Subject: Re: AVHRR Image Mapping Problem
Posted by David Fanning on Fri, 15 Dec 2006 15:55:08 GMT
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David Fanning writes:

> Or, do you think this might just be right? :-(

Humm. I get the same effect if I use shapefiles to
draw the continental outlines. Perhaps it IS right!

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: AVHRR Image Mapping Problem
Posted by David Fanning on Fri, 15 Dec 2006 16:10:49 GMT
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David Fanning writes:

> Or, do you think this might just be right? :-(

The good news is that this is MUCH better than I can
achieve with iMap. :-)

Cheers,

David
--
David Fanning, Ph.D.
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Subject: Re: AVHRR Image Mapping Problem
Posted by Paul Van Delst[1] on Fri, 15 Dec 2006 16:11:45 GMT
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David Fanning wrote:

> Folks,
>
> Does anyone have any experience working with AVHRR NDVI
> image data or Albers map projection? I have obtained
> the data, which is of the African continent from here:
>
> ftp://ftp.glcf.umiacs.umd.edu/glcf/GIMMS/Regional/Albers/Afr ica
>
> The image is in an Albers Conical equal area projection
> and the centers of the four corner pixels are known from
> the documentation:
>
> ; YX coordinates of the four corners (LL, UL, UR, LR)
> longitude = [-23.49, -24.6, 64.523, 63.414]
> latitude = [-42.243, 43.711, 43.712, -42.242]
>
> This is a GeoTiff file, so I also pull the Standard
> Parallels out of the geotiff information stored in
> the file (they are -19 and 21).
>
> I follow the method outlined on this page (which has
> worked perfectly for a polar stereo map projection),
> using instead of a Stereo projection, an Albers
> projection with standard parallels:
>
> http://www.dfanning.com/map_tips/precipmap.html
>
> The method *ALMOST* works! :-)
>
> But the continental outlines do not QUITE line up properly.
> You can see my result here:
>
> http://www.dfanning.com/misc/africa.jpg
>
> Do you think this might be an Albers projection problem?
> A difference between MAP_PROJ_INIT and MAP_SET? (I have
> tried different DATUMS with no change in effect.)
>
> Or, do you think this might just be right? :-(

Not my area of expertise, but it sure looks like some sort of projection problem. If it was an issue with the data (e.g. AVHRR geolocate issue) then I think it would be shifted in one direction everywhere. Your test plot shows a eastward shift on the northern east coasts, a westward shift on the northern west coast, and a much smaller westward shift on the southern west coast. That suggests to me the data near your standard parallels are more "accurate" (by whatever measure) but things get smudged out more and more as you move away from them.

paulv

--
Paul van Delst Ride lots.
CIMSS @ NOAA/NCEP/EMC Eddy Merckx
Ph: (301)763-8000 x7748
Fax:(301)763-8545

Subject: Re: AVHRR Image Mapping Problem
Posted by James Kuyper on Fri, 15 Dec 2006 17:21:41 GMT
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David Fanning wrote:
> Folks,
>
> Does anyone have any experience working with AVHRR NDVI
> image data or Albers map projection? I have obtained
> the data, which is of the African continent from here:
>
> ftp://ftp.glcf.umiacs.umd.edu/glcf/GIMMS/Regional/Albers/Afr ica
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>
> This is a GeoTiff file, so I also pull the Standard
> Parallels out of the geotiff information stored in
> the file (they are -19 and 21).

One thing you could check is the possibility that the standard
parallels are reversed: does it work better if you use -21 and +19?

Subject: Re: AVHRR Image Mapping Problem
Posted by David Fanning on Fri, 15 Dec 2006 17:29:28 GMT
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kuyper@wizard.net writes:

> One thing you could check is the possibility that the standard
> parallels are reversed: does it work better if you use -21 and +19?

Humm. Well, now the upper part of the map is correct, but
the error is transferred to the lower part of the map.
(I just multiplied the standard parallels by minus 1.)
Does this give you any clues?

Cheers,

David
--
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Subject: Re: AVHRR Image Mapping Problem
Posted by Matt[1] on Fri, 15 Dec 2006 17:37:14 GMT
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It's been my experience that it's never a good idea to check projection accuracy using country outlines. ESRI shapefiles are notoriously inaccurate when it comes to geolocation. I suspect that similar vector files from other sources will have similar shortcomings, with few exceptions. I actually know for a fact that National Geographic sometimes resorts to stretching or compressing their raster data (using graphics software - Photoshop perhaps?) to match their vector data for their publication maps. What is the source of the country outline you are using as comparison? Is it a vector file? If it is a vector file, could you search for a more accurate one?

If you can, I would suggest using SRTM elevation data (http://glcf.umiacs.umd.edu/data/srtm/, access: http://glcfapp.umiacs.umd.edu:8080/esdi/index.jsp) to check projection accuracy. As far as I know SRTM data has a high degree of geolocational accuracy. Use the SRTM 30 Arc Second, which is also at 1km. Keep in mind that SRTM data is not in Albers projection so you'd have to warp the data. I imagine that this will lead to some misalignments since you are warping SRTM from Geographic coordinates to Albers and the AVHRR data was warped from Goodes Interrupted to Albers, but it should give you a better idea of the relative geolocational accuracy of the two datasets.

If you'd rather use vector data to do the comparison, try the SRTM Water Bodies data http://edc.usgs.gov/products/elevation/swbd.html. This is a very accurate vector file outlining coastlines/waterbodies.

Best
Matt S.

On Dec 15, 11:11 am, Paul van Delst <Paul.vanDe...@noaa.gov> wrote:
> David Fanning wrote:
>> Folks,
>
>> Does anyone have any experience working with AVHRR NDVI
>> image data or Albers map projection? I have obtained
>> the data, which is of the African continent from here:
>
>> ftp://ftp.glcf.umiacs.umd.edu/glcf/GIMMS/Regional/Albers/Afr ica
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>
>> This is a GeoTiff file, so I also pull the Standard
>> Parallels out of the geotiff information stored in
>> the file (they are -19 and 21).
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>> I follow the method outlined on this page (which has
>> worked perfectly for a polar stereo map projection),
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>> projection with standard parallels:
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>> http://www.dfanning.com/map_tips/precipmap.html
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>> The method *ALMOST* works! :-)
>
>> But the continental outlines do not QUITE line up properly.
>> You can see my result here:
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>> Do you think this might be an Albers projection problem?
>> A difference between MAP_PROJ_INIT and MAP_SET? (I have
>> tried different DATUMS with no change in effect.)
>
>> Or, do you think this might just be right? :-(Not my area of expertise, but it sure looks like
some sort of projection problem. If it
> was an issue with the data (e.g. AVHRR geolocate issue) then I think it would be shifted
> in one direction everywhere. Your test plot shows a eastward shift on the northern east
> coasts, a westward shift on the northern west coast, and a much smaller westward shift on

> the southern west coast. That suggests to me the data near your standard parallels are
> more "accurate" (by whatever measure) but things get smudged out more and more as you move
> away from them.
>
> paulv
>
> --
> Paul van Delst Ride lots.
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> Fax:(301)763-8545

Subject: Re: AVHRR Image Mapping Problem
Posted by Jean H. on Fri, 15 Dec 2006 17:39:44 GMT
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> If it was an issue with the data (e.g. AVHRR geolocate issue)
> then I think it would be shifted in one direction everywhere.
> paulv

The data is correct... using ArcMap, the data lines up almost perfectly
(i.e. a few places are off, but most pixels are within the borders)

Jean

Subject: Re: AVHRR Image Mapping Problem
Posted by Braedley on Fri, 15 Dec 2006 17:44:03 GMT
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> From the image, it looks like a possible off by one error, maybe in the scaling of the GeoTiff data?
The points furthest from the center appear to have the most error, and they are shifted away from the center point. For example, if you look along the French Coast, the error doesn't appear to be as large because the direction of the error is close to the line that the coast makes.

Braedley

David Fanning wrote:
> kuyper@wizard.net writes:
>
>> One thing you could check is the possibility that the standard
>> parallels are reversed: does it work better if you use -21 and +19?
>

> Humm. Well, now the upper part of the map is correct, but
> the error is transferred to the lower part of the map.
> (I just multiplied the standard parallels by minus 1.)
> Does this give you any clues?
>
> Cheers,
>
> David
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming: http://www.dfanning.com/
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: AVHRR Image Mapping Problem
Posted by David Fanning on Fri, 15 Dec 2006 18:13:39 GMT
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Matt writes:

> If you'd rather use vector data to do the comparison, try the SRTM
> Water Bodies data http://edc.usgs.gov/products/elevation/swbd.html.
> This is a very accurate vector file outlining coastlines/waterbodies.

I have tried the GSHHS high-resolution shoreline data
with slightly better, but similar results. Fooling around
with the standard parallels gets parts of the map (not,
unfortunately, ALL parts at the same time!) correct, which leads
me to think it is a map projection problem. But on whose
end!?

All my "outline" routines rely on MAP_SET. I suppose
to get to the bottom of this I'll have to see if I can
get an outline strictly from a MAP_PROJ_INIT.

Cheers,

David
--
David Fanning, Ph.D.
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Subject: Re: AVHRR Image Mapping Problem

Posted by David Fanning on Fri, 15 Dec 2006 18:17:25 GMT
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Jean H. writes:

> The data is correct... using ArcMap, the data lines up almost perfectly
> (i.e. a few places are off, but most pixels are within the borders)

I'm beginning to wonder if I have stumbled into the problem
that caused the ENVI developers to write their own map
projections, instead of using IDL's. :-(

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
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Subject: Re: AVHRR Image Mapping Problem
Posted by James Kuyper on Fri, 15 Dec 2006 18:23:07 GMT
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David Fanning wrote:
> kuyper@wizard.net writes:
>
>> One thing you could check is the possibility that the standard
>> parallels are reversed: does it work better if you use -21 and +19?
>
> Humm. Well, now the upper part of the map is correct, but
> the error is transferred to the lower part of the map.
> (I just multiplied the standard parallels by minus 1.)
> Does this give you any clues?

Actually, yes. I have no idea why the standard parrallels might be
incorrect, but given the symptoms you describe, it might be worthwile
to try 19.99999 and -20.00001. IDL doesn't like it when the standard
parallels add up to exactly zero. That is unfortunate, because a Albers
projection with standard parallels adding up to zero is a different way
of describing the cylindrical equal-area projection, one of my favorite
map projections, and one that IDL doesn't support.
