Subject: Re: Display radar data?
Posted by Kenneth P. Bowman on Wed, 08 Oct 2008 13:41:55 GMT
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In article
<d8a8332c-2a1d-46be-9a3a-ba7263d4f4ae@b38g2000prf.googlegroups.com>,
 Dave <daikan1998@tom.com> wrote:

> Dear friends:
>
> I have some weather radar data, whose coordinates are distances
> (kilometers) and angles to the radar station. So how can I convert
> these local coordinates to longitude/latitude cordinates? Please give
> any clue. Thanks.
>
> dave

LL_ARC_DISTANCE

What, that name wasn't obvious?

Ken Bowman

Subject: Re: Display radar data?
Posted by David Fanning on Wed, 08 Oct 2008 14:32:34 GMT
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Dave writes:

> I have some weather radar data, whose coordinates are distances
> (kilometers) and angles to the radar station. So how can I convert
> these local coordinates to longitude/latitude cordinates? Please give
> any clue.

Set up a map projection of the area of interest with MAP_SET
or MAP_PROJ_INIT. Then use CV_COORD to convert your data
from polar coordinates to rectangular coordinates (which
will be the data or lat/lon coordinates, in this case).

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: Display radar data?
Posted by Kenneth P. Bowman on Wed, 08 Oct 2008 14:59:04 GMT
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In article <MPG.2356726dd34c2ea398a4bd@news.giganews.com>,
David Fanning <news@dfanning.com> wrote:

> Dave writes:
>
>> I have some weather radar data, whose coordinates are distances
>> (kilometers) and angles to the radar station. So how can I convert
>> these local coordinates to longitude/latitude cordinates? Please give
>> any clue.
>
> Set up a map projection of the area of interest with MAP_SET
> or MAP_PROJ_INIT. Then use CV_COORD to convert your data
> from polar coordinates to rectangular coordinates (which
> will be the data or lat/lon coordinates, in this case).
>
> Cheers,
>
> David

I think LL_ARC_DISTANCE is a lot easier and the source code is available.

LL_ARC_DISTANCE could be improved by making it handle double precision
inputs better (!DTOR is single precision), by replacing the awkward WHILE loops
with MOD operations, and by vectorizing it.

Ken

Subject: Re: Display radar data?
Posted by pgrigis on Wed, 08 Oct 2008 15:13:48 GMT
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David Fanning wrote:
> Dave writes:
>
>> I have some weather radar data, whose coordinates are distances
>> (kilometers) and angles to the radar station. So how can I convert
>> these local coordinates to longitude/latitude cordinates? Please give
>> any clue.
>

> Set up a map projection of the area of interest with MAP_SET
> or MAP_PROJ_INIT. Then use CV_COORD to convert your data
> from polar coordinates to rectangular coordinates (which
> will be the data or lat/lon coordinates, in this case).

While I am sure that this strategy would work, that will be depriving the original
poster of the joy of figuring out how to convert polar coordinates in a plane tangent
to a sphere at a given point to spherical coordinates. Now, that's a beautiful
geometry problem, isn't it? Furthermore, if high-precision is not important,
the problem may be simplified a bit by making the assumption that the earth is
locally flat at the radar position, thus reducing the problem to converting plane
coordinates from polar to cartesian...

Ciao,
Paolo

>
> 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: Display radar data?
Posted by pgrigis on Wed, 08 Oct 2008 15:33:26 GMT
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pgri...@gmail.com wrote:
> David Fanning wrote:
>> Dave writes:
>>
>>> I have some weather radar data, whose coordinates are distances
>>> (kilometers) and angles to the radar station. So how can I convert
>>> these local coordinates to longitude/latitude cordinates? Please give
>>> any clue.
>>

>> Set up a map projection of the area of interest with MAP_SET
>> or MAP_PROJ_INIT. Then use CV_COORD to convert your data
>> from polar coordinates to rectangular coordinates (which
>> will be the data or lat/lon coordinates, in this case).
>
> While I am sure that this strategy would work, that will be depriving
> the original
> poster of the joy of figuring out how to convert polar coordinates in
> a plane tangent
> to a sphere at a given point to spherical coordinates. Now, that's a
> beautiful
> geometry problem, isn't it? Furthermore, if high-precision is not
> important,
> the problem may be simplified a bit by making the assumption that the
> earth is
> locally flat at the radar position, thus reducing the problem to
> converting plane
> coordinates from polar to cartesian...

In the latter approximation, a back of the envelope computation
yielded (you may want to double check this before actually using it)

lon=lon0+r/R*sin(alpha)*!radeg
lat=lat0+r/R*cos(alpha)/cos(lat0)*!radeg

Cheers,
Paolo

>
> Ciao,
> Paolo
>
>
>>
>> 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: Display radar data?

Posted by David Fanning on Wed, 08 Oct 2008 15:35:45 GMT
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pgrigis@gmail.com writes:

> While I am sure that this strategy would work, that will be depriving
> the original
> poster of the joy of figuring out how to convert polar coordinates in
> a plane tangent
> to a sphere at a given point to spherical coordinates. Now, that's a
> beautiful
> geometry problem, isn't it?

It's beautiful, alright. But if your plane geometry texts
have been sitting on your shelf gathering dust, as mine
have, for the past 30+ years, it's easier to just call
the Young Genius away at college and let him figure it
out for you. :-)

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: Display radar data?
Posted by Dave[4] on Thu, 09 Oct 2008 07:40:20 GMT
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On Oct 8, 10:32 pm, David Fanning <n...@dfanning.com> wrote:
> Dave writes:
>> I have some weather radar data, whose coordinates are distances
>> (kilometers) and angles to the radar station. So how can I convert
>> these local coordinates to longitude/latitude cordinates? Please give
>> any clue.
>
> Set up a map projection of the area of interest with MAP_SET
> or MAP_PROJ_INIT. Then use CV_COORD to convert your data
> from polar coordinates to rectangular coordinates (which
> will be the data or lat/lon coordinates, in this case).
>
> 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.")

Fanning, very thanks for your reply. Your answer is simple, but not suit for my problem.
As Ciao says, high-precision is very important for radar data. Many things should be considered, such like earth radius, altitude of radar station and so on. Things going complex.
I find SPRINT code at http://www.mmm.ucar.edu/pdas/pdas.html, which is a program to interpolate radar measurements taken at spherical coordinates (range, azimuth, and elevation) to regularly-spaced Cartesian or longitude-latitude grids. May be I should try it. Thanks again.

DAVE
