#742

81-070B-03~~E~~D,04~~E~~D,05C B,07~~C~~B,09~~F~~E

DE-B

16 SECOND UA ATOMSHPERIC DATA

81-070B-03D,04D,05B,07B,09E

DE-B

16 SECOND UA ATOMSPHERIC DATA

THIS DATASET CONSISTS OF 1 6250 BPI, VAX LABELED WRITTEN TAPE. THE LABEL NAME IS "DEUAOA", AND SHOULD BE MOUNTED AS SUCH. THE TAPE HAS BEEN RESTORED FROM ITS ORIGINAL BACKUP FORMAT. A DIRECTORY LISTING OF THE TAPE HAVE BEEN INCLUDED IN THE DATASET CATALOG.

D#	C#	FILES	TIMESPAN
D-103885	C-031269	556	08/06/81-02/16/83

From: NCFMRB::OPERATOR 6-FEB-1997 09:47:12.89
To: NCF::MYERS
CC:
Subj: deuaoa directory listing

Directory MKC400:[]

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DEUA83043.DAT;3	DEUA83044.DAT;3	DEUA83045.DAT;3	DEUA83046.DAT;3
DEUA83047.DAT;3	DEUACAT.DAT;6	DEUAOA.LIS;1	OABASE.DAT;1
OAREAD4.FOR;75	README.TXT;1	UREAD.FOR;8	UROPEN.FOR;10

Total of 556 files.

UA tape for DE on a vax

This is a system of files and subroutines to read atmospheric data and corresponding orbit data at 16 second intervals. The tape contains the UA files (DEUAyyddd.DAT), read routines for the files (UROPEN.FOR,UREAD.FOR), a catalog of UA data (DEUACAT.DAT), orbit data (OABASE.DAT), and a read routine for the orbit data (OAREAD.FOR).

Format of VAX version of UA files for DE

Files are written unformatted with a file for each days data and the record length (fixed for any given day) depending on the available data.

File names are of the form DEUAYYDDD.DAT where YY is the last two digits of the year (19YY) and DDD is the day count (Jan 1 = 1).

Word	First Record	Other Records
1	NW*100000+YYDDD (integer)	Time (integer millisec)
2	Word code 1 (integer)	Data for code 1 (real)
3	" " 2 "	" " " 2 "
|		
|		
NW+1	" " NW "	" " " NW "

The integer codes for currently available data are:

1 NACS N2
2 NACS O
3 NACS HE
4 NACS AR
5 NACS N
6 WATS TN
7 WATS NVE
8 WATS NVU
9 LANG NP
10 LANG TE
11 FPI FWAV
12 FPI FALT
13 FPI FVN
14 FPI FTEM
15 FPI RAY
16 RPA TI
17 RPA NI
18 RPA IVE
19 RPA IVN
20 RPA IVU

File DEUACAT.DAT contains a list of days and geophysical data (code numbers) available on that day (TYPE DEUACAT.DAT).

Two subroutines are available to aid in accessing the UA data. They use I/O unit numbers in the range 91 to 99. The logical SYS$UA must be ASSIGNED to the directory containing the DEUAyyddd.DAT files.

Initiate read operations.

```
CALL UROPEN(FDATE,FTIME,IERR,MAP)

 Input parameters:
  FDATE - First date (YYDDD) for data (INTEGER).
  FTIME - First time (Millisec) for data (INTEGER).
  MAP   - array containing number of data items to be
          retrieved plus list of the data item code numbers.

 Output parameters:
  IERR - Error return:
         3XX Open error with XX VAX error code;
         800 No data within 20 days of request;
         900 No further data.
```

Read sequentially.

```
CALL UREAD(IDATE,ITIME,IERR,DATA)

 Output parameters:
  IDATE - Date of data (YYDDD).
  ITIME - Time of data (Millisec).
  IERR  - Error return:
          3XX Open error with XX VAX error code;
          400  Read error;
          800 No data within 20 days of request;
          900 No further data.
  DATA  - Array of data according to map established
          in call to UROPEN.
```

Subroutine OAREAD is used to get orbit data. I/O unit 99 is used for reading. The logical SYS$OA should be ASSIGNED to the directory containing the file OABASE.DAT.

```
CALL OAREAD(IDATE,ITIME,IERR,MAP,DATA)

Input parameters:
  IDATE - Date of data (YYDDD).
  ITIME - Time of data (Millisec).
  MAP   - Array containing number of required parameters
          plus list of parameters
          13 Orbit number
          32 Altitude
          33 Latitude
          34 Longitude
          37 Local Solar Time
          38 Local Magnetic Time
          39 L Shell
          40 Invariant Latitude
          76 Solar Zenith Angle
Output parameters:
  IERR  - Error return from file open
    ierr = -20 means gap in data prevented interpolation (may not occur)
    ierr = -21 means read error from OABASE.DAT (probably
           trying to access non-existant record)
  DATA  - Array of data according to MAP
```

Example:

```
C       Example to read N2, He, O, and TN starting at day 82200 (two
C       hundreth day of 1982) and at 20000 sec plus altitude and latitude.
C       UREAD returns actual date and time of data.
      DIMENSION MAPU(5),DATAU(4),MAPO(3),DATAO(2)
      DATA MAPU/4,1,2,3,6/,MAPO/2,32,33/
      CALL UROPEN(82200,20000000,IERR,MAPU)
      IF(IERR.NE.0) GOTO 20
   10 CONTINUE
        CALL UREAD(IDATE,ITIME,IERR,DATA)
        IF(IERR.NE.0) GOTO 20
        CALL OAREAD(IDATE,ITIME,IERR,MAP,DATA)
        TYPE*,IDATE,ITIME,DATAO,DATAU
        IF(IERR.NE.0) GOTO 20
        GOTO 10
   20 CONTINUE
...
...
      STOP
      END
```

```
      SUBROUTINE UREAD(IDATE,ITIME,IERR,DATA)
C-----------------------------------------------------------------
C        Sequential read of DE UA records
C        A. E. Hedin 11/27/84
C     Output parameters:
C       IDATE - Date of data (YYDDD).
C       ITIME - Time of data (Millisec).
C       IERR  - Error return:
C               3XX Open error with XX VAX error code;
C               400  Read error;
C               800 No data within 20 days of request;
C               900 No further data.
C       DATA  - Array of data according to map established
C               in call to UROPEN.
C     I/O Units 92 and 94.
C     File names of the form SYS$UA:DEUAyyddd
C-----------------------------------------------------------------
      INTEGER DMAP(21),RMAP(21),TMAP(21)
      DIMENSION DATA(1),D(20)
      COMMON/U$COM/IOS,NW,IOPEN,NDATE,RMAP,TMAP
      DATA DMAP/20,1,2,3,4,5,6,7,8,9,10,11,12,13,14
     & ,15,16,17,18,19,20/
      IERR=0
      ITRANS=0
      IF(IOPEN.NE.9876) CALL UROPEN(0,0,IERR,DMAP)
      IF(IERR.NE.0) GOTO 60
   10 CONTINUE
        IDATE=NDATE
        READ(92,ERR=90,END=50) ITIME,(D(J),J=1,NW)
C       Transfer data if read successful
        DO 20 J=1,RMAP(1)
          K=TMAP(RMAP(J+1))
          IF(K.GT.0) THEN
            DATA(J)=D(K)
          ELSE
            DATA(J)=0.
          ENDIF
   20   CONTINUE
        GOTO 60
C       Go to new file
   50   CONTINUE
        CALL UROPEN(IDATE+1,0,IERR,RMAP)
        IF(IERR.EQ.0) GOTO 10
   60 CONTINUE
      RETURN
   90 CONTINUE
      IERR=400+IOS
      RETURN
      END
```

```
      SUBROUTINE UROPEN(FDATE,FTIME,IERR,MAP)
C-----------------------------------------------------------------
C       Open DE UA files and position for read.
C       A.E.Hedin 11/27/84
C     Input parameters:
C       FDATE - First date (YYDDD) for data (INTEGER).
C       FTIME - First time (Millisec) for data (INTEGER).
C       MAP   - array containing number of data items to be
C               retrieved plus list of the data item numbers.
C                1 NACS N2
C                2 NACS O
C                3 NACS HE
C                4 NACS AR
C                5 NACS N
C                6 WATS TN
C                7 WATS NVE
C                8 WATS NVU
C                9 LANG NP
C               10 LANG TE
C               11 FPI FWAV
C               12 FPI FALT
C               13 FPI FVN
C               14 FPI FTEM
C               15 FPI RAY
C               16 RPA TI
C               17 RPA NI
C               18 RPA IVE
C               19 RPA IVN
C               20 RPA IVU
C     Output parameters:
C       IERR - Error return:
C              3XX Open error with XX VAX error code;
C              800 No data within 20 days of request;
C              900 No further data.
C     I/O Units 92 and 94.
C     File names of the form SYS$UA:DEUAyyddd
C-----------------------------------------------------------------
      INTEGER FDATE,FTIME,FMAP(21),RMAP(21),TMAP(21)
      DIMENSION MAP(1)
      CHARACTER*5 CYD
      COMMON/U$COM/IOS,NW,IOPEN,NDATE,RMAP,TMAP
      DATA IOPEN/0/,RMAP/21*0/,FMAP/21*0/,MAXMAP/21/
      DATA JOPEN/9876/,MINDATE/81218/,MAXDATE/83049/
      IERR=0
      ITIME=0
C      Save map parameters
      MP=MIN(MAXMAP,MAP(1)+1)
      DO 20 I=1,MP
        RMAP(I)=MAP(I)
   20 CONTINUE
C      Close file if open
      IF(IOPEN.EQ.JOPEN) THEN
        CLOSE(92)
        IOPEN=0
      ENDIF
C      Open requested date or earliest expected
      NDATE=MAX(FDATE,MINDATE)
      WRITE(CYD,100) NDATE
  100 FORMAT(I5)
```

etc.

DEUACAT.DAT

Sample page

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