Subject: Re: plotting on a sphere
Posted by Mark Hadfield on Sun, 07 Jul 2002 22:19:15 GMT

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"Chris O'Dell" <odell@cmb.physics.wisc.edu> wrote in message
news:3D260AC8.3050406@cmb.physics.wisc.edu...

> I am new to 3D graphing in IDL. I would like to plot various
> scalar fields on the surface of a sphere, displayed in 3D using
> color contours. Ideally, I would be able to then use my mouse to
> rotate the sphere to different orientations.

If you want 3D with rotations then you want object graphics.

To create a sphere in object graphics, you use MESH_OBJ to create a list of
vertex positions and a connectivity list (i.e. a list specifying which
vertices have to be connected to draw the shape). Then you feed these to an
IDLgrPolygon object. Here's an example that creates & displays a
plain-coloured sphere:

```
pro sphere_example
   compile_opt IDL2
   if n_elements(n_lon) eq 0 then n_lon = 20
   if n_elements(n_lat) eq 0 then n_lat = 20
   mesh_obj, 4, vert, conn, replicate(1, n_lon, n_lat)
   help, vert, conn
   sphere = obj_new('IDLgrPolygon', DATA=vert, POLY=conn, COLOR=[0,0,255],
STYLE=2)
   xobjview, sphere
end
```

To give the sphere a non-uniform colour you use the IDLgrPolygon's
VERT_COLORS property. You will see that the above example creates a mesh
with 400 vertices. The X, Y & Z positions of the vertices are held in the
columns of a [3,400] floating-point array. The VERT_COLORS array should be a
[3,400] byte array, with the columns corresponding to red, green and blue
respectively. Into this you need to load the color at each vertex, expressed
as a function of the X, Y and Z position at that vertex.

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