Subject: Yet Another Reason Not to Use MAP_SET
Posted by David Fanning on Tue, 30 Dec 2008 06:02:45 GMT
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Folks,

After another *long* and tedious day, I've discovered yet another reason to abandon MAP_SET for the MAP_PROJ_*** routines. It appears that under certain, relatively rare, but important to me, circumstances calling MAP_SET can cause CONVERT_COORD to throw NANs, rather than good numbers.

I discovered this because I was writing a map coordinate object for my Catalyst Library. When I was converting from UV coordinates to lat/lon coordinates, I kept getting NANs. Very strange...

So here is the deal. Several years ago I worked out what system variables need to be set to effect a data coordinate system without actually drawing a plot. This is how I set up a data coordinate space in the Catalyst Library.

Here is a program, named Coord_Test, that will allow me to demonstrate the problem:

http://www.dfanning.com/misc/coord_test.pro

By calling Coord_Test, I get this output. The "CATALYST Method" and the "PLOT Method" are the results of converting the device coordinate (12, 341) to data coordinates after setting up the data coordinate space by my "catalyst" method, or by drawing a plot. (I use Convert_Coord to do the conversion.) As you can see, I get identical output with both methods, as I expect.

```
IDL> coord_test
XRange:       -2039019.3       3677734.5
YRange:       -8164217.0      -3672516.8
!X.Window:      0.000000      1.00000
!Y.Window:      0.000000      1.00000
!P.Clip:           0           0         700         500
CATALYST Method:       -1941017.8      -5100877.4       0.00000000

XRange:       -2039019.3       3677734.5
YRange:       -8164217.0      -3672516.8
!X.Window:      0.000000      1.00000
!Y.Window:      0.000000      1.00000
!P.Clip:           0           0         700         500
```

```
PLOT Method:       -1941017.8      -5100877.4      0.00000000
```

Now, however, I issue a MAP_SET command before running the Coord_Test program. Notice now my "catalyst" method is throwing NANs.

```
IDL> MAP_SET, 90, -105, /STEREOGRAPHIC, /NOBORDER, $
       POSITION=position, /NOERASE
IDL> Coord_Test
XRange:       -2039019.3       3677734.5
YRange:       -8164217.0      -3672516.8
!X.Window:      0.000000      1.00000
!Y.Window:      0.000000      1.00000
!P.Clip:           0           0         700         500
CATALYST Method:              NaN             NaN      0.00000000

XRange:       -2039019.3       3677734.5
YRange:       -8164217.0      -3672516.8
!X.Window:      0.000000      1.00000
!Y.Window:      0.000000      1.00000
!P.Clip:           0           0         700         500
PLOT Method:       -1941017.8      -5100877.4      0.00000000
```

Can anyone think why a MAP_SET command would cause something like this?

Cheers,

David

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Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")