
Subject: Re: Transverse cylindrical map projection.
Posted by [Liam E. Gumley](#) on Thu, 23 Mar 2000 08:00:00 GMT
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James Kuyper <kuyper@wizard.net> wrote in message
news:38DA1B88.7A690089@wizard.net...

> I want to plot data using a transverse cylindrical map projection. An
> equal-area one would be best, but equidistant or mercator would be
> almost as good, just so as long as it's transverse version of one of the
> cylindrical projections. MAP_SET accepts a tilt angle, which doesn't do
> what I want for most of the cylindrical projections. The user's guide
> contains an example command:
>
> map_set,0,0,45,londel=20,latdel=20,/grid,\$
> /continent,/cyl,title='Oblique Cylindrical Equidistant'
>
> which is shown in the book as producing a map with the projection axis
> tilted by 45 degrees: the lines of constant latitude and longitude are
> curved. When I try it, I get a map tilted by 45 degrees, which is a very
> different thing: The lines of constant latitude and longitude are
> straight, tilted by 45 degrees. This suggests that the book was printed
> using a different (hopefully later) version of IDL than I'm using. I saw
> the problem first in version 5.0.3, but I've recently discovered where
> they've hidden version 5.2 on our machine, and I still see the same
> results using it.
>
> Luckily, I've found that the transverse mercator projection does
> implement the tilt properly. However, in large maps it often considers
> one or more of my limit points unmappable, for reasons that escape me.
> For example,
>
> map_set,-15.7970,-90.4190,260.1820,limit=[78.548,-31.494,\$
> -27.66,-64.441,-64.066,103.55,-0.792,-114.296],\$
> /continents,/grid,/label,/isotropic,/transverse_mercator
>
> Produces the complaints:
> % MAP_SET_LIMITS: Unmappable limit point: -31.4940 78.5480
> % MAP_SET_LIMITS: Unmappable limit point: 103.550 -64.0660
>
> The only points that should be unmappable in a mercator projection are
> points near the projection axis, and of the four points I gave, those
> two are the ones farthest from the axis.
>
> If you use /lambert instead of /transverse_mercator, you'll get a feel
> for the kind of plot I want. /stereo and /azimuthal also work, each with
> their own distortion properties. However, I want a cylindrical
> projection, not an azimuthal one - the projection properties aren't
> quite what I want.

James,

I haven't bothered with the LIMIT keyword to MAP_SET since I discovered the SCALE keyword:

```
map_set, -15.7970, -90.4190, 260.1820, /transverse, scale=50e6
map_continents, /hires
map_grid, /label
```

The map is always isotropic, and it always fills the current display. You usually need to experiment a little with the scale factor, but it beats trying to guess map limits.

Cheers,
Liam.

Subject: Re: Transverse cylindrical map projection.
Posted by [James Kuyper](#) on Fri, 24 Mar 2000 08:00:00 GMT
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Liam Gumley wrote:

>

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It turns out I was mistaken. In both cases, it was tilting the map, rather than the axis of the projection.

```
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> trying to guess map limits.
```

I don't want to do it that way. I'm conveying an extra level of information by my choice of boundaries; they corresponding to the farthest distance the satellite could see in each direction at any time during the data collection, if it had been pointed in that direction. This provides a context for displaying the images it saw in the direction it was actually pointing.

In any event, I resolved the problem. The feature I wanted is controlled by the 'central_azimuth' parameter, rather than by the 'rot' parameter. Looking at their descriptions, I can't figure out why they work the way they do. 'rot' has basically the effect I would expect given the description of 'central_azimuth', and vice-versa. Once I figured out the correct central_azimuth angle, MAP_SET had no problems with my limit points.
