Subject: shaded relief
Posted by greg michael on Fri, 19 Jan 2007 09:45:49 GMT
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I want a method to generate fast shaded relief views from a surface elevation grid (pixel for pixel orthogonal views which overlay)

I tried using direct graphics with something like:

```
 shade_surf,dtm,image=sh,az=0,ax=90,position=[0,0,768,768],ti ck=0,xstyle=1,ystyle=1
```

This works, except that the z-scale is auto-scaled producing an unrealistic exaggeration. shade_surf doesn't take an /isotropic keyword.

I retried with object graphics, and after a lot of tinkering got it to work:

```
function gm_ortho_shade,z,mpp,texture=texture ;z - DTM, metres; mpp -
horizontal metres per pix
 dim=size(z,/dim)
 x=findgen(dim[0])*mpp
 y=findgen(dim[1])*mpp

 oModel = OBJ_NEW('IDLgrModel',lighting=1);,depth_cue=[-1,1]
 obj=[omodel]
 if arg_present(texture) then begin
  oImage=OBJ_NEW('IDLgrImage',texture);,greyscale=1)
  obj=[obj,oimage]
  oSurface = OBJ_NEW('IDLgrSurface', z,x,y, style=2,
color=[128,255,255],texture_map=oImage,shading=1);, color=[255,255,255]
 endif else begin
  oSurface = OBJ_NEW('IDLgrSurface',z,x,y, STYLE = 2,
color=[255,255,255], shading=1,shininess=128.,specular=[0,0,0])
 endelse
 obj=[obj,osurface]

 oLight=obj_new('IDLgrLight',type=2, location=[-1000,1000,1000])
 oModel -> add, oLight
 obj=[obj,olight]

 oModel -> Add, oSurface
 oSurface->GetProperty,XRange=xr,YRange=yr,ZRange=zr

 mx=yr[1]>xr[1]
 r=(yr[1]>xr[1])/(yr[1]<xr[1])
 f=r/mx ;make a scaling factor for the largest of x, y.
 oSurface->SetProperty,XCoord_Conv=[0,f], YCoord_Conv=[0,f],
```

```
ZCoord_Conv=[0.,f]

 oView =
 OBJ_NEW('IDLgrView',projection=1,VIEWPLANE_RECT=[0,0,xr[1]/m x*r,yr[1]/mx*r])

 oView -> Add, oModel
 buffer=obj_new("idlgrbuffer",dimensions=dim)
 buffer->draw,oView
 (buffer->read())->getproperty,data=img
 obj_destroy,[obj,buffer,oview]

 return,img
end
```

The problem is that it's much slower than the direct graphics method.
I wonder if anyone has anyone has any suggestion to force shade_surf to
be isotropic? Or otherwise to speed up the object way?

Many thanks,
Greg
