Subject: Re: create an UTM grid
Posted by natha on Tue, 29 Nov 2011 01:26:24 GMT
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I think we are doing exactly the same but you are taking in account
half pixel. You said that in your grids, the distances are exactly
1000 meters apart. Not in mines. Take a look :

```
  center_lat= 45
  center_lon=-74
  xdim=100
  ydim=100
  resolution=1000.

  map_utm=MAP_PROJ_INIT('UTM', /GCTP, CENTER_LON=center_lon,
CENTER_LAT=center_lat, ELLIPSOID=24)

  xycenter=MAP_PROJ_FORWARD(center_lon, center_lat,
MAP_STRUCTURE=map_utm)

  xstart=xycenter[0] - (xdim/2.-.5)*resolution
  ystart=xycenter[1] - (ydim/2.-.5)*resolution

  xgrid=FINDGEN(xdim)*resolution + xstart
  ygrid=FINDGEN(ydim)*resolution + ystart

  xgrid=REBIN(xgrid, xdim, ydim)
  ygrid=REBIN(REFORM(ygrid, 1, ydim), xdim, ydim)

  result=MAP_PROJ_INVERSE(xgrid, ygrid, MAP_STRUCTURE=map_utm)

  res_lon=REFORM(result[0,*],xdim,ydim)
  res_lat=REFORM(result[1,*],xdim,ydim)

  sz=SIZE(res_lon,/DIM)

  xres=FLTARR(sz)
  yres=FLTARR(sz)

  FOR i=0, sz[0]-2 DO FOR j=0, sz[1]-1 DO $
    xres[i,j]=MAP_2POINTS(res_lon[i,j],res_lat[i,j],res_lon[i
+1,j],res_lat[i,j],/METERS,RADIUS=6378137.)
  FOR i=0, sz[0]-1 DO FOR j=0, sz[1]-2 DO $

 yres[i,j]=MAP_2POINTS(res_lon[i,j],res_lat[i,j],res_lon[i,j] ,res_lat[i,j
+1],/METERS,RADIUS=6378137.)

  xres[sz[0]-1,*]=xres[sz[0]-2,*]
```

```
yres[*,sz[1]-1]=yres[*,sz[1]-2]

mmin_x=MIN(xres,MAX=mmax_x)
mmin_y=MIN(yres,MAX=mmax_y)

PRINT, mmin_x, mmax_x
PRINT, mmin_y, mmax_y
```

IDL prints:
998.289 998.727
1001.60 1002.14

Maybe this is because MAP_2POINTS do not use the same semimajor and semiminor axis of the ellipsoid but I tried the same code using the Sphere (6370997.0,6370997.0) and giving the same number to the RADIUS keyword on MAP_2POINTS. The result I get is:
999.991 1000.38
999.989 1000.38

And if my grid is 1000x1000, the results are:
990.751 1000.40
990.745 1000.40

I can consider this results correct even if I was expecting all distances to be exactly 1000m. Do you think that this is due to the same error you explained in http://www.idlcoyote.com/map_tips/utmwrong.php ?

Anyway, 1% is not a big error but I am missing some precision here.

nata
