Subject: Limit on Polar Stereographic Projection?
Posted by lin on Fri, 26 Dec 1997 08:00:00 GMT
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Hi IDL users,

Can a polar stereographic map projection allow a specification of map boundary? Our research group needs to generate a series of polar stereographic maps of a subset of the southern hemisphere between some specified latitude (-30 degrees, see the example below) and the south pole. However, when we use /limit keyword (either four elements for the two opposite diagonals or eight elements for the left, top, right, bottom regions) in the map_set call to specify mapping boundaries, we get undesirable plots:

Our Sun workstation idl cuts out an entire quadrant from the map, viz the quadrant from longitude -180 to -90 as a coding example appended below.

Our Linux idl does not cut out the quadrant, but makes an ugly plot that extends outside the limiting -30 degree latitude circle out along the plot window's diagonals.

Everything is ok with the default of 0 degree latitude limit. (I.e. leaving off the "limit=" keyword.) But if that keyword is included with the 8 element vector specifying the latitudes and longitudes of the desired boundary, then the above problem occurs.

We don't want to limit ourselves to a 90 degree range of latitude for the polar stereographic type of plot, so we need to find a way to make idl plot the entire longitude range of -180 to +180 for any arbitrary latitude limit (for either the north or south pole projection).

Does anyone know what causes the problem and how to fix it? Thanks in advance for your help.

Jin

_____ example ----------
---------- begin cut ----------

```
;  This is an idl test program to draw the polar
;  stereographic map projection with an explicit
;  latitude limit, with the projection plane tangent
;  to a pole (the south pole in this example).
;
;
```

```
;  Define lat,lon at left, top, right, bottom edge of plot window
;
 lat_lon_limits=[-30.,-90., -30.,0., -30.,90., -30.,180.]
;
;
;  Define center of projection (tangent point in lat,lon space)
;
 p0lat = -90.
 p0lon = 0.
;
;
;  Define rotation angle
;
 rot = 0.
;
;
;  Set the map transformation, and plot the continents plus lon,lat lines
;
 map_set, p0lat, p0lon, rot, $
        /stereographic, $
        /grid,  $
        /continent,  $
        /isotropic, $
        /noborder,  $
        /label,  $
        latdel=10,  $
        londel=45,  $
        limit=lat_lon_limits
;
;
;  Terminate normally
;
end
--------------------------- end cut ----------------------------
```