	2.091E-06
28	1.204E-02	0.00	1.382E-02	0.00	7.439E-03	0.00	1.515E-02	0.00	5.694E-03	0.00	0.	0.	0.	0.
29	9.772E-03	0.00	1.167E-02	0.00	6.698E-03	0.00	1.301E-02	0.00	4.599E-03	0.00	0.	0.	0.	0.
30	6.681E-03	0.00	9.287E-03	0.00	4.900E-03	0.00	9.003E-03	0.00	3.453E-03	0.00	0.	0.	0.	0.
31	1.019E-03	0.00	1.215E-03	0.00	3.058E-04	0.00	1.238E-03	0.00	8.739E-04	0.00	0.	0.	0.	0.
32	1.788E-05	0.00	2.031E-05	0.00	1.831E-04	0.00	2.056E-05	0.00	2.054E-05	0.00	0.	0.	0.	0.

WAVELENGTH = 10.24656 MICROMETERS

FREQUENCY = 975.927 HAVENUMBERS

HT (KH)	TROPICAL			MIDLATITUDE SUMMER			MIDLATITUDE WINTER			SUBARCTIC SUMMER			SUBARCTIC WINTER			CLEAR			AEROSOL			HAZY						
	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$				
1	1.944E+00	0.00	1.243E+00	0.00	2.140E-01	0.00	6.964E-01	0.00	7.603E-02	0.00	5.603E-03	4.791E-03	2.731E-02	2.335E-02	1.359E+00	0.00	1.012E+00	0.00	1.871E-01	0.00	5.659E-01	0.00	7.775E-02	0.00	3.825E-03	3.270E-03	1.722E-02	1.472E-02
2	1.034E+00	0.00	6.539E-01	0.00	1.448E-01	0.00	3.812E-01	0.00	7.355E-02	0.00	1.665E-03	1.427E-03	5.539E-03	4.735E-03	2.647E-01	0.00	3.988E-01	0.00	1.205E-01	0.00	2.603E-01	0.00	6.345E-02	0.00	7.123E-04	6.088E-04	1.924E-03	1.545E-03
3	3.216E-01	0.00	2.366E-01	0.00	7.964E-02	0.00	1.766E-01	0.00	5.015E-02	0.00	3.303E-04	2.828E-04	5.436E-04	7.195E-04	6.247E-01	0.00	3.988E-01	0.00	1.205E-01	0.00	2.603E-01	0.00	6.345E-02	0.00	7.123E-04	6.088E-04	1.924E-03	1.545E-03
4	1.882E-01	0.00	1.439E-01	0.00	5.485E-02	0.00	1.173E-01	0.00	3.571E-02	0.00	2.060E-04	1.761E-04	3.070E-04	2.524E-04	1.263E-01	0.00	9.506E-02	0.00	2.852E-02	0.00	4.943E-02	0.00	1.864E-02	0.00	1.212E-04	1.035E-04	1.285E-04	1.285E-04
5	1.194E-02	0.00	6.831E-02	0.00	3.935E-02	0.00	4.943E-02	0.00	1.864E-02	0.00	1.212E-04	1.035E-04	1.212E-04	1.035E-04	9.506E-02	0.00	9.506E-02	0.00	2.852E-02	0.00	4.943E-02	0.00	1.864E-02	0.00	1.212E-04	1.035E-04	1.285E-04	1.285E-04
6	5.468E-02	0.00	4.833E-02	0.00	2.106E-02	0.00	3.277E-02	0.00	1.369E-02	0.00	1.179E-04	1.008E-04	1.179E-04	1.008E-04	3.836E-02	0.00	4.833E-02	0.00	2.106E-02	0.00	3.277E-02	0.00	1.369E-02	0.00	1.179E-04	1.008E-04	1.008E-04	1.008E-04
7	9.836E-02	0.00	4.343E-02	0.00	1.646E-02	0.00	2.273E-02	0.00	1.099E-02	0.00	1.140E-04	9.742E-05	1.140E-04	9.742E-05	2.597E-02	0.00	4.343E-02	0.00	1.646E-02	0.00	2.273E-02	0.00	1.099E-02	0.00	1.140E-04	9.742E-05	9.742E-05	9.742E-05
8	2.686E-02	0.00	2.597E-02	0.00	1.247E-02	0.00	1.626E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.921E-02	0.00	1.921E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00
9	1.772E-02	0.00	1.921E-02	0.00	1.024E-02	0.00	1.414E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.414E-02	0.00	1.414E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00	1.024E-02	0.00
10	1.478E-02	0.00	1.347E-02	0.00	1.092E-02	0.00	1.348E-02	0.00	1.092E-02	0.00	1.092E-02	0.00	1.092E-02	0.00	1.347E-02	0.00	1.347E-02	0.00	1.092E-02	0.00	1.092E-02	0.00	1.092E-02	0.00	1.092E-02	0.00	1.092E-02	0.00
11	1.170E-02	0.00	1.086E-02	0.00	1.072E-02	0.00	1.395E-02	0.00	1.072E-																			

HT (KH)	TROPICAL			MID-LATITUDE SUMMER			MID-LATITUDE WINTER			SUBARCTIC SUMMER			SUBARCTIC WINTER			CLEAR			AEROSOL			HAZY		
	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$	$k_f(km^{-1})$	$\sigma_m(km^{-1})$		
1	5.739E-01	0.00	4.239E-01	0.00	8.713E-02	0.00	2.383E-01	0.00	3.973E-02	0.00	5.513E-03	4.800E-03	2.735E-02	2.333E-02										
2	5.023E-01	0.00	3.211E-01	0.00	7.501E-02	0.00	1.849E-01	0.00	4.020E-02	0.00	3.831E-03	3.276E-03	1.725E-02	1.375E-02										
3	2.919E-01	0.00	1.893E-01	0.00	5.767E-02	0.00	1.174E-01	0.00	3.736E-02	0.00	1.579E-03	1.429E-03	5.547E-03	4.743E-03										
4	1.589E-01	0.00	1.093E-01	0.00	4.593E-02	0.00	7.952E-02	0.00	3.177E-02	0.00	7.133E-04	6.099E-04	1.927E-03	1.743E-03										
5	9.678E-02	0.00	7.091E-02	0.00	3.509E-02	0.00	5.713E-02	0.00	2.655E-02	0.00	3.713E-04	2.833E-04	8.641E-04	7.139E-04										
6	5.952E-02	0.00	4.993E-02	0.00	2.814E-02	0.00	4.213E-02	0.00	2.094E-02	0.00	2.063E-04	1.764E-04	3.407E-04	2.929E-04										
7	4.583E-02	0.00	3.959E-02	0.00	2.245E-02	0.00	3.270E-02	0.00	1.530E-02	0.00	1.507E-04	1.298E-04	1.503E-04	1.239E-04										
8	3.672E-02	0.00	3.254E-02	0.00	1.813E-02	0.00	2.660E-02	0.00	1.255E-02	0.00	1.215E-04	1.033E-04	1.214E-04	1.039E-04										
9	2.743E-02	0.00	2.594E-02	0.00	1.452E-02	0.00	1.930E-02	0.00	9.732E-03	0.00	1.194E-04	1.009E-04	1.148E-04	1.015E-04										
10	2.229E-02	0.00	2.020E-02	0.00	1.178E-02	0.00	1.503E-02	0.00	8.045E-03	0.00	1.194E-04	1.009E-04	1.130E-04	1.009E-04										
11	1.763E-02	0.00	1.647E-02	0.00	9.277E-03	0.00	1.154E-02	0.00	7.505E-03	0.00	1.141E-04	9.759E-05	1.141E-04	9.759E-05										
12	1.380E-02	0.00	1.321E-02	0.00	8.075E-03	0.00	1.005E-02	0.00	7.577E-03	0.00	1.091E-04	9.331E-05	1.091E-04	9.331E-05										
13	1.071E-02	0.00	1.039E-02	0.00	8.027E-03	0.00	1.038E-02	0.00	7.560E-03	0.00	1.094E-04	9.256E-05	1.092E-04	9.256E-05										
14	9.579E-03	0.00	7.992E-03	0.00	7.966E-03	0.00	1.002E-02	0.00	7.595E-03	0.00	1.064E-04	9.116E-05	1.056E-04	9.116E-05										
15	8.079E-03	0.00	6.998E-03	0.00	7.986E-03	0.00	1.047E-02	0.00	7.938E-03	0.00	1.013E-04	9.665E-05	1.013E-04	9.665E-05										
16	7.562E-03	0.00	7.323E-03	0.00	7.743E-03	0.00	1.045E-02	0.00	7.830E-03	0.00	9.721E-05	8.313E-05	9.721E-05	8.313E-05										
17	7.146E-03	0.00	7.094E-03	0.00	7.550E-03	0.00	1.004E-02	0.00	7.809E-03	0.00	9.189E-05	7.859E-05	9.189E-05	7.859E-05										
18	6.730E-03	0.00	7.021E-03	0.00	7.429E-03	0.00	1.049E-02	0.00	7.589E-03	0.00	9.907E-05	7.616E-05	1.907E-05	7.515E-05										
19	6.322E-03	0.00	7.291E-03	0.00	7.439E-03	0.00	1.043E-02	0.00	7.475E-03	0.00	9.711E-05	7.449E-05	9.711E-05	7.449E-05										
20	6.375E-03	0.00	7.351E-03	0.00	7.205E-03	0.00	1.041E-02	0.00	7.361E-03	0.00	7.974E-05	6.733E-05	7.974E-05	6.733E-05										
21	5.324E-03	0.00	7.942E-03	0.00	7.161E-03	0.00	1.054E-02	0.00	7.064E-03	0.00	5.208E-05	5.309E-05	5.208E-05	5.309E-05										
22	5.372E-03	0.00	8.394E-03	0.00	7.142E-03	0.00	1.039E-02	0.00	6.61E-03	0.00	3.342E-05	2.858E-05	3.342E-05	2.858E-05										
23	7.150E-03	0.00	8.703E-03	0.00	7.076E-03	0.00	1.034E-02	0.00	6.293E-03	0.00	2.535E-05	2.168E-05	2.535E-05	2.168E-05										
24	7.750E-03	0.00	9.542E-03	0.00	6.942E-03	0.00	1.024E-02	0.00	6.319E-03	0.00	1.973E-05	1.697E-05	1.973E-05	1.697E-05										
25	8.472E-03	0.00	9.494E-03	0.00	7.147E-03	0.00	1.086E-02	0.00	5.949E-03	0.00	1.610E-05	1.377E-05	1.610E-05	1.377E-05										
30	1.022E-02	0.00	1.126E-02	0.00	6.829E-03	0.00	1.231E-02	0.00	5.084E-03	0.00	9.593E-06	7.348E-06	9.593E-06	7.348E-06										
35	1.055E-02	0.00	1.162E-02	0.00	6.007E-03	0.00	1.705E-02	0.00	4.993E-03	0.00	2.454E-06	2.098E-06	2.454E-06	2.098E-06										
40	1.004E-02	0.00	1.159E-02	0.00	6.079E-03	0.00	1.275E-02	0.00	4.598E-03	0.00	0.0	0.0	0.0	0.0										
45	8.269E-03	0.00	9.935E-03	0.00	5.598E-03	0.00	1.113E-02	0.00	3.785E-03	0.00	0.0	0.0	0.0	0.0										
50	5.712E-03	0.00	7.135E-03	0.00	4.159E-03	0.00	7.774E-03	0.00	2.695E-03	0.00	0.0	0.0	0.0	0.0										
55	5.430E-03	0.00	7.100E-03	0.00	2.578E-04	0.00	1.028E-03	0.00	7.319E-04	0.00	0.0	0.0	0.0	0.0										
60	1.403E-05	0.00	1.593E-05	0.00	4.454E-04	0.00	1.609E-03	0.00	1.654E-05	0.00	0.0	0.0	0.0	0.0										
100																								

WAVELENGTH = 10.207196 MICROMETERS
 FREQUENCY = 979.701 WAVENUMBERS

HT(KM)	TROPICAL	MIDLATITUDE SUMMER	MIDLATITUDE WINTER	SUBARCTIC SUMMER	SUBARCTIC WINTER	CLEAR	AEROSOL	HAZY
	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$	$k_m(km^{-1})$	$\sigma_m(km^{-1})$
0 - 1	4.835E-01	0.00	2.934E-01	0.00	5.789E-02	0.00	1.588E-01	0.00
1 - 2	3.566E-01	0.00	2.193E-01	0.00	5.048E-02	0.00	1.229E-01	0.00
2 - 3	2.026E-01	0.00	1.246E-01	0.00	3.994E-02	0.00	7.889E-02	0.00
3 - 4	1.086E-01	0.00	7.435E-02	0.00	3.269E-02	0.00	5.469E-02	0.00
4 - 5	6.041E-02	0.00	4.995E-02	0.00	2.626E-02	0.00	4.047E-02	0.00
5 - 6	4.222E-02	0.00	3.638E-02	0.00	2.085E-02	0.00	3.061E-02	0.00
6 - 7	3.303E-02	0.00	2.945E-02	0.00	1.668E-02	0.00	2.421E-02	0.00
7 - 8	2.597E-02	0.00	2.446E-02	0.00	1.344E-02	0.00	1.831E-02	0.00
8 - 9	2.056E-02	0.00	1.943E-02	0.00	1.069E-02	0.00	1.434E-02	0.00
9 - 10	1.668E-02	0.00	1.512E-02	0.00	8.606E-03	0.00	1.109E-02	0.00
10 - 11	1.294E-02	0.00	1.223E-02	0.00	6.577E-03	0.00	8.439E-03	0.00
11 - 12	1.013E-02	0.00	9.717E-03	0.00	5.972E-03	0.00	7.333E-03	0.00
12 - 13	7.765E-03	0.00	7.571E-03	0.00	5.849E-03	0.00	7.623E-03	0.00
13 - 14	6.136E-03	0.00	5.756E-03	0.00	5.850E-03	0.00	7.430E-03	0.00
14 - 15	4.292E-03	0.00	5.040E-03	0.00	5.907E-03	0.00	7.814E-03	0.00
15 - 16	3.332E-03	0.00	5.301E-03	0.00	5.767E-03	0.00	7.881E-03	0.00
16 - 17	2.415E-03	0.00	5.230E-03	0.00	5.678E-03	0.00	7.668E-03	0.00
17 - 18	1.830E-03	0.00	5.214E-03	0.00	5.632E-03	0.00	8.089E-03	0.00
18 - 19	1.989E-03	0.00	5.357E-03	0.00	5.677E-03	0.00	8.142E-03	0.00
19 - 20	2.508E-03	0.00	5.531E-03	0.00	5.545E-03	0.00	8.187E-03	0.00
20 - 21	3.105E-03	0.00	5.869E-03	0.00	5.457E-03	0.00	8.294E-03	0.00
21 - 22	3.867E-03	0.00	6.120E-03	0.00	5.564E-03	0.00	8.668E-03	0.00
22 - 23	4.735E-03	0.00	6.503E-03	0.00	5.544E-03	0.00	8.120E-03	0.00
23 - 24	5.415E-03	0.00	6.767E-03	0.00	5.468E-03	0.00	8.022E-03	0.00
24 - 25	5.938E-03	0.00	7.381E-03	0.00	5.352E-03	0.00	7.921E-03	0.00
25 - 26	6.520E-03	0.00	7.333E-03	0.00	5.441E-03	0.00	8.364E-03	0.00
26 - 27	7.822E-03	0.00	8.609E-03	0.00	5.071E-03	0.00	9.350E-03	0.00
27 - 28	7.999E-03	0.00	8.865E-03	0.00	4.397E-03	0.00	1.284E-02	0.00
28 - 29	7.612E-03	0.00	8.826E-03	0.00	4.495E-03	0.00	9.769E-03	0.00
29 - 30	6.346E-03	0.00	7.681E-03	0.00	4.233E-03	0.00	8.660E-03	0.00
30 - 31	4.429E-03	0.00	5.578E-03	0.00	3.198E-03	0.00	6.101E-03	0.00
31 - 32	6.284E-04	0.00	7.557E-04	0.00	1.935E-04	0.00	7.687E-04	0.00
32 - 33	9.819E-06	0.00	1.113E-05	0.00	1.032E-04	0.00	1.122E-05	0.00
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WAVELENGTH =		10.194626 MICROMETERS									
FREQUENCY =		980.909 WAVELENGTHS									
HT (M)		TROPICAL		MIDLATITUDE		SUBARCTIC		SUBARCTIC		WINTER	
		SUMMER		WINTER		SUMMER		WINTER		WINTER	
		$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$
0	0	4.744E-01	0.00	2.855E-01	0.00	5.291E-02	0.00	1.520E-01	0.00	2.450E-02	0.00
1	1	3.672E-01	0.00	2.118E-01	0.00	4.572E-02	0.00	1.164E-01	0.00	2.480E-02	0.00
2	2	1.953E-01	0.00	1.178E-01	0.00	3.554E-02	0.00	7.311E-02	0.00	2.191E-02	0.00
3	3	1.019E-01	0.00	6.824E-02	0.00	2.863E-02	0.00	4.958E-02	0.00	1.982E-03	0.00
4	4	5.477E-02	0.00	4.454E-02	0.00	2.263E-02	0.00	3.584E-02	0.00	1.663E-02	0.00
5	5	3.713E-02	0.00	3.175E-02	0.00	1.772E-02	0.00	2.662E-02	0.00	1.299E-02	0.00
6	6	2.863E-02	0.00	2.532E-02	0.00	1.403E-02	0.00	2.071E-02	0.00	9.965E-03	0.00
7	7	1.738E-02	0.00	1.638E-02	0.00	8.834E-03	0.00	1.547E-02	0.00	7.592E-03	0.00
8	8	1.397E-02	0.00	1.264E-02	0.00	7.060E-03	0.00	1.198E-02	0.00	5.745E-03	0.00
9	9	1.075E-02	0.00	1.014E-02	0.00	5.353E-03	0.00	9.176E-03	0.00	4.649E-03	0.00
10	10	8.344E-03	0.00	7.989E-03	0.00	4.832E-03	0.00	5.975E-03	0.00	4.433E-03	0.00
11	11	6.344E-03	0.00	6.167E-03	0.00	4.711E-03	0.00	6.192E-03	0.00	4.523E-03	0.00
12	12	4.969E-03	0.00	4.641E-03	0.00	4.681E-03	0.00	6.006E-03	0.00	4.509E-03	0.00
13	13	3.441E-03	0.00	4.033E-03	0.00	4.689E-03	0.00	6.280E-03	0.00	4.720E-03	0.00
14	14	2.646E-03	0.00	4.222E-03	0.00	4.535E-03	0.00	6.285E-03	0.00	4.651E-03	0.00
15	15	1.896E-03	0.00	4.139E-03	0.00	4.421E-03	0.00	6.054E-03	0.00	4.643E-03	0.00
16	16	1.423E-03	0.00	4.098E-03	0.00	4.342E-03	0.00	6.336E-03	0.00	4.551E-03	0.00
17	17	1.342E-03	0.00	4.171E-03	0.00	4.342E-03	0.00	6.316E-03	0.00	4.425E-03	0.00
18	18	1.243E-03	0.00	4.275E-03	0.00	4.209E-03	0.00	6.318E-03	0.00	4.351E-03	0.00
19	19	2.398E-03	0.00	4.515E-03	0.00	4.121E-03	0.00	6.403E-03	0.00	4.167E-03	0.00
20	20	2.988E-03	0.00	4.701E-03	0.00	4.218E-03	0.00	6.246E-03	0.00	4.086E-03	0.00
21	21	3.671E-03	0.00	5.019E-03	0.00	4.238E-03	0.00	6.340E-03	0.00	3.935E-03	0.00
22	22	4.244E-03	0.00	5.272E-03	0.00	4.231E-03	0.00	6.323E-03	0.00	3.761E-03	0.00
23	23	4.879E-03	0.00	5.834E-03	0.00	4.202E-03	0.00	6.305E-03	0.00	3.776E-03	0.00
24	24	5.216E-03	0.00	5.870E-03	0.00	4.379E-03	0.00	6.743E-03	0.00	3.505E-03	0.00
25	25	6.530E-03	0.00	7.151E-03	0.00	4.189E-03	0.00	7.766E-03	0.00	3.670E-03	0.00
30	30	6.987E-03	0.00	7.634E-03	0.00	3.782E-03	0.00	1.091E-02	0.00	3.092E-03	0.00
35	35	5.673E-03	0.00	7.731E-03	0.00	3.918E-03	0.00	8.574E-03	0.00	2.908E-03	0.00
40	40	5.543E-03	0.00	6.719E-03	0.00	3.689E-03	0.00	7.597E-03	0.00	2.437E-03	0.00
45	45	3.843E-03	0.00	4.854E-03	0.00	2.773E-03	0.00	5.317E-03	0.00	1.892E-03	0.00
50	50	5.284E-04	0.00	5.365E-04	0.00	1.678E-04	0.00	6.469E-04	0.00	4.712E-04	0.00
70	70	7.907E-06	0.00	8.956E-06	0.00	8.355E-05	0.00	9.012E-06	0.00	9.775E-05	0.00
100	100										

AEROSOL

CLEAR

SUBARCTIC
WINTERSUBARCTIC
SUMMERMIDLATITUDE
WINTERMIDLATITUDE
SUMMER

TROPICAL

HT (M)

 $\sigma(km^{-1})$ $k(km^{-1})$ $\sigma(km^{-1})$ $k(km^{-1})$ $\sigma(km^{-1})$ $k(km^{-1})$ $\sigma(km^{-1})$ $k(km^{-1})$ $\sigma(km^{-1})$ $k(km^{-1})$ $\sigma(km^{-1})$ $k(km^{-1})$ $\sigma(km^{-1})$ $k(km^{-1})$ $\sigma(km^{-1})$ $k(km^{-1})$

WAVELENGTH = 10.182356 MICROMETERS

FREQUENCY = 982.091 WAVENUMBERS

HT(WM)	TROPICAL		MIDLATITUDE SUMMER		MIDLATITUDE WINTER	SUBARCTIC SUMMER	SUBARCTIC WINTER	CLEAR	AEROSOL	HAZY
	$k_a(km^{-1})$	$\sigma_m(km^{-1})$	$k_a(km^{-1})$	$\sigma_m(km^{-1})$	$k_a(km^{-1})$	$\sigma_m(km^{-1})$	$k_a(km^{-1})$	$\sigma_m(km^{-1})$	$k_a(km^{-1})$	$\sigma_m(km^{-1})$
0	5.520E-01	0.00	3.364E-01	0.00	5.870E-02	0.00	1.800E-01	0.00	5.644E-03	4.831E-03
1	4.114E-01	0.00	2.537E-01	0.00	5.039E-02	0.00	1.389E-01	0.00	3.852E-03	3.297E-03
2	2.395E-01	0.00	1.444E-01	0.00	3.828E-02	0.00	8.753E-02	0.00	2.285E-02	1.681E-03
3	1.275E-01	0.00	8.253E-02	0.00	2.981E-02	0.00	5.824E-02	0.00	1.215E-02	7.172E-04
4	6.454E-02	0.00	5.078E-02	0.00	2.234E-02	0.00	4.017E-02	0.00	1.550E-02	3.331E-04
5	4.081E-02	0.00	3.359E-02	0.00	1.652E-02	0.00	2.814E-02	0.00	1.157E-02	2.074E-04
6	2.962E-02	0.00	2.485E-02	0.00	1.253E-02	0.00	2.032E-02	0.00	8.171E-03	1.515E-04
7	2.183E-02	0.00	1.941E-02	0.00	9.593E-03	0.00	1.431E-02	0.00	6.319E-03	1.220E-04
8	1.583E-02	0.00	1.467E-02	0.00	7.327E-03	0.00	1.049E-02	0.00	4.669E-03	1.194E-04
9	1.213E-02	0.00	1.096E-02	0.00	5.753E-03	0.00	7.684E-03	0.00	3.733E-03	1.187E-04
10	9.012E-03	0.00	8.538E-03	0.00	4.319E-03	0.00	5.639E-03	0.00	3.509E-03	1.149E-04
11	6.811E-03	0.00	6.555E-03	0.00	3.880E-03	0.00	4.824E-03	0.00	3.573E-03	1.097E-04
12	5.093E-03	0.00	4.964E-03	0.00	3.777E-03	0.00	4.980E-03	0.00	3.635E-03	1.088E-04
13	3.942E-03	0.00	3.692E-03	0.00	3.734E-03	0.00	4.810E-03	0.00	3.603E-03	1.072E-04
14	2.701E-03	0.00	3.101E-03	0.00	3.717E-03	0.00	5.003E-03	0.00	3.740E-03	1.019E-04
15	2.057E-03	0.00	3.325E-03	0.00	3.572E-03	0.00	4.982E-03	0.00	3.649E-03	8.774E-05
16	1.460E-03	0.00	3.250E-03	0.00	3.456E-03	0.00	4.768E-03	0.00	3.600E-03	9.239E-05
17	1.089E-03	0.00	3.203E-03	0.00	3.367E-03	0.00	4.958E-03	0.00	3.483E-03	8.956E-05
18	1.179E-03	0.00	3.243E-03	0.00	3.336E-03	0.00	4.901E-03	0.00	3.342E-03	8.758E-05
19	1.487E-03	0.00	3.293E-03	0.00	3.197E-03	0.00	4.862E-03	0.00	3.244E-03	7.917E-05
20	1.830E-03	0.00	3.448E-03	0.00	3.051E-03	0.00	4.896E-03	0.00	3.068E-03	6.242E-05
21	2.268E-03	0.00	3.555E-03	0.00	3.133E-03	0.00	4.744E-03	0.00	2.980E-03	5.343E-05
22	2.765E-03	0.00	3.766E-03	0.00	3.115E-03	0.00	4.800E-03	0.00	2.843E-03	4.554E-05
23	3.144E-03	0.00	3.927E-03	0.00	3.082E-03	0.00	4.771E-03	0.00	2.593E-03	3.360E-05
24	3.439E-03	0.00	4.341E-03	0.00	3.044E-03	0.00	4.736E-03	0.00	2.703E-03	2.549E-05
25	3.802E-03	0.00	4.343E-03	0.00	3.130E-03	0.00	5.062E-03	0.00	2.699E-03	1.984E-05
30	4.755E-03	0.00	5.307E-03	0.00	3.016E-03	0.00	5.876E-03	0.00	2.552E-03	1.619E-05
35	5.169E-03	0.00	5.766E-03	0.00	2.749E-03	0.00	8.504E-03	0.00	2.245E-03	1.386E-05
40	5.145E-03	0.00	6.002E-03	0.00	2.952E-03	0.00	6.684E-03	0.00	2.245E-03	1.386E-05
45	4.412E-03	0.00	5.385E-03	0.00	2.892E-03	0.00	6.116E-03	0.00	1.881E-03	0.00
50	3.131E-03	0.00	3.982E-03	0.00	2.239E-03	0.00	4.373E-03	0.00	1.509E-03	0.00
50 - 70	4.249E-04	0.00	5.138E-04	0.00	1.318E-04	0.00	5.221E-04	0.00	3.804E-04	0.00
70 - 100	6.172E-06	0.00	6.987E-06	0.00	6.590E-05	0.00	7.022E-06	0.00	7.762E-05	0.00

FREQUENCY = 983.248 HAVENUMBERS

HT (km)	SUMMER			WINTER			SUMMER			WINTER			CLEAR			HAZY		
	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$k_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$	$\sigma_{\text{eff}}^{\text{sum}} (\text{km}^{-1})$		
0	4.536E-01	0.00	2.683E-01	0.00	4.361E-02	0.00	1.381E-01	0.00	1.834E-02	0.00	5.551E-03	4.839E-03	2.754E-02	2.359E-02				
1	3.288E-01	0.00	1.961E-01	0.00	3.697E-02	0.00	1.036E-01	0.00	1.833E-02	0.00	3.957E-03	3.302E-03	1.735E-02	1.437E-02				
2	1.802E-01	0.00	1.045E-01	0.00	2.758E-02	0.00	6.226E-02	0.00	1.657E-02	0.00	1.683E-03	1.441E-03	5.535E-03	4.782E-03				
3	4.307E-02	0.00	5.677E-02	0.00	2.139E-02	0.00	4.020E-02	0.00	1.421E-02	0.00	7.181E-04	6.148E-04	1.940E-03	1.651E-03				
4	3.462E-02	0.00	3.471E-02	0.00	1.632E-02	0.00	2.757E-02	0.00	1.159E-02	0.00	3.335E-04	2.856E-04	8.475E-04	7.255E-04				
5	2.790E-02	0.00	2.356E-02	0.00	1.235E-02	0.00	1.963E-02	0.00	8.843E-03	0.00	2.077E-04	1.778E-04	3.095E-04	2.650E-04				
6	2.074E-02	0.00	1.815E-02	0.00	9.625E-03	0.00	1.472E-02	0.00	6.64E-03	0.00	1.517E-04	1.39E-04	1.517E-04	1.299E-04				
7	1.588E-02	0.00	1.460E-02	0.00	7.561E-03	0.00	1.074E-02	0.00	4.976E-03	0.00	1.222E-04	1.046E-04	1.222E-04	1.046E-04				
8	1.188E-02	0.00	1.131E-02	0.00	5.888E-03	0.00	8.142E-03	0.00	3.777E-03	0.00	1.196E-04	1.012E-04	1.195E-04	1.024E-04				
9	9.350E-03	0.00	8.609E-03	0.00	4.712E-03	0.00	6.151E-03	0.00	3.032E-03	0.00	1.185E-04	1.017E-04	1.185E-04	1.017E-04				
10	7.066E-03	0.00	6.803E-03	0.00	3.603E-03	0.00	4.625E-03	0.00	2.97E-03	0.00	1.142E-04	9.838E-05	1.142E-04	9.838E-05				
11	5.385E-03	0.00	5.293E-03	0.00	2.83E-03	0.00	4.022E-03	0.00	3.150E-03	0.00	1.099E-04	9.407E-05	1.099E-04	9.407E-05				
12	4.030E-03	0.00	3.237E-03	0.00	2.17E-03	0.00	3.198E-03	0.00	3.280E-03	0.00	1.099E-04	9.407E-05	1.099E-04	9.407E-05				
13	3.101E-03	0.00	3.025E-03	0.00	3.220E-03	0.00	4.099E-03	0.00	3.280E-03	0.00	1.073E-04	9.190E-05	1.073E-04	9.190E-05				
14	2.109E-03	0.00	2.621E-03	0.00	3.195E-03	0.00	4.255E-03	0.00	3.267E-03	0.00	1.020E-04	8.735E-05	1.020E-04	8.735E-05				
15	1.595E-03	0.00	2.731E-03	0.00	3.053E-03	0.00	4.230E-03	0.00	3.257E-03	0.00	9.787E-05	8.380E-05	9.787E-05	8.380E-05				
16	1.15E-03	0.00	2.661E-03	0.00	2.933E-03	0.00	4.052E-03	0.00	3.20E-03	0.00	9.251E-05	7.921E-05	9.251E-05	7.921E-05				
17	8.281E-04	0.00	2.61E-03	0.00	2.834E-03	0.00	4.182E-03	0.00	3.00E-03	0.00	9.961E-05	7.678E-05	9.961E-05	7.678E-05				
18	9.013E-04	0.00	2.645E-03	0.00	2.781E-03	0.00	4.119E-03	0.00	2.888E-03	0.00	9.770E-05	7.509E-05	9.770E-05	7.509E-05				
19	1.48E-03	0.00	2.689E-03	0.00	2.648E-03	0.00	4.053E-03	0.00	2.754E-03	0.00	7.927E-05	6.787E-05	7.927E-05	5.737E-05				
20	1.429E-03	0.00	2.805E-03	0.00	2.545E-03	0.00	4.035E-03	0.00	2.581E-03	0.00	5.25E-05	5.351E-05	5.25E-05	5.351E-05				
21	1.783E-03	0.00	2.889E-03	0.00	2.551E-03	0.00	3.874E-03	0.00	2.444E-03	0.00	4.550E-05	3.904E-05	4.550E-05	3.904E-05				
22	2.184E-03	0.00	3.038E-03	0.00	2.512E-03	0.00	3.877E-03	0.00	2.299E-03	0.00	3.365E-05	2.881E-05	3.365E-05	2.881E-05				
23	2.491E-03	0.00	3.152E-03	0.00	2.463E-03	0.00	3.822E-03	0.00	2.152E-03	0.00	2.552E-05	2.185E-05	2.552E-05	2.185E-05				
24	2.768E-03	0.00	3.462E-03	0.00	2.411E-03	0.00	3.775E-03	0.00	2.132E-03	0.00	1.986E-05	1.701E-05	1.986E-05	1.701E-05				
25	3.095E-03	0.00	3.496E-03	0.00	2.461E-03	0.00	4.021E-03	0.00	1.955E-03	0.00	1.621E-05	1.389E-05	1.621E-05	1.389E-05				
30	4.07E-03	0.00	4.582E-03	0.00	2.136E-03	0.00	6.759E-03	0.00	1.736E-03	0.00	2.470E-06	2.115E-06	2.470E-06	2.115E-06				
35	4.18E-03	0.00	4.820E-03	0.00	2.326E-03	0.00	5.385E-03	0.00	1.691E-03	0.00	0.0	0.0	0.0	0.0				
40	3.570E-03	0.00	4.378E-03	0.00	2.318E-03	0.00	4.992E-03	0.00	1.491E-03	0.00	0.0	0.0	0.0	0.0				
45	2.554E-03	0.00	3.265E-03	0.00	1.816E-03	0.00	3.594E-03	0.00	1.212E-03	0.00	0.0	0.0	0.0	0.0				
50	3.30E-04	0.00	4.093E-04	0.00	1.053E-04	0.00	4.162E-04	0.00	0.0	0.0	0.0	0.0	0.0	0.0				
55	4.7715E-06	0.00	5.078E-06	0.00	5.078E-06	0.00	5.351E-06	0.00	6.045E-06	0.00	0.0	0.0	0.0	0.0				
60	4.7715E-06	0.00	5.078E-06	0.00	5.078E-06	0.00	5.351E-06	0.00	6.045E-06	0.00	0.0	0.0	0.0	0.0				

WAVELENGTH = 10.158689 MICROMETERS																
FREQUENCY = 984.379 WAVENUMBERS																
HT(KM)	TROPICAL		MIDLATITUDE		MIDLATITUDE		SUBARCTIC		SUBARCTIC		CLEAR		AEROSOL		HAZY	
	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$
0	4.548E-01	0.00	2.674E-01	0.00	4.039E-01	0.00	1.356E-01	0.00	1.576E-02	0.00	5.558E-03	4.846E-03	2.757E-02	2.351E-02		
1	3.283E-01	0.00	1.940E-01	0.00	3.372E-02	0.00	1.005E-01	0.00	1.580E-02	0.00	3.862E-03	3.307E-03	1.739E-02	1.439E-02		
2	1.776E-01	0.00	1.010E-01	0.00	2.437E-02	0.00	5.869E-02	0.00	1.434E-02	0.00	1.685E-03	1.443E-03	5.592E-03	4.799E-03		
3	8.523E-02	0.00	5.257E-02	0.00	1.830E-02	0.00	3.656E-02	0.00	1.173E-02	0.00	7.190E-04	6.158E-04	1.942E-03	1.564E-03		
4	3.902E-02	0.00	3.052E-02	0.00	1.345E-02	0.00	2.401E-02	0.00	9.348E-03	0.00	3.339E-04	2.800E-04	8.435E-04	7.257E-04		
5	2.389E-02	0.00	1.977E-02	0.00	9.893E-03	0.00	1.643E-02	0.00	6.941E-03	0.00	2.079E-04	1.781E-04	3.099E-04	2.554E-04		
6	1.721E-02	0.00	1.472E-02	0.00	7.508E-03	0.00	1.188E-02	0.00	5.087E-03	0.00	1.519E-04	1.301E-04	1.513E-04	1.301E-04		
7	9.390E-03	0.00	1.158E-02	0.00	5.771E-03	0.00	8.421E-03	0.00	3.746E-03	0.00	1.223E-04	1.048E-04	1.223E-04	1.048E-04		
8	7.277E-03	0.00	6.589E-03	0.00	4.133E-03	0.00	6.241E-03	0.00	2.762E-03	0.00	1.197E-04	1.025E-04	1.197E-04	1.025E-04		
9	5.428E-03	0.00	5.138E-03	0.00	3.457E-03	0.00	3.612E-03	0.00	2.204E-03	0.00	1.190E-04	1.019E-04	1.190E-04	1.019E-04		
10	4.084E-03	0.00	3.943E-03	0.00	2.585E-03	0.00	3.389E-03	0.00	2.173E-03	0.00	1.150E-04	9.853E-05	1.150E-04	9.853E-05		
11	3.021E-03	0.00	2.975E-03	0.00	2.326E-03	0.00	2.908E-03	0.00	2.255E-03	0.00	1.100E-04	9.421E-05	1.100E-04	9.421E-05		
12	2.307E-03	0.00	2.196E-03	0.00	2.257E-03	0.00	2.303E-03	0.00	2.255E-03	0.00	1.091E-04	9.345E-05	1.091E-04	9.345E-05		
13	1.552E-03	0.00	1.897E-03	0.00	2.283E-03	0.00	2.960E-03	0.00	2.272E-03	0.00	1.021E-04	8.748E-05	1.021E-04	8.748E-05		
14	1.158E-03	0.00	1.985E-03	0.00	2.204E-03	0.00	3.096E-03	0.00	2.368E-03	0.00	9.799E-05	8.393E-05	9.799E-05	8.393E-05		
15	8.045E-04	0.00	1.946E-03	0.00	2.136E-03	0.00	2.989E-03	0.00	2.314E-03	0.00	9.263E-05	7.933E-05	9.263E-05	7.933E-05		
16	5.927E-04	0.00	1.924E-03	0.00	2.080E-03	0.00	3.110E-03	0.00	2.236E-03	0.00	9.378E-05	7.690E-05	9.378E-05	7.690E-05		
17	4.674E-04	0.00	1.955E-03	0.00	2.054E-03	0.00	3.080E-03	0.00	2.128E-03	0.00	5.781E-05	7.520E-05	5.781E-05	7.520E-05		
18	3.327E-04	0.00	1.996E-03	0.00	1.964E-03	0.00	3.047E-03	0.00	2.041E-03	0.00	7.937E-05	6.798E-05	7.937E-05	6.798E-05		
19	1.046E-03	0.00	2.095E-03	0.00	1.893E-03	0.00	3.045E-03	0.00	1.905E-03	0.00	6.358E-05	5.360E-05	6.358E-05	5.360E-05		
20	1.316E-03	0.00	2.162E-03	0.00	1.903E-03	0.00	2.930E-03	0.00	1.820E-03	0.00	4.366E-05	3.910E-05	4.366E-05	3.910E-05		
21	1.629E-03	0.00	2.283E-03	0.00	1.876E-03	0.00	2.937E-03	0.00	1.713E-03	0.00	3.369E-05	2.895E-05	3.369E-05	2.895E-05		
22	1.864E-03	0.00	2.376E-03	0.00	1.841E-03	0.00	2.897E-03	0.00	1.603E-03	0.00	2.555E-05	2.189E-05	2.555E-05	2.189E-05		
23	2.046E-03	0.00	2.614E-03	0.00	1.803E-03	0.00	2.865E-03	0.00	1.596E-03	0.00	1.989E-05	1.703E-05	1.989E-05	1.703E-05		
24	2.266E-03	0.00	2.610E-03	0.00	1.840E-03	0.00	3.058E-03	0.00	1.452E-03	0.00	1.623E-05	1.390E-05	1.623E-05	1.390E-05		
25	2.852E-03	0.00	3.200E-03	0.00	1.756E-03	0.00	3.555E-03	0.00	1.527E-03	0.00	8.662E-06	7.419E-06	8.662E-06	7.419E-06		
30	3.158E-03	0.00	3.540E-03	0.00	1.512E-03	0.00	5.235E-03	0.00	1.303E-03	0.00	2.473E-06	2.473E-06	2.473E-06	2.473E-06		
35	3.217E-03	0.00	3.779E-03	0.00	1.787E-03	0.00	4.237E-03	0.00	1.286E-03	0.00	0.00	0.00	0.00	0.00		
40	2.824E-03	0.00	3.481E-03	0.00	1.816E-03	0.00	3.986E-03	0.00	1.153E-03	0.00	0.00	0.00	0.00	0.00		
45	2.038E-03	0.00	2.620E-03	0.00	1.440E-03	0.00	2.891E-03	0.00	9.519E-04	0.00	0.00	0.00	0.00	0.00		
50	2.628E-04	0.00	3.195E-04	0.00	8.221E-05	0.00	3.242E-04	0.00	2.395E-04	0.00	0.00	0.00	0.00	0.00		
70	3.509E-06	0.00	3.956E-06	0.00	3.816E-05	0.00	3.973E-06	0.00	4.592E-06	0.00	0.00	0.00	0.00	0.00		

		WAVELENGTH = 10.136200 MICROMETERS													
		FREQUENCY = 986.563 WAVELENGTHS													
HT(MM)		TROPICAL			MIDLATITUDE			MIDLATITUDE			SUBARCTIC				
		SUMMER			WINTER			SUMMER			WINTER				
		CLEAR			AEROSOL			HAZY							
		$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$\kappa(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$\kappa(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$k(\text{km}^{-1})$	$\sigma(\text{km}^{-1})$	$\kappa(\text{km}^{-1})$			
0	1	4.282E-01	0.00	2.475E-01	0.00	3.280E-02	0.00	1.215E-01	0.00	1.144E-02	0.00	5.572E-03	4.860E-03	2.754E-02	2.359E-02
0	2	3.063E-01	0.00	1.770E-01	0.00	2.678E-02	0.00	8.831E-02	0.00	1.133E-02	0.00	3.871E-03	3.317E-03	1.643E-02	1.433E-02
1	1	1.619E-01	0.00	8.833E-02	0.00	1.840E-02	0.00	4.928E-02	0.00	1.003E-02	0.00	1.689E-03	1.447E-03	5.605E-03	4.903E-03
2	3	7.358E-02	0.00	4.286E-02	0.00	1.309E-02	0.00	2.908E-02	0.00	7.932E-03	0.00	7.207E-04	6.176E-04	1.947E-03	1.558E-03
3	4	3.017E-02	0.00	2.288E-02	0.00	9.080E-03	0.00	1.782E-02	0.00	6.029E-03	0.00	3.347E-04	2.868E-04	9.506E-04	7.298E-04
4	5	1.701E-02	0.00	1.375E-02	0.00	6.314E-03	0.00	1.144E-02	0.00	4.290E-03	0.00	2.084E-04	1.786E-04	3.107E-04	2.562E-04
5	6	1.158E-02	0.00	9.651E-03	0.00	4.639E-03	0.00	7.773E-03	0.00	3.021E-03	0.00	1.522E-04	1.304E-04	1.522E-04	1.304E-04
6	7	8.033E-03	0.00	7.315E-03	0.00	3.455E-03	0.00	5.280E-03	0.00	2.172E-03	0.00	1.226E-04	1.051E-04	1.225E-04	1.051E-04
7	8	5.753E-03	0.00	5.408E-03	0.00	2.583E-03	0.00	3.770E-03	0.00	1.595E-03	0.00	1.200E-04	1.028E-04	1.290E-04	1.028E-04
8	9	4.316E-03	0.00	3.961E-03	0.00	2.016E-03	0.00	2.714E-03	0.00	1.282E-03	0.00	1.193E-04	1.022E-04	1.133E-04	1.022E-04
9	10	3.135E-03	0.00	3.024E-03	0.00	1.520E-03	0.00	1.978E-03	0.00	1.265E-03	0.00	1.153E-04	9.882E-05	1.153E-04	9.882E-05
10	11	2.304E-03	0.00	2.281E-03	0.00	1.386E-03	0.00	1.708E-03	0.00	1.359E-03	0.00	1.103E-04	9.448E-05	1.103E-04	9.448E-05
11	12	1.674E-03	0.00	1.705E-03	0.00	1.384E-03	0.00	1.795E-03	0.00	1.952E-03	0.00	1.094E-04	9.372E-05	1.094E-04	9.372E-05
12	13	1.252E-03	0.00	1.257E-03	0.00	1.398E-03	0.00	1.774E-03	0.00	1.487E-03	0.00	1.077E-04	9.231E-05	1.077E-04	9.231E-05
13	14	8.282E-04	0.00	1.094E-03	0.00	1.398E-03	0.00	1.857E-03	0.00	1.542E-03	0.00	1.024E-04	8.774E-05	1.024E-04	8.774E-05
14	15	6.073E-04	0.00	1.146E-03	0.00	1.353E-03	0.00	1.871E-03	0.00	1.525E-03	0.00	9.923E-05	8.417E-05	9.823E-05	8.417E-05
15	16	4.155E-04	0.00	1.129E-03	0.00	1.316E-03	0.00	1.823E-03	0.00	1.535E-03	0.00	9.285E-05	7.956E-05	9.236E-05	7.956E-05
16	17	3.073E-04	0.00	1.122E-03	0.00	1.284E-03	0.00	1.898E-03	0.00	1.490E-03	0.00	9.000E-05	7.712E-05	9.000E-05	7.712E-05
17	18	3.414E-04	0.00	1.151E-03	0.00	1.266E-03	0.00	1.894E-03	0.00	1.411E-03	0.00	8.802E-05	7.542E-05	8.802E-05	7.542E-05
18	19	4.503E-04	0.00	1.189E-03	0.00	1.216E-03	0.00	1.872E-03	0.00	1.337E-03	0.00	7.956E-05	6.817E-05	7.956E-05	6.817E-05
19	20	5.819E-04	0.00	1.255E-03	0.00	1.175E-03	0.00	1.854E-03	0.00	1.227E-03	0.00	6.273E-05	5.375E-05	6.273E-05	5.375E-05
20	21	7.438E-04	0.00	1.296E-03	0.00	1.165E-03	0.00	1.767E-03	0.00	1.143E-03	0.00	4.577E-05	3.922E-05	4.577E-05	3.922E-05
21	22	9.282E-04	0.00	1.359E-03	0.00	1.131E-03	0.00	1.740E-03	0.00	1.049E-03	0.00	3.377E-05	2.894E-05	3.377E-05	2.894E-05
22	23	1.073E-03	0.00	1.401E-03	0.00	1.090E-03	0.00	1.690E-03	0.00	9.579E-04	0.00	2.562E-05	2.195E-05	2.562E-05	2.195E-05
23	24	1.180E-03	0.00	1.516E-03	0.00	1.045E-03	0.00	1.655E-03	0.00	9.162E-04	0.00	1.994E-05	1.708E-05	1.994E-05	1.708E-05
24	25	1.298E-03	0.00	1.599E-03	0.00	1.046E-03	0.00	1.749E-03	0.00	8.200E-04	0.00	1.527E-05	1.394E-05	1.627E-05	1.394E-05
25	30	1.607E-03	0.00	1.806E-03	0.00	9.623E-04	0.00	2.002E-03	0.00	8.239E-04	0.00	9.583E-06	7.440E-06	9.633E-06	7.440E-06
30	35	1.780E-03	0.00	2.005E-03	0.00	8.701E-04	0.00	2.964E-03	0.00	6.941E-04	0.00	2.479E-06	2.124E-06	2.479E-06	2.124E-06
35	40	1.849E-03	0.00	2.189E-03	0.00	9.907E-04	0.00	2.473E-03	0.00	6.983E-04	0.00	0.00	0.00	0.00	0.00
40	45	1.664E-03	0.00	2.073E-03	0.00	1.047E-03	0.00	2.396E-03	0.00	6.472E-04	0.00	0.00	0.00	0.00	0.00
45	50	1.223E-03	0.00	1.591E-03	0.00	8.534E-04	0.00	1.766E-03	0.00	5.516E-04	0.00	0.00	0.00	0.00	0.00
50	70	1.487E-04	0.00	1.821E-04	0.00	4.703E-05	0.00	1.846E-04	0.00	1.388E-04	0.00	0.00	0.00	0.00	0.00
70	100	1.809E-06	0.00	2.041E-06	0.00	2.008E-05	0.00	2.037E-06	0.00	2.475E-06	0.00	0.00	0.00	0.00	0.00

HT(K4)	TROPICAL			MIDLATITUDE SUMMER			MIDLATITUDE WINTER			SUBARCTIC SUMMER			SUBARCTIC WINTER			CLEAR			AEROSOL			HAZY		
	$k(km^{-1})$	$\sigma(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	$\sigma(km^{-1})$	$k(km^{-1})$	$\sigma(km^{-1})$	
0	4.225E-01	0.00	2.429E-01	0.00	3.062E-02	0.00	1.179E-01	0.00	1.015E-02	0.00	5.679E-03	4.867E-03	2.757E-03	2.757E-02	2.371E-02									
1	3.013E-01	0.00	1.729E-01	0.00	2.477E-02	0.00	8.506E-02	0.00	9.943E-03	0.00	3.879E-03	3.322E-03	1.745E-02	1.495E-02										
2	1.579E-01	0.00	8.499E-02	0.00	1.658E-02	0.00	4.681E-02	0.00	8.691E-03	0.00	1.691E-03	1.449E-03	5.612E-03	4.910E-03										
3	7.028E-02	0.00	4.000E-02	0.00	1.147E-02	0.00	2.685E-02	0.00	6.763E-03	0.00	7.215E-04	6.184E-04	1.949E-03	1.571E-03										
4	2.737E-02	0.00	2.051E-02	0.00	7.727E-03	0.00	1.591E-02	0.00	4.981E-03	0.00	3.351E-04	2.871E-04	8.515E-04	7.599E-04										
5	1.475E-02	0.00	1.189E-02	0.00	5.185E-03	0.00	9.888E-03	0.00	3.482E-03	0.00	2.087E-04	1.788E-04	3.110E-04	2.566E-04										
6	9.711E-03	0.00	8.044E-03	0.00	3.782E-03	0.00	6.506E-03	0.00	2.402E-03	0.00	1.524E-04	1.306E-04	1.524E-04	1.305E-04										
7	6.515E-03	0.00	5.975E-03	0.00	2.790E-03	0.00	4.338E-03	0.00	1.744E-03	0.00	1.228E-04	1.052E-04	1.228E-04	1.052E-04										
8	4.539E-03	0.00	4.366E-03	0.00	2.077E-03	0.00	3.046E-03	0.00	1.310E-03	0.00	1.194E-04	1.030E-04	1.291E-04	1.030E-04										
9	3.333E-03	0.00	3.177E-03	0.00	1.657E-03	0.00	2.188E-03	0.00	1.089E-03	0.00	1.155E-04	9.896E-05	1.155E-04	9.896E-05										
10	2.386E-03	0.00	2.404E-03	0.00	1.293E-03	0.00	1.625E-03	0.00	1.135E-03	0.00	1.104E-04	9.461E-05	1.104E-04	9.461E-05										
11	1.731E-03	0.00	1.809E-03	0.00	1.202E-03	0.00	1.429E-03	0.00	1.250E-03	0.00	1.095E-04	9.385E-05	1.095E-04	9.385E-05										
12	1.248E-03	0.00	1.360E-03	0.00	1.211E-03	0.00	1.506E-03	0.00	1.362E-03	0.00	1.079E-04	9.244E-05	1.079E-04	9.244E-05										
13	9.240E-04	0.00	1.014E-03	0.00	1.212E-03	0.00	1.492E-03	0.00	1.380E-03	0.00	1.023E-04	8.786E-05	1.023E-04	8.786E-05										
14	6.070E-04	0.00	8.862E-04	0.00	1.190E-03	0.00	1.534E-03	0.00	1.377E-03	0.00	9.935E-05	8.429E-05	9.834E-05	9.439E-05										
15	4.030E-04	0.00	9.119E-04	0.00	1.125E-03	0.00	1.519E-03	0.00	1.321E-03	0.00	9.935E-05	8.429E-05	9.834E-05	9.439E-05										
16	2.983E-04	0.00	8.835E-04	0.00	1.067E-03	0.00	1.459E-03	0.00	1.293E-03	0.00	9.935E-05	8.429E-05	9.834E-05	9.439E-05										
17	2.212E-04	0.00	8.651E-04	0.00	1.014E-03	0.00	1.484E-03	0.00	1.244E-03	0.00	9.911E-05	7.723E-05	9.911E-05	7.723E-05										
18	2.469E-04	0.00	8.740E-04	0.00	9.762E-04	0.00	1.452E-03	0.00	1.110E-03	0.00	9.912E-05	7.552E-05	9.812E-05	7.552E-05										
19	3.245E-04	0.00	9.213E-04	0.00	9.163E-04	0.00	1.404E-03	0.00	1.018E-03	0.00	7.965E-05	6.827E-05	7.956E-05	5.927E-05										
20	4.188E-04	0.00	9.247E-04	0.00	8.685E-04	0.00	1.362E-03	0.00	9.104E-04	0.00	5.280E-05	5.383E-05	5.280E-05	5.383E-05										
21	5.314E-04	0.00	9.407E-04	0.00	8.442E-04	0.00	1.278E-03	0.00	8.290E-04	0.00	4.582E-05	3.927E-05	4.582E-05	3.927E-05										
22	6.583E-04	0.00	9.733E-04	0.00	8.080E-04	0.00	1.245E-03	0.00	7.430E-04	0.00	3.391E-05	2.898E-05	3.391E-05	2.898E-05										
23	7.673E-04	0.00	9.941E-04	0.00	7.702E-04	0.00	1.200E-03	0.00	6.762E-04	0.00	2.553E-05	2.198E-05	2.553E-05	2.198E-05										
24	8.290E-04	0.00	1.070E-03	0.00	7.333E-04	0.00	1.170E-03	0.00	6.492E-04	0.00	1.995E-05	1.711E-05	1.995E-05	1.711E-05										
25	9.102E-04	0.00	1.058E-03	0.00	7.303E-04	0.00	1.123E-03	0.00	5.705E-04	0.00	1.629E-05	1.396E-05	1.629E-05	1.396E-05										
30	1.133E-03	0.00	1.279E-03	0.00	6.694E-04	0.00	1.424E-03	0.00	5.710E-04	0.00	9.693E-06	7.451E-06	9.693E-06	7.451E-06										
35	1.279E-03	0.00	1.445E-03	0.00	6.109E-04	0.00	1.246E-03	0.00	4.845E-04	0.00	8.48E-06	6.48E-06	8.48E-06	6.48E-06										
40	1.354E-03	0.00	1.610E-03	0.00	7.114E-04	0.00	1.826E-03	0.00	4.693E-04	0.00	0.00	0.00	0.00	0.00										
45	1.238E-03	0.00	1.552E-03	0.00	7.696E-04	0.00	1.802E-03	0.00	4.690E-04	0.00	0.00	0.00	0.00	0.00										
50	9.192E-04	0.00	1.205E-03	0.00	6.373E-04	0.00	1.341E-03	0.00	4.070E-04	0.00	0.00	0.00	0.00	0.00										
55	1.084E-04	0.00	1.332E-04	0.00	3.446E-05	0.00	1.350E-04	0.00	1.022E-04	0.00	0.00	0.00	0.00	0.00										
60	1.253E-06	0.00	1.413E-06	0.00	1.407E-05	0.00	1.307E-06	0.00	1.757E-06	0.00	0.00	0.00	0.00	0.00										