Subject: Re: UTM mapping problems
Posted by andrew.cool on Thu, 11 Nov 2004 21:44:10 GMT
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sso@nilu.no (Sverre Solberg) wrote in message
news:<55f39a3a.0411110650.63c260ce@posting.google.com>...
> I have a problem with the UTM map projection which I cant find any
> solution for. Perhaps someone could help? I want to plot a UTM map
> for an approx 300 km area (in x and y) with a model grid (58x74 cells)
> on top, and I compute the lat/lon of the grid cells. However, when
> overplotting this grid the grid lines become very uneven and nothing
> like a straighth line at all. Is there any way to avoid this? And why
> is it behaving like this? The program below shows the problem (at
> least on my screen!). I'm using IDL 5.5 (yes I know there are
> upgrades) for Unix, and the 'utm_to_ll' function was taken from Ben
> Tuppers UTM IDL utilities found on this newsgroup.
>
> many thanks for any help!
> Sverre Solberg
>

Hi Sverre,

I don't think this is your fault.

If you comment out your plotting of the grid, and instead use IDL's
own Map_grid wih the Latdel and Londel keywords, then the same effect
occurs. (See amendment to code below). So it's not just your coding at
fault.
And if your remove the /trans, then the grid lines are wonderfully
straight,
though rotated. I suspect that there is an inherent problem in IDL's
mapping routines in the way they handle Transverse Mercator and
rotation.

Send your code to support@rsinc.com and say "What gives?" Or better
still,
search RSI's Tech Tips first.

Cheers,

Andrew
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Cool
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dsto
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defence

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gov
dot
au

Adelaide, South Oz

```
>
>  ----------------------------------------
>
>  PRO Test_utm
>
>  ;..Switch to black on white:
>    loadct, 39
>    !P.color   = 0
>    !P.background = !D.n_colors-1
>
>  ;..SW corner (WGS84 system):
>    east  = 692089.d
>    north = 3868229.d
>
>    dx   = 5000.d
>    nx   = 58 + 1
>    ny   = 74 + 1
>    zone = 34
>
>  ;..compute the lon/lat coordinates of the grid cells:
>    utmgrid = dblarr(nx, ny, 2)
>
>    FOR ix = 0, nx-1 DO BEGIN
>       FOR iy = 0, ny-1 DO BEGIN
>          utmx = east  + ix*dx - dx/2
>          utmy = north + iy*dx - dx/2
>          IF KEYWORD_SET(utm) THEN BEGIN
>             utmgrid(ix, iy, 1) = utmx
>             utmgrid(ix, iy, 0) = utmy
>          ENDIF ELSE BEGIN
>             latlon = utm_to_ll(utmx, utmy, 'WGS84', zone = zone)
>             utmgrid(ix, iy, 1) = latlon(0)
>             utmgrid(ix, iy, 0) = latlon(1)
>          ENDELSE
>       ENDFOR
>    ENDFOR
>
>    lat0 = utmgrid(0, 0, 0)
>    lon0 = utmgrid(0, 0, 1)
```

```
>    lat1 = utmgrid(nx-1, ny-1, 0)
>    lon1 = utmgrid(nx-1, ny-1, 1)
>
>  ;..Draw UTM MAP WGS84 (Aka NAD83)
>  ;     from Chuck Gantz via http://gpsy.com/gpsinfo/geotoutm.htm
>  ;     taken from the idl newsgroups
>  ;     assign constant values for WGS 84 datum for lat/lon to UTM
>    A     = 6378137.d
>    eccsq = 0.00669439d
>    k0    = 0.9996d
>
>    map_set, 0, 0, 12.7, /trans, limit = [lat0, lon0, lat1, lon1], $
>       ellipsoid = [A, eccsq, k0], title = title
>    map_continents, /coast, /hires, thick = 2
>
  lat_range = lat1 - lat0
  lon_range = lon1 - lon0

  latdel = lat_range/float(ny)
  londel = lon_range/float(nx)
  map_grid,londel=londel,latdel=latdel,glinestyle=0

>  ;..Draw the grid lines:
>  ;   FOR iy = 1, ny DO BEGIN
>  ;      x = utmgrid(*, iy-1, 1)
>  ;      y = utmgrid(*, iy-1, 0)
>  ;      oplot, x, y, color = 0
>  ;   ENDFOR
>  ;   FOR ix = 1, nx DO BEGIN
>  ;      x = utmgrid(ix-1, *, 1)
>  ;      y = utmgrid(ix-1, *, 0)
>  ;      oplot, x, y, color = 0
>  ;   ENDFOR
>
>  END
```