Subject: Converting characters to real
Posted by Kelly Dean on Mon, 09 Nov 1998 08:00:00 GMT
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I am working on some IDL to code to read in GMS imagery in the McIDAS format. There is one section that I am having difficult understanding - the orbital element section. I know how to use the numbers in the navigation model, but how do I extract the values from this section?

From what I can understand, the nav section is a character string and the character values are converted into a bit, then converted into a real. There is some FORTRAN code at the bottom that maybe of some help.

I would appreciate any suggestions anyone may have to help me to use IDL to convert this character string into a real number.

Kelly

==========FORTRAN Code ==========

```
      SUBROUTINE DECODE_OA_BLOCK( COBAT, FORM )
C*********************************************************** *************

C     ORBIT AND ATTITUDE DATA PROCESSING ROUTINE
C*********************************************************** *************

C
      implicit none
      INTEGER  MAP(672,4)
      integer  i,j
      CHARACTER  COBAT*3200, FORM*5
      REAL   R4DMY,RESLIN(4),RESELM(4),RLIC(4),RELMFC(4),SENSSU(4)
      REAL   VMIS(3),ELMIS(3,3),RLINE(4),RELMNT(4)
      real   SUBLAT,SUBLON
      DOUBLE PRECISION  R8DMY,DSPIN,DTIMS,ATIT(10,10),
     &                  ORBT1(35,8)
C
      COMMON /MMAP1/MAP
      COMMON /NAV1/SUBLAT, SUBLON
C
      EQUIVALENCE (MAP( 5,1),DTIMS),    (MAP( 7,1),RESLIN(1))
      EQUIVALENCE (MAP(11,1),RESELM(1)),(MAP(15,1),RLIC(1))
      EQUIVALENCE (MAP(19,1),RELMFC(1)),(MAP(27,1),SENSSU(1))
      EQUIVALENCE (MAP(31,1),RLINE(1)), (MAP(35,1),RELMNT(1))
      EQUIVALENCE (MAP(39,1),VMIS(1)),  (MAP(42,1),ELMIS)
      EQUIVALENCE (MAP(131,1),DSPIN)
      EQUIVALENCE (MAP(13,3),ORBT1(1,1)),(MAP(13,2),ATIT(1,1))
C
```

```
 C=============================================================
==============

C
      DO 1000 I=1,4
        DO 1100 J=1,672
          MAP(J,I) = 0
 1100   CONTINUE
 1000 CONTINUE
C

      CALL SV0100( 6, 8, COBAT(  1:  6), R4DMY    , DTIMS )
      CALL SV0100( 4, 8, COBAT(  7: 10), RESLIN(1), R8DMY )
      CALL SV0100( 4, 8, COBAT( 11: 14), RESLIN(2), R8DMY )
      CALL SV0100( 4, 8, COBAT( 11: 14), RESLIN(3), R8DMY )
      CALL SV0100( 4, 8, COBAT( 11: 14), RESLIN(4), R8DMY )
      CALL SV0100( 4,10, COBAT( 15: 18), RESELM(1), R8DMY )
      CALL SV0100( 4,10, COBAT( 19: 22), RESELM(2), R8DMY )
      CALL SV0100( 4,10, COBAT( 19: 22), RESELM(3), R8DMY )
      CALL SV0100( 4,10, COBAT( 19: 22), RESELM(4), R8DMY )
      CALL SV0100( 4, 4, COBAT( 23: 26), RLIC(1)  , R8DMY )
      CALL SV0100( 4, 4, COBAT( 27: 30), RLIC(2)  , R8DMY )
            ....
            ....
            ....
            ....
            .... if the rest of the code is needed, let me know.

      SUBROUTINE SV0100( IWORD, IPOS, C, R4DAT, R8DAT)
 C*********************************************************** *
C     TYPE CONVERT ROUTINE ( R-TYPE )
 C*********************************************************** *
C
      implicit none
      INTEGER  IWORD,IPOS,IDATA1
      CHARACTER  C(*)*1
      REAL     R4DAT
      DOUBLE PRECISION   R8DAT
C
 C============================================================= ==
C
      R4DAT = 0.0
      R8DAT = 0.D0
      IF(IWORD.EQ.4) THEN
        IDATA1 = ICHAR( C(1)(1:1) )/128
        R8DAT  = DFLOAT( MOD(ICHAR(C(1)(1:1)),128))*2.D0**(8*3)+
     *           DFLOAT(     ICHAR(C(2)(1:1))     )*2.D0**(8*2)+
     *           DFLOAT(     ICHAR(C(3)(1:1))     )*2.D0**(8*1)+
```

```
*         DFLOAT(     ICHAR(C(4)(1:1))     )
   R8DAT = R8DAT/10.D0**IPOS
   IF(IDATA1.EQ.1)  R8DAT = -R8DAT
   R4DAT = SNGL(R8DAT)
 ELSEIF(IWORD.EQ.6) THEN
   IDATA1 = ICHAR( C(1)(1:1) )/128
   R8DAT  = DFLOAT( MOD(ICHAR(C(1)(1:1)),128))*2.D0**(8*5)+
*         DFLOAT(     ICHAR(C(2)(1:1))     )*2.D0**(8*4)+
*         DFLOAT(     ICHAR(C(3)(1:1))     )*2.D0**(8*3)+
*         DFLOAT(     ICHAR(C(4)(1:1))     )*2.D0**(8*2)+
*         DFLOAT(     ICHAR(C(5)(1:1))     )*2.D0**(8*1)+
*         DFLOAT(     ICHAR(C(6)(1:1))     )
   R8DAT = R8DAT/10.D0**IPOS
   IF(IDATA1.EQ.1) R8DAT =-R8DAT
   R4DAT = SNGL(R8DAT)
 ENDIF
 RETURN
 END
```