Subject: map_proj_init
Posted by marit on Sat, 07 Apr 2007 22:09:48 GMT
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Has anyone run into the problem that subsequent calls to map_proj_init using a GCTP projection interfere with previously defined maps? Here is an example:

```
south_proj=MAP_PROJ_INIT('Polar Stereographic'  ,/GCTP ,$
    semimajor_axis=6378273.0,semiminor_axis=6356889.4,$
     center_lon=0,center_lat=-70.0,false_easting=0,false_northing =0)

 print,map_proj_forward([0,0],[-90.0,-89.0],map_structure=sou th_proj)
       0.0000000       0.0000000
       0.0000000       108332.24

north_proj=MAP_PROJ_INIT('Polar Stereographic'  ,/GCTP ,$
     semimajor_axis=6378273.0,semiminor_axis=6356889.4,$
      center_lon=0,center_lat=70.0,false_easting=0,false_northing= 0)

 print,map_proj_forward([0,0],[-90.0,-89.0],map_structure=sou th_proj)
       0.0000000  -2.0002841e+23
       0.0000000  -1.4035070e+09
```

I haven't yet seen this occur if the second projection is an IDL projection; however the IDL projections are not usually useful since they can't be set up like a normal projections with false easting and false northing and they are mostly spherical not ellipsoidal.

Subject: Re: MAP_PROJ_INIT
Posted by David Fanning on Sat, 29 Oct 2011 14:18:33 GMT
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alx writes:

> In order to process some GPS data, I logically write:
> IDL> map = map_proj_init(101, ELLIPSOID=24, ZONE=31)
> wanting to use WGS84 ellipsoid and UTM projection (zone 31 is for
> Paris), for further use of the "map_proj_forward" function. Then :
> IDL> print, map.A, map.E2, map.PROJECTION
>   6370997.0   0.00000000   20
> shows that IDL rather chooses the SPHERE and the projection n°20.
> Moreover this projection is not referenced in the IDL_help, the
> projection index ranging from 0 to 19.
> Forcing GCTP keyword to 1 does not change anything.
> What does it mean ?

I doubt it means anything. At most it means IDL maintains
a different indexing scheme internally than they do in
their public interface. That's not unusual. I don't think
I would spend any time worrying about it. :-)

Cheers,

David

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

Subject: Re: MAP_PROJ_INIT
Posted by lecacheux.alain on Sat, 29 Oct 2011 15:27:42 GMT
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On 29 oct, 16:18, David Fanning <n...@dfanning.com> wrote:
> alx writes:
>> In order to process some GPS data, I logically write:
>> IDL> map = map_proj_init(101, ELLIPSOID=24, ZONE=31)
>> wanting to use WGS84 ellipsoid and UTM projection (zone 31 is for
>> Paris), for further use of the "map_proj_forward" function. Then :
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>> Moreover this projection is not referenced in the IDL_help, the
>> projection index ranging from 0 to 19.
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> their public interface. That's not unusual. I don't think
> I would spend any time worrying about it. :-)
>
> Cheers,
>
> David
>
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.

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> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

My problem is actually the following: when applying the
map_proj_forward function to real data,- that is to say when computing
plane coordinates from given GPS longitudes and latitudes, a very
standard operation from GPS data -, I find results wrong by a few
hundred meters...
For instance:
IDL> lon0 = 2.1937863d0 & lat0 = 47.3808737d0
IDL> map = map_proj_init(101, ELLIPSOID=24, ZONE=31)
IDL> print, map_proj_forward(lon0, lat0)
      439142.34   5247587.0
Actual easting and northing (as calculated by using other tools) are
439144 and 5247806 instead.
I then suspect somme error in map_proj_init, or maybe I am not using
it correctly.
I was wondering if other people had same experience.
alain.

Subject: Re: MAP_PROJ_INIT
Posted by David Fanning on Sat, 29 Oct 2011 16:48:11 GMT
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alx writes:

> My problem is actually the following: when applying the
> map_proj_forward function to real data,- that is to say when computing
> plane coordinates from given GPS longitudes and latitudes, a very
> standard operation from GPS data -, I find results wrong by a few
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> For instance:
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> IDL> print, map_proj_forward(lon0, lat0)
>   439142.34   5247587.0
> Actual easting and northing (as calculated by using other tools) are
> 439144 and 5247806 instead.
> I then suspect somme error in map_proj_init, or maybe I am not using
> it correctly.
> I was wondering if other people had same experience.

Well, this is *exactly* the problem I was having this
week, and the "other tool" was ENVI. Maybe we are going
to have to look into this some more. What "other tools"
are you using?

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: MAP_PROJ_INIT
Posted by lecacheux.alain on Sat, 29 Oct 2011 17:14:31 GMT
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On 29 oct, 18:48, David Fanning <n...@dfanning.com> wrote:
> alx writes:
>> My problem is actually the following: when applying the
>> map_proj_forward function to real data,- that is to say when computing
>> plane coordinates from given GPS longitudes and latitudes, a very
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>> I was wondering if other people had same experience.
>
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> week, and the "other tool" was ENVI. Maybe we are going
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> are you using?
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> Cheers,
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> David
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> --
> David Fanning, Ph.D.
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> Sepore ma de ni thui. ("Perhaps thou speakest truth.")- Masquer le texte des messages

précédents -
>
> - Afficher le texte des messages précédents -

> What "other tools" are you using?
Several online tools, like "http://www.rcn.montana.edu/resources/tools/coordinates.aspx".
But my reference is the french one: "http://geodesie.ign.fr/index.php?p=53&page=circe".
All these give same results within 1 meter.
alx.

Subject: Re: MAP_PROJ_INIT
Posted by lecacheux.alain on Sat, 29 Oct 2011 18:10:25 GMT
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On 29 oct, 19:14, alx <lecacheux.al...@wanadoo.fr> wrote:
> On 29 oct, 18:48, David Fanning <n...@dfanning.com> wrote:
>
>
>
>
>
>> alx writes:
>>> My problem is actually the following: when applying the
>>> map_proj_forward function to real data,- that is to say when computing
>>> plane coordinates from given GPS longitudes and latitudes, a very
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>>> For instance:
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>>> IDL> map = map_proj_init(101, ELLIPSOID=24, ZONE=31)
>>> IDL> print, map_proj_forward(lon0, lat0)
>>> 439142.34 5247587.0
>>> Actual easting and northing (as calculated by using other tools) are
>>> 439144 and 5247806 instead.
>>> I then suspect somme error in map_proj_init, or maybe I am not using
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>> week, and the "other tool" was ENVI. Maybe we are going
>> to have to look into this some more. What "other tools"
>> are you using?
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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 thui. ("Perhaps thou speakest truth.")- Masquer le texte des messages précédents -
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> p=53&page=circe".
> All these give same results within 1 meter.
> alx.- Masquer le texte des messages précédents -
>
> - Afficher le texte des messages précédents -

Well, I ran the command "map = map_proj_init(101, ELLIPSOID=24, ZONE=31)" in debug mode.
I found that the ELLIPSOID index is wrongly changed to -1 at line 1164 (in "map_proj_getellipsoid"). This may explain why the output map finally contains a SPHERE reference.
Unavoidably, the rest of the computation will be in error or, at least, inaccurate.
The ITTVIS programmer seems to feel a bit unconfortable, because on lines 1376-1379 (in map_proj_init) you can get his own warning :

```
        ; Internal routines to initialize GCTP forward and inverse
        ; projections. Use at your own peril.
        MAP_PROJ_GCTP_FORINIT, sMap.simple, gctpZone, sMap.p,
ellipsoid
        MAP_PROJ_GCTP_REVINIT, sMap.simple, gctpZone, sMap.p,
ellipsoid
```

Indeed, sMap.p does no longer contains the original ellipsoid index ...
alx.

Subject: Re: MAP_PROJ_INIT
Posted by David Fanning on Sat, 29 Oct 2011 18:41:57 GMT
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alx writes:

> In order to process some GPS data, I logically write:

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> Moreover this projection is not referenced in the IDL_help, the
> projection index ranging from 0 to 19.
> Forcing GCTP keyword to 1 does not change anything.
> What does it mean ?

Well, I think it means the IDL UTM map transformation is
screwed. You can ONLY use a spherical datum with this
transformation. The datum I was trying to use the other
day was WGS84 and I was getting the magnitude of errors
you are getting. This is a problem, since ANY data you
get from satellites is probably using a WGS84 datum.
Which means there is no way you can use this data in
IDL. (Well, unless accuracy doesn't matter to you.)

Maybe this is why IDL examples always use global map
projections. A couple hundred meters here and there
is chump change on that scale.

Cheers,

David

--
David Fanning, Ph.D.
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