Subject: Re: Image Warp Success?
Posted by Maxwell Peck on Mon, 08 Feb 2010 20:43:50 GMT
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> Has anyone ever had any success using MAP_PROJ_IMAGE to
> warp an image in one map projection into another map
> projection?

I gave up a long time ago. ENVI seems to work fine though, it's only expensive if your time isn't worth anything I guess (and sanity). If you really want to stick it up ITT though using GDAL with Python bindings is good for these sort of tasks (you can even do basic conversions without scripting). I definitely plan to move over to this once support for file formats I use is a little bit more mature.

Max

Subject: Re: Image Warp Success?
Posted by David Fanning on Mon, 08 Feb 2010 21:25:24 GMT
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Maxwell Peck writes:

> I gave up a long time ago. ENVI seems to work fine though, it's only
> expensive if your time isn't worth anything I guess (and sanity). If
> you really want to stick it up ITT though using GDAL with Python
> bindings is good for these sort of tasks (you can even do basic
> conversions without scripting). I definitely plan to move over to this
> once support for file formats I use is a little bit more mature.

Our Learning Python group is starting up next week. Maybe I'll take this on as my first project. :-)

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 philipelson on Tue, 09 Feb 2010 12:12:57 GMT
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> Has anyone ever had any success using MAP_PROJ_IMAGE to
> warp an image in one map projection into another map
> projection?

I did something similar to this recently, though not on the
projections that you want - in *theory* that shouldn't matter! You
will need to get hold of the image found at the URL below, but here is
the code:

```
URL = 'http://onearth.jpl.nasa.gov/wms.cgi?
 request=GetMap&width=256&height=256&layers=modis &styles=&srs=EPSG:
4326&format=image/png&bbox=-30,0,70,80'

file = 'wms.cgi.png'

image = READ_IMAGE(file,r,g,b)

limit = [0, -30, 80, 70]

tileStruct = MAP_PROJ_INIT(8, LIMIT = limit)
mapStruct = MAP_PROJ_INIT('Lambert Azimuthal')

PLOT, mapStruct.uv_box[[0,2]], $
  mapStruct.uv_box[[1,3]],     $
  /NoData, XSTYLE=5, YSTYLE=5

r = MAP_PROJ_IMAGE(reform(image[0,*,*]), tileStruct.uv_box,
MAP_STRUCTURE=mapStruct, IMAGE_STRUCTURE=tileStruct, /BILINEAR,
UVRANGE=uv)
g = MAP_PROJ_IMAGE(reform(image[1,*,*]), tileStruct.uv_box,
MAP_STRUCTURE=mapStruct, IMAGE_STRUCTURE=tileStruct, /BILINEAR,
UVRANGE=uv)
b = MAP_PROJ_IMAGE(reform(image[2,*,*]), tileStruct.uv_box,
MAP_STRUCTURE=mapStruct, IMAGE_STRUCTURE=tileStruct, /BILINEAR,
UVRANGE=uv, mask=mask)

top_right   = CONVERT_COORD(uv[2], uv[3], /DATA, /TO_DEVICE)
bottom_left = CONVERT_COORD(uv[0], uv[1], /DATA, /TO_DEVICE)
img_size = (ceil(top_right - bottom_left))[0:1]

image = congrid([[[r]], [[g]], [[b]]], img_size[0], img_size[1], 3)

tv, image, uv[0], uv[1], true=3, /data
```

map_continents, MAP_STRUCTURE=mapStruct, /hires

map_grid, MAP_STRUCTURE=mapStruct

I hope this is helpful,

Regards,

Philip

Subject: Re: Image Warp Success?
Posted by David Fanning on Tue, 09 Feb 2010 20:52:42 GMT
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David Fanning writes:

> 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. :-(

My inability to get a reasonable result with MAP_PROJ_IMAGE
has turned out to be at least partly due to an incredibly
embarrassing error in my MapCoord object, which I use to
work around many of the reentrant limitations of the
MAP_PROJ_*** routines.

If the desired map projection was passed into the object
as a string (e.g., 'UTM') rather than as an index
(e.g., 101), then the wrong map projection information
was saved in the object. I rarely use map projection
names, which is probably why it took me so long to discover
this grievous error. :-(

In any case, this is fixed now, and I have confirmed that
the output map structure from my object and from MAP_PROJ_INIT
are identical no matter how the map projection is selected.

http://www.dfanning.com/programs/catalyst/source/coordinates /mapcoord__d
efine.pro

Once this problem was fixed, I obtained what appear to be
reasonable results from MAP_PROJ_IMAGE. My apologies for casting
aspertion on code that possibly doesn't deserve it. I do note
that the documenation is not clear as to what the "range"
parameter should be, and that you only get "correct" results if
you specify the range in UV coordinates, rather than the lat/lon
coordinates specified in the on-line help. I learned this only
by comparing the results from the results from ENVI.

Cheers,

David

--
David Fanning, Ph.D.
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Sepore ma de ni thue. ("Perhaps thos speakest truth.")

Subject: Re: Image Warp Success?
Posted by penteado on Tue, 09 Feb 2010 21:16:59 GMT
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On Feb 9, 6:52 pm, David Fanning <n...@dfanning.com> wrote:
> My inability to get a reasonable result with MAP_PROJ_IMAGE
> has turned out to be at least partly due to an incredibly
> embarrassing error in my MapCoord object, which I use to
> work around many of the reentrant limitations of the
> MAP_PROJ_*** routines.
>
> If the desired map projection was passed into the object
> as a string (e.g., 'UTM') rather than as an index
> (e.g., 101), then the wrong map projection information
> was saved in the object. I rarely use map projection
> names, which is probably why it took me so long to discover
> this grievous error. :-(

I think I ran into that problem yesterday, but I thought it was
because I did not know the right way to use mapcoord. Since the result
kept showing the default projection, I changed from setting it by name
to setting it by number.

Also, I noticed that if I give a sphere_radius to

mapcoord::setmapprojection, I get a

% Tag name DATUM is undefined for structure MAPCOORD.

from the line (in the version I have, 628)
self.datum.semimajor_axis = sphere_radius

Which looked to me like it should have self.thisdatum, instead of
self.datum. Or was I not using it right?

Anyway, Catalyst is much appreciated. It made my widget programs much
nicer, and my life much easier.

Subject: Re: Image Warp Success?
Posted by David Fanning on Tue, 09 Feb 2010 21:35:58 GMT
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David Fanning writes:

> Once this problem was fixed, I obtained what appear to be
> reasonable results from MAP_PROJ_IMAGE. My apologies for casting
> aspertion on code that possibly doesn't deserve it. I do note
> that the documenation is not clear as to what the "range"
> parameter should be, and that you only get "correct" results if
> you specify the range in UV coordinates, rather than the lat/lon
> coordinates specified in the on-line help. I learned this only

Whoa! About 10 seconds after I sent this message I just
FINALLY understood how MAP_PROJ_IMAGE works! Don't read
the documenation, you will be plenty confused. Read my
article as soon as I get it written. This routine is
not too bad, once you understand how to use it. :-)

Cheers,

David

--
David Fanning, Ph.D.
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Sepore ma de ni thue. ("Perhaps thos speakest truth.")

Subject: Re: Image Warp Success?
Posted by David Fanning on Tue, 09 Feb 2010 21:38:39 GMT
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pp writes:

> Also, I noticed that if I give a sphere_radius to
> mapcoord::setmapprojection, I get a
>
> % Tag name DATUM is undefined for structure MAPCOORD.
>
> from the line (in the version I have, 628)
> self.datum.semimajor_axis = sphere_radius
>
> Which looked to me like it should have self.thisdatum, instead of
> self.datum. Or was I not using it right?

Yes, that is a problem, too. Not my day, apparently. :-(

Although any day that you understand something that previously
confused the hell out of you has to be a good day, no matter
how poor your programming skills are. :-)

Download a new version of the MapCoord object. I think your's
is pretty old. :-)

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 David Fanning on Wed, 10 Feb 2010 17:22:45 GMT
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David Fanning writes:

> Whoa! About 10 seconds after I sent this message I just
> FINALLY understood how MAP_PROJ_IMAGE works! Don't read
> the documenation, you will be plenty confused. Read my
> article as soon as I get it written. This routine is
> not too bad, once you understand how to use it. :-)

I note this morning that the MAP_PROJ_IMAGE on-line help on my Windows machine is different (and a LOT more accurate) than the on-line help on my LINUX machine. The LINUX IDL version is IDL 7.0.2 and the Windows version is 7.1.2. So, I guess ITTVIS has noticed the deficiency and have taken steps to fix it.

In particular, this paragraph has been added to the description of the range parameter:

> 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 is the essential piece of information that I stumbled onto yesterday and which is needed to make this work properly.

Cheers,

David

--
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