Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by Jie Zhou on Sat, 22 Feb 2014 17:14:02 GMT
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On Saturday, February 22, 2014 2:24:48 PM UTC+1, David Fanning wrote:
> Jie Zhou writes:
>
>
>
>> I want to display a image using selectabledrawwidget. The image hold geographic coordinate (GTCP code 100). When I try to add map grid or outline on the display, I should set a mapcoord for the display. But as I know, the mapcoord definition does not support geographic projection. So anyone know how to process it? or is there any other object can finish the work?
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>
>
> I added the Geographic "projection" to the MapCoord object for you this
>
> morning. You can find it here:
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>
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>
> http://www.idlcoyote.com/programs/catalyst/source/coordinate s/mapcoord__
>
> define.pro
>
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>
> Cheers,
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>
> David
>
> --
>
> David Fanning, Ph.D.
>
> Fanning Software Consulting, Inc.
>
> Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
>
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Hi,David,

Thanks for your help. But I think the GEOCOORD object should be change, too

---

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Sun, 23 Feb 2014 13:02:34 GMT
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Jie Zhou writes:

> Thanks for your help. But I think the GEOCOORD object should be change, too.

Well, the GeoCoord object is a little different. It relies on map projection data being in a GeoTiff file. But, a geographic coordinate system doesn't have a map projection associated with it. (Which is why this wasn't initially included in either object.)

I've never seen a TIFF file with a geographic coordinate system, but I imagine one exists. If you have one and can send it to me, I can take a look at seeing if I can incorporate this into GeoCoord. It will be a day or two before I can get to this.

Cheers,

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

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by Yngvar Larsen on Sun, 23 Feb 2014 16:12:37 GMT
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The digital elevation model SRTM is distributed as 5x5 degrees tiles as GeoTIFFs in lat/Lon.

http://www.cgiar-csi.org/data/srtm-90m-digital-elevation-dat abase-v4-1

This is obviously a rather important dataset for the geosciences.

--
Yngvar

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Mon, 24 Feb 2014 00:22:03 GMT
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Yngvar Larsen writes:

> The digital elevation model SRTM is distributed as 5x5 degrees tiles as GeoTIFFs in lat/Lon.
>
> http://www.cgiar-csi.org/data/srtm-90m-digital-elevation-dat abase-v4-1
>
> This is obviously a rather important dataset for the geosciences.

Great. Thanks!

Do you have one of these you can e-mail to me? The server appears to be
down.

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
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Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by Jie Zhou on Mon, 24 Feb 2014 08:19:40 GMT
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On Monday, February 24, 2014 1:22:03 AM UTC+1, David Fanning wrote:
> Yngvar Larsen writes:
>
>
>
>> The digital elevation model SRTM is distributed as 5x5 degrees tiles as GeoTIFFs in lat/Lon.
>
>>
>
>> http://www.cgiar-csi.org/data/srtm-90m-digital-elevation-dat abase-v4-1
>
>>
>
>> This is obviously a rather important dataset for the geosciences.

>
>
>
> Great. Thanks!
>
>
>
> Do you have one of these you can e-mail to me? The server appears to be
>
> down.
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> Cheers,
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> David
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> --
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> David Fanning, Ph.D.
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> Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
>
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

I have send you a geotiff file with geographic coordinate by email yesterday. Did you get it?
Jie

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by Yngvar Larsen on Mon, 24 Feb 2014 08:47:04 GMT
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On Monday, 24 February 2014 01:22:03 UTC+1, David Fanning wrote:
> Yngvar Larsen writes:
>
>> The digital elevation model SRTM is distributed as 5x5 degrees tiles as GeoTIFFs in lat/Lon.
>
>> http://www.cgiar-csi.org/data/srtm-90m-digital-elevation-dat abase-v4-1
>>
>> This is obviously a rather important dataset for the geosciences.

>
> Great. Thanks!
>
> Do you have one of these you can e-mail to me? The server appears to be down.

I just sent you an email with a download link for one of the SRTM tiles.

--
Yngvar

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Mon, 24 Feb 2014 13:37:38 GMT
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Jie Zhou writes:

> I have send you a geotiff file with geographic coordinate by email yesterday. Did you get it?

I did get this file. Here is what the GeoTiff structure in the file
looks like:

```
IDL> help, geotiff
** Structure <6bcac450>, 7 tags, length=104, data length=96, refs=1:
   MODELPIXELSCALETAG
               DOUBLE    Array[3]
   MODELTIEPOINTTAG
               DOUBLE    Array[6, 1]
   GTMODELTYPEGEOKEY
               INT              2
   GTRASTERTYPEGEOKEY
               INT              1
   GTCITATIONGEOKEY
               STRING    'IMAGINE GeoTIFF Support
ERDAS Desktop 2010 10.1.0.604
Projection Name = Geographic (Lat/Lon)
Units = degrees
GeoTIFF Units = dd'
   GEOGRAPHICTYPEGEOKEY
               INT           4326
   GEOGANGULARUNITSGEOKEY
               INT           9102
```

You can see that the map projection "information" is embedded into the
file in a non-standard way as a CGCITATIONGEOKEY string that has to be
parsed to pull out the information needed to read the data. In other
words, this file has to be handled in a completely different way from

"standard" GeoTiff files, which use GeoKeys to obtain information.

I think it would be easier to write a routine that reads these specific
files than it would be to make old code behave in an unnatural way.

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
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Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Mon, 24 Feb 2014 13:38:18 GMT
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Yngvar Larsen writes:

> I just sent you an email with a download link for one of the SRTM tiles.

I just got this. I'll have a look. :-)

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
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Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Mon, 24 Feb 2014 13:58:36 GMT
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Yngvar Larsen writes:

> I just sent you an email with a download link for one of the SRTM tiles.

Yes, so this file doesn't pretend to have map projection information in
it. Here is the GeoTiff structure from the file:

```
IDL> help, geo
** Structure <7b9e5160>, 2 tags, length=72, data length=72, refs=1:
   MODELPIXELSCALETAG
                  DOUBLE    Array[3]
   MODELTIEPOINTTAG
                  DOUBLE    Array[6, 1]
```

I just think it is unreasonable to expect general purpose GeoTiff readers to handle files like this. Obviously, you can fill your reader code with multiple exceptions, etc. But, when you get a file like this, the file itself doesn't tell you want you need to know to work with the data properly.

I'm not saying it is *hard* to use these files. It is easy enough. I'm just saying, you need information from outside the file, or in Jie Zhou's case, you need to parse internal information in a non-standard way, in order to make sense of the data. If I worked with these files for a living, I'd take 15 minutes and write myself a reader.

Cheers,

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

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by Fabzi on Mon, 24 Feb 2014 23:20:42 GMT
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On 24.02.2014 14:58, David Fanning wrote:
> I just think it is unreasonable to expect general purpose GeoTiff
> readers to handle files like this. Obviously, you can fill your reader
> code with multiple exceptions, etc.

I believe that these are also "standard" formats but less transparent. My own GeoTiff reader is filled with exceptions and ugly code, written while reverse engineering this cryptic metadata. I agree with David that it is not possible to write code to parse all kinds of geotiff files, but it must be possible somehow since ENVI or ArcGIS handle almost all geotiffs you could find. IDL could probably inherit code from ENVI, but this is another topic ;)

Cheers

Fabien

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Mon, 24 Feb 2014 23:48:48 GMT
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Fabien writes:

> I believe that these are also "standard" formats but less transparent.

I don't know. I've seen three files in the past three days that purport
to be "GeoTiff" files, and not a one of them appears to have been
written by someone who read the TIFF definitions and standards document.
Can you just make it up and call it a GeoTiff?

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
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Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by Yngvar Larsen on Tue, 25 Feb 2014 09:25:30 GMT
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On Tuesday, 25 February 2014 00:48:48 UTC+1, David Fanning wrote:
> Fabien writes:
>
>
>
>> I believe that these are also "standard" formats but less transparent.

These files are indeed TIFF 6.0 conformant, but the information in them do not contain enough GeoTIFF tags to have a uniquely defined grid without external information. Thus, you need ugly special cases in your GeoTIFF reader to handle this. Or a specific reader for each. I did the latter for SRTM tiles, which only contain "ModelPixelScaleTag" and "ModelTiepointTag", but no info on the coordinate system.

> I don't know. I've seen three files in the past three days that purport
> to be "GeoTiff" files, and not a one of them appears to have been
> written by someone who read the TIFF definitions and standards document.

You should not confuse GeoTIFF with TIFF. A conformant TIFF file can contain almost any imaginable tags/metadata (or not...). However, such extra information can be ignored a conformant TIFF _reader_. GeoTIFF is such extra information.

GCS_WGS_84 = 4326

> Can you just make it up and call it a GeoTiff?

I guess you can use at least one of the defined GeoTIFF tags, and call it a GeoTIFF file. But if you would like your file to be self contained, I would say you should at least follow the cookbooks in the spec:

http://www.remotesensing.org/geotiff/spec/geotiff2.6.html#2. 6.3
http://www.remotesensing.org/geotiff/spec/geotiff2.7.html#2. 7.3

Specifically, for the geographic coordinate systems discussed in this thread, you should do the following

"
case GEOGRAPHIC: Check the list of standard GCS's and use the
corresponding code. To use a code both the Datum, Prime
Meridian, and angular units must match those of the code.

Store in: GeographicTypeGeoKey and skip to Step 4.
If none of the coded GCS's match exactly, then this is a
user-defined GCS. Check the list of standard datums,
Prime Meridians, and angular units to define your system.
Store in: GeogGeodeticDatumGeoKey, GeogAngularUnitsGeoKey,
GeogPrimeMeridianGeoKey and skip to Step 4.

If none of the datums match your system, you have a
user-defined datum, which is an odd system, indeed. Use
the GeogEllipsoidGeoKey to select the appropriate ellipsoid
or use the GeogSemiMajorAxisGeoKey, GeogInvFlatteningGeoKey to
define, and give a reference using the GeogCitationGeoKey.
Store in: GeogEllipsoidGeoKey, etc. and go to Step 4.
"

The file that J. Zhou sent you contain the following information on the coordinate system:

```
  GEOGRAPHICTYPEGEOKEY
              INT         4326
   GEOGANGULARUNITSGEOKEY
              INT         9102
```

which means a standard GCS (WGS-84) and angular units (degrees) plus
GTMODELTYPEGEOKEY
INT 2
GTRASTERTYPEGEOKEY
INT 1
which means Geographical coordinate system with "PixelIsArea". Thus, this is a well defined self contained GeoTIFF file as far as I understand. On the other hand, the SRTM tile I sent you did not contain any of this, and needs special treatment with external information.

--
Yngvar

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Tue, 25 Feb 2014 13:26:21 GMT
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Yngvar Larsen writes:

> These files are indeed TIFF 6.0 conformant, but the information in them do not contain enough GeoTIFF tags to have a uniquely defined grid without external information. Thus, you need ugly special cases in your GeoTIFF reader to handle this. Or a specific reader for each. I did the latter for SRTM tiles, which only contain "ModelPixelScaleTag" and "ModelTiepointTag", but no info on the coordinate system.

Thanks for such a detailed explanation. Very helpful.

Cheers,

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

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by Jie Zhou on Wed, 26 Feb 2014 08:39:35 GMT
View Forum Message <> Reply to Message

On Tuesday, February 25, 2014 2:26:21 PM UTC+1, David Fanning wrote:
> Yngvar Larsen writes:
>
>

>
>> These files are indeed TIFF 6.0 conformant, but the information in them do not contain enough GeoTIFF tags to have a uniquely defined grid without external information. Thus, you need ugly special cases in your GeoTIFF reader to handle this. Or a specific reader for each. I did the latter for SRTM tiles, which only contain "ModelPixelScaleTag" and "ModelTiepointTag", but no info on the coordinate system.
>
>
>
> Thanks for such a detailed explanation. Very helpful.
>
>
>
> Cheers,
>
>
>
> David
>
> --
>
> David Fanning, Ph.D.
>
> Fanning Software Consulting, Inc.
>
> Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
>
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Dear David,
Will you rewrite the code for GEOCOORD to support the Geographic projection?
Jie

Subject: Re: how to composite a mapcoord object using geographic coordinate(no projection)
Posted by David Fanning on Wed, 26 Feb 2014 13:21:35 GMT
View Forum Message <> Reply to Message

Jie Zhou writes:

> Will you rewrite the code for GEOCOORD to support the Geographic projection?

Well, maybe, but not anytime soon. I'm really busy right now and paying customers are in line.

Cheers,

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