Subject: Georeferencing Errors
Posted by will.mccarty on Tue, 02 Nov 2004 18:20:10 GMT
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OK, I've posted on this before, and this time I'm using a bit of a
more common dataset (GTOPO30 terrain elevation), but getting similar
geolocation errors. Thus I'm interested in seeing what (if anything)
you guys can come up with. I use the following code:

```
--test_lat_lon.pro
ulx = -99.99583333333334
uly = 39.99583333333333
dx = 0.00833333333333
dy = 0.00833333333333

lat = fltarr(4800,6000)
lon = lat
for i = 0, 4799 do begin
   for j = 0, 5999 do begin
      lat[i,j] = uly - dy*j
      lon[i,j] = ulx + dx*i
   endfor
endfor

openr,1,'W100N40.DEM'
z = intarr(4800,6000)
readu,1,z
close,1

z = swap_endian(z)
 map_set,mean(lat),mean(lon),/cylindrical,limit=[min(lat),min (lon),max(lat),max(lon)],/noborder

rmz = map_patch(z,lon,lat,missing=-9999)
tvscl,rmz
map_continents
end
---end
```

to put the topographic info to a projection. The result is at
http://vortex.nsstc.uah.edu/~mccarty/georef-err.png. Clearly there
are some georeferencing errors. I've tried both idl 5.6 (my normal
version) as well as 6.0. Similarly, I've tried multiple projections.
I've got some theories, but i'm looking to the experts on this one.

Thanks for any help you folks can provide.

Will

Subject: Re: Georeferencing Errors
Posted by will.mccarty on Wed, 03 Nov 2004 20:19:24 GMT
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OK, after months of wondering why, I've finally figured out the problem!

The double precision adjustment played a role, but not the main role. I had this problem with lat/lon grids already in double precision previously, and yet had the exact same georeferencing problems.

It all comes down to two simple parameters. I post this so when I have the problem again in 6 months, I'll find the answer.

I had been declaring projection information using:

--
map_set,mean(lat),mean(lon),/cylindrical,limit=[min(lat),min (lon),max(lat),max(lon)],/noborder
--

However, this gives a default border around the image. map_patch, however, assumes no border. Thus by declaring the projection as having no border:

--
map_set,mean(lat),mean(lon),/cylindrical,limit=[min(lat),min (lon),max(lat),max(lon)],/noborder,xmargin=0,ymargin=0
--

The map_continents vector information and the map_patch result end up lining up perfectly.

My thought process in why this happens may be flawed, but by setting xmargin and ymargin to zero, it lines up.

Will

Subject: Re: Georeferencing Errors
Posted by Kelly Dean on Thu, 04 Nov 2004 05:21:49 GMT
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You are on the right track, but try this instead...

TVscl, MAP_PATCH(z, lon, lat, missing=-9999, XSTART=x0, YSTART=y0), x0, y0

This will allow your image to be placed in the same location as your map. So there is no need to add XMargine=0 and YMargine=0 parameters in the MAP_SET declaration.

Kelly Dean
Colorado State University
Fort Collins, Colorado

Will McCarty wrote:

```
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>  endfor
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>  z = intarr(4800,6000)
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```

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>
> Will