
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
