Subject: Re: Convert planetary sinusoidal map image to (lat,lon,value) array
Posted by Ken Mankoff on Mon, 29 Jul 2002 17:58:49 GMT
View Forum Message <> Reply to Message

Hi Suniti,

I guess I'll give this a shot. Never done this but here is what I
would try first if I were doing it:

1) Set up an identical map projection. The key word (no pun intended)
here is *identical*, so that every pixel of your new "sinusoidal equal
area" projection is the same as the BYTARR you have been given. If
you can't get it identical, I am not sure what to do next.

You can test if it is identical via:
IDL> WINDOW, XSIZE=1440, YSIZE=720
IDL> MAP_SET, 0, 0, /SIN, /ISO
IDL> TV, sinusoidal_projection
IDL> MAP_GRID & MAP_CONTINENTS & MAP_HORIZON

Does the border created by MAP_HORIZON line up exactly (to the pixel)
with the data your data from the TV command? Look up the keywords to
MAP_SET if not, and try other projections...

2) Redo the above code, but stop after the TV command so its just your
data, nothing extra. You don't actually need a window, but you need
the MAP_SET command to be run (with the correct 1440,720 sizes) so
that IDL defines the map coordinate system. You are going to use this
later to convert between (x,y) pixels and (lat,lon) degrees.

3) Set up the new array you want to put your data into. I suggest a
cylindrical 'projection', which can then be warped to any other
projection you want. So...
IDL> new_array = BYTARR(1440, 720)

4) Step through every (x,y) pixel in your image. Actually, don't use
the image itself, just use your array. For each (x,y), figure out what
(lat,lon) it is at. Stick it into the correct bin in NEW_ARRAY.

```
FOR x=0,1439 DO BEGIN
   FOR y=0,719 DO BEGIN
 aPixel = sinusoidal( x, y )
 IF ( aPixel NE 0 ) THEN BEGIN ; not a valid (lat,lon) coord.
   latlon = CONVERT_COORD( x, y, /device, /to_data )
   new_array[ latlon[0], latlon[1] ] = aPixel
     ENDIF
   ENDFOR
ENDFOR
```

I am not sure if my syntax is correct, but this should give you the general idea

Hope this helps,
Let us know if it works,
  -Ken.

On 29 Jul 2002, Suniti Karunatillake wrote:
> I have a sinusoidal equal area map projection image in the form of a
> byte array. The image is rectangular, 1440 pixels (length) X 720
> pixels (height). I am able to read the file and store it as an array
> of dimensions 1440(columns)X720(rows).
>
> I need to convert the planetary portion of the image (all other points
> have value 0 in the image array) into a table of form (latitude,
> longitude, value). I am also uncertain which type of array I should
> construct from the planetary portion of the image in order to apply
> the conversion.
>
> Sincerely,
> Suniti