
Subject: Image Warp Success?

Posted by [David Fanning](#) on Mon, 08 Feb 2010 20:30:45 GMT

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Folks,

Has anyone ever had any success using MAP_PROJ_IMAGE to warp an image in one map projection into another map projection?

Given what I know about the non-reentrant nature of the MAP_PROJ_*** routines, I can't image this ever working properly, but I thought I would give it a try. I have an image in a UTM map projection that I want to convert to a Lambert Equal Area projection. The result looks like a disaster. I'd pursue this further if someone could give me hope. :-(

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

Sepore ma de ni thue. ("Perhaps thos speakest truth.")

Subject: Re: Image Warp Success?

Posted by [pfp](#) on Fri, 12 Feb 2010 04:43:41 GMT

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On Feb 10, 3:22 pm, David Fanning <n...@dfanning.com> wrote:

- > If you are warping Image from one map projection to
- > another (that is, if you provide a value for the
- > IMAGE_STRUCTURE keyword), then Range is a four-element
- > array specifying the Cartesian (UV) range. In this case,
- > Range must be provided and has the format
- > [Umin, Vmin, Umax, Vmax].

This may be related to a question I had this week: how can I use plot with locations expressed in latitude and longitude, if map_set was not used? From what I could find out, it seems that plot only uses !map to know the projection. What I wanted to do was plot lines on a Catalyst drawwidget that used a mapcoord to set the projection (to warp a background image).

The way I found to do it was to get the map structure from the mapcoord object, and give it map_proj_forward, to convert lat/lon to UV coordinates. Then I plot on top of the image, setting the plot range to the values in the uv_box field of the map structure. This seems to give the right result, but I am unsure that this is the most proper way to do it, particularly because I am not yet very familiar with how the Catalyst draw, image and coordinate objects interact.

Subject: Re: Image Warp Success?

Posted by [David Fanning](#) on Fri, 12 Feb 2010 05:52:12 GMT

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pfp writes:

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> with locations expressed in latitude and longitude, if map_set was not
> used? From what I could find out, it seems that plot only uses !map to
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> seems to give the right result, but I am unsure that this is the most
> proper way to do it, particularly because I am not yet very familiar
> with how the Catalyst draw, image and coordinate objects interact.

Yes, my best map projection advice is to STOP thinking in latitude/longitude space. It just totally screws you up. :-)

What you want to think about is the map projection grid, or what IDL calls UV space, and what almost everyone else calls "Cartesian" or XY space. And don't even think about using Map_Set. You want to be using the Map_Proj_*** routines. And even those won't work worth a damn if you are trying to do something interactively. Then I think the only usable thing around is the MapCoord object from the Catalyst Library, which can work around the problems with Map_Proj_Init and it's spooky action-at-a-distance "feature."

The projected grid space is nice because it is regular and rectangular, just like a plot! Which means if you set your plot data space up to reflect your XY coordinate grid, then things just go onto the map or image naturally.

MapCoord, of course, makes setting all this up extremely simple. Just call its draw method and there you have it. You use MAP_PROJ_INVERSE and MAP_PROJ_FORWARD to convert back and forth from lat/lon to XY coordinates. Easy!

Map_Grid and Map_Continents can also draw onto the XY grid if they are given a map structure derived from Map_Proj_Init. So you don't have to do anything hard to draw map grids and outlines. Station locations or cities or anything else you want to draw on the plot are just PLOTS calls (usually after converting lat/lon locations to XY with Map_Proj_Forward).

The Coyote routine GeoCoord can read a GeoTIFF image and produce a MapCoord object that is all set up for you to navigate your image. I'll probably write something similar this weekend for netCDF files containing map projection information ahead of a map projection talk I am giving at the IDL User's Group meeting in a week or so.

I expect the presentation will be available on-line shortly after the talk.

Cheers,

David

P.S. And, oh, don't forget to flip your image in the vertical direction. Everyone in the world except IDL assumes the (0,0) point is in the upper left corner! Use REVERSE for this, not !Order or life will never make any sense to you. :-)

--

David Fanning, Ph.D.
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Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Image Warp Success?
Posted by [penteado](#) on Fri, 12 Feb 2010 11:21:17 GMT
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Thanks for the tips.

So it ends up similar to the way to plot things over imap (first convert to UV with the map structure). But in the case of imap it would be much more useful if it had a way to provide the plot locations in lat/lon, so that it could update the plot when the

projection gets changed on its interface, as it does with the images it warps.

On Feb 12, 3:52 am, David Fanning <n...@dfanning.com> wrote:

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