
Subject: Re: Map_Image and interpolation
Posted by [davidf](#) on Wed, 08 Dec 1999 08:00:00 GMT
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Ben Tupper (Ben_member@newsguy.com) writes:

> Uhoh. You have said the very same thing to me before. Generally, as you have
> learned recently, I often don't know my point either.

Oh, good, then we can have another one of those moot discussions. :-)

> I can indeed plot the ship locations on the warped grid correctly. No problem
> with MAP_SET, MAP_IMAGE, PLOTS, etc. What I want to do is make a profile plot
> of depth between consecutive ship locations. In order to do so, I MUST do
> interpolation between two locations on the warped grid.

Now here is where I fail to follow your argument. Because my first reaction is this: why in the WORLD would you want to do the interpolation between two locations on the warped grid!? That would be the **last** place I think I would want to do an interpolation. For one thing, the warped grid is not really the data. It's a representation of the data, in the same way that a TVed image is a representation of the image and not the image itself. A profile of scaled image data, for example, would be essentially meaningless; you want a profile of the **real** image data.

I would do an interpolation along the line (or arc, probably) of the bathymetric grid, and then project that line (or arc, which would turn into a line in the projection) onto the map projection.

How do you know which pixels to light up? The ones Map_Set **tells** you to light up.

> Now a certain person
> with an excellent IDL Tips Web site (think Canis latrans) has a page that
> suggest something like the following for interpolating values off an image
> (grid, ...)between points (x1,y1) and (x2,y2)
>
>
> nPoints = Round(ABS(x2-x1+1) > ABS(y2-y1+1.))
> xloc = X1 + (X2-X1) * Findgen(nPoints) / (nPoints - 1)
> yloc = Y1 + (Y2-Y1) * Findgen(nPoints) / (nPoints - 1)
> Z = Interpolate(WarpedGrid, xloc, yloc)
>
> (or maybe I could do Z = WarpedGrid[xloc,yloc])

- >
- > So, the question is... if I have a coordinate like (-68.503, 44.056), how do I
- > convert that into the appropriate subscript locations on the warped grid?

The simple answer is: by running it through the map projection. You may not readily know a specific XY location, but you can certainly light it up.

- > You might be wondering why the points must be interpolated from the warped image
- > and not the original...

Indeed, I'm wondering ...

- > Well, the warped image has been flattened onto a 2d
- > surface while the original is for a sphere(its grid spacing is 0.0416667 arc
- > seconds.)

Well, I'm ready to concede the simple algorithm you found on my web page may not be what you want for an arc, but I think you might find an equivalent arc-interpolation scheme on Ray Sterner's web page. (That's where I found this algorithm.) Or, it would be easy enough, I think, to come up with one of your own. (Let's let the lurkers come up with something. :-)

The point is, the curved line in real space will turn into a straight line on the map projection in just the same way that the curved image turned into a flat image.

I always enjoy these conversations, Ben. I don't always understand them. But I do enjoy them. :-)

Cheers,

David

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