
Subject: Cartesian IDLgrSurface of [theta,phi] data to a sphere??

Posted by [tbowers0](#) on Thu, 09 Aug 2001 23:28:26 GMT

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Hi all,

I have a 10x24 2D array of 'intensities' where the cols and rows are values at each theta (0 to 90, every 10 degrees, includes a polar 'cap') and phi (0 to 360, every 15 degrees) 'look' angle over the hemisphere. I can easily plot this as a shaded surface via DFanning's xsurface program. Problem is, it's difficult to see the directional relationship of the data projected on this 2D surface. So, after much twiddling, I tried replacing the IDLgrSurface object with an IDLgrPolygon. E.g., replace this line in david's code

```
thisSurface = OBJ_NEW('IDLgrSurface', data, x, y, $
    Color=[255,255,0], _Extra=extra)
```

with this below to see the data shaded by value (easier to see how data maps to sphere in a minute)

```
thisPalette=Obj_New('IDLgrPalette')
thisPalette->LoadCT, 13 ;data colored blue - red
s = Size(data, /Dimensions)
dataColoringByValue = Reform(BytScl(data, /NaN), s[0]*s[1])
thisSurface = OBJ_NEW('IDLgrSurface', data, x, y,
    Vert_Colors=dataColoringByValue, $
    Color=[255,255,0], Palette=thisPalette, _Extra=extra)
```

Compile and run this. Now, think of the x axis running from the equator to the pole, and the y data as starting from prime meridian and going 360 degrees. Then, without closing this window so you can compare, comment out just the last line above and paste in these 2 lines of code right after:

```
MESH_OBJ, 4, Vertex_List, Polygon_List, Replicate(1, s[0], s[1])
thisSurface = OBJ_NEW('IDLgrPolygon', Vertex_List,
    polygons=Polygon_List, $
    Vert_Colors=dataColoringByValue, Palette=thisPalette, style=2,
    shading=1)
```

Move the 2 graphics windows side by side and you can see how it transfers to the sphere. I've tried transposing and rot'ing the heck outta it, as well as just trying to get it to only the hemisphere with NaN data to get it to plot correctly, but to no avail. 1 problem I see is that my (real) data is computed with a polar cap so the 'longitudnal' lines don't converge to a point, but the mesh_obj'd sphere does. Even so, my major problem is that the mapping to the sphere just isn't panning out. Could I please ask for

hints/tips/suggestions???

TIA

todd
