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Atmospheric absorption line data - updated
version. By HUNT, G.E. and TRAYNIER, C.A.

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[1976], 30cm.Pp.[3].2 Refs.

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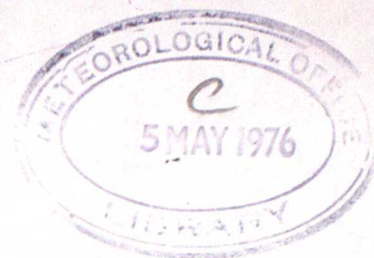
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MET O 19 BRANCH MEMORANDUM NO. 31.



Atmospheric Absorption Line Data - Updated Version

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An updated version (Hunt and Parker, 1973) of the AFCRL compilation of the molecular spectroscopic parameters for a number of infra-red molecules is now available on tape 200524.

The most significant of the changes between this new data set and the previous one are:-

1) A large number of weak CO_2 bands in the region from 400 to 4000 cm^{-1} have been added. These bands are listed in the report (AFCRL-TR-73-0096) but were not initially included.

2) Data on the lines associated with the minor isotopes of water vapour have been recently re-calculated covering the spectral region from 1.8 to 10 micrometers.

3) Submillimeter lines of oxygen and the pure rotation lines of CO have been added.

4) Methane data near 3.3 and 7.5 micrometers have been completely replaced.

5) Half widths have been supplied for most of the lines on the tape based either on measurements or recent theoretical investigations.

ACCESSION OF TAPE

The data is stored on tape 200524 in ascending order of frequency, and is split into 7 files as was its predecessor. Because of the nature of the routine used to copy the files, however, this time they all have the same name - M20.AFCRL2. These files are arranged as follows:-

- File 1 (DSN = M20.AFCRL2) - up to 500 cm^{-1}
- File 2 (DSN = M20.AFCRL2) - from 500 cm^{-1} to 1000 cm^{-1}
- File 3 (DSN = M20.AFCRL2) - from 1000 cm^{-1} to 2000 cm^{-1}
- File 4 (DSN = M20.AFCRL2) - from 2000 cm^{-1} to 5000 cm^{-1}
- File 5 (DSN = M20.AFCRL2) - from 5000 cm^{-1} to 7500 cm^{-1}
- File 6 (DSN = M20.AFCRL2) - from 7500 cm^{-1} to 10000 cm^{-1}
- File 7 (DSN = M20.AFCRL2) - above 10000 cm^{-1}

Each file is split into blocks of data. The first element in each block tells how many data records are in the block. The records are in 80 column card form such that one card contains data for a given frequency.

The data can be read in the same manner as the original version. The following FORTRAN program illustrates simply how to extract the first file of data and list it.

```
      DIMENSION A(40,4),B(40,35),N(40,3)
2     READ(8,1,END=5)IND,(((A(I,J),J=1,4),(B(I,J),J=1,35),(N(I,J),J=1,3)
      *),I=1,IND)
      WRITE(6,6)
      DO 3 I=1,IND
3     WRITE(6,4)A(I,J),J=1,4),(B(I,J),J=1,35),(N(I,J),J=1,3)
      GO TO 2
5     STOP
1     FORMAT(I10,40(F10.3,E10.3,1x F4.3,F10.3,35A1,I3,I4,I3))
4     FORMAT(1H ,F12.3,E12.3,F7.3,F12.3,35A1,I3,I4,I3)
6     FORMAT(1H0)
      END
```

The JCL necessary for the tape read is defined by:-

```
//GO.FTO8FOO1 DD DSN=M20.AFCRL2,UNIT=TAPE9,
// VOL=(PRIVATE,,SER=200524),LABEL=(1,SL,,IN),
// DCB=(RECFM=VS,BLKSIZE=3300,DEN=3)
```

REFERENCES

- 1 R. A. McCLATCHEY et al (1973) AFCRL Atmospheric Absorption Line Parameters Compilation - AFCRL-TR-73-0096 - Environmental Research Papers No. 434
- 2 G. E. HUNT and J PARKER Met-0-20 Meteorological Office Atmospheric Absorption Line Data October 1973

All enquiries regarding this document or the use of the data should be directed to Dr. G. E. Hunt Met O 19, Room 230, EXtn. 2428