

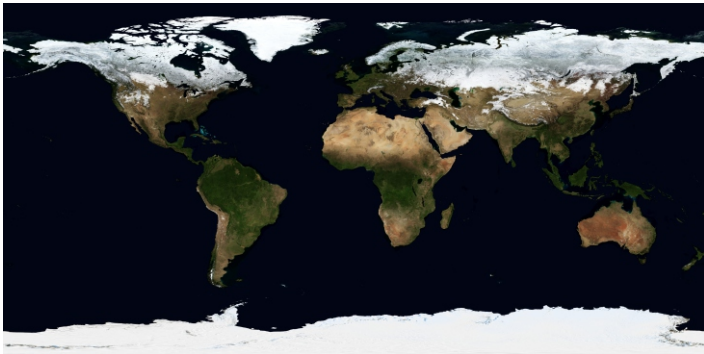
3D EARTH-MOON MODEL with space background

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This all started as a proof of concept for myself. I, like many, was interested in how to wrap textured images of planets and other things around a sphere and rotate it. I began by researching what types of map projections were the best, or at least the easiest to use for my needs. in the end I choose Equirectangular projections...these maps have widths that are twice their height. Their 2:1 pixel ratio translates easily to a sphere which has the same ratio of $360^\circ \times 180^\circ$.

In this type of projection the vertical center of the image is closest to normal scale in appearance, but as you move towards the top or bottom of the image the terrain is stretched to account for the curvature of the sphere, therefore the entire top row of pixels in the image represents just a single point, the North pole. the entire bottom row of pixels represents a single point, the South pole.

Equirectangular projections can be found online. ALSO known as 360° panoramic images, etc.
https://en.wikipedia.org/wiki/Equirectangular_projection



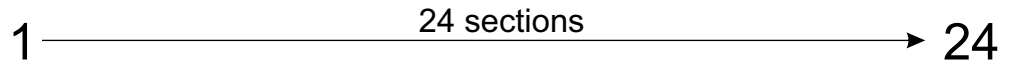
My program will also use images like this 360 panorama once converted (see below)



HOW IT WORKS

SO now the question is HOW DO YOU WRAP A RECTANGLE AROUND A SPHERE? The first thing you must do is convert the image into a Polar Compressed projection. the process compresses the top and bottom of the image using a curved shape mask while separating the image into equal longitudinal sections. in this case I'm using a 24 section projection which means each section represents 15 degrees of longitude. The more sections you divide out of the 360 degrees the rounder the sphere model will be. a big benefit of using this method is that round objects on the image maintain their 'roundness' even at the north & south poles. After creating this program I realized it also makes a very good 360 Panorama viewer.

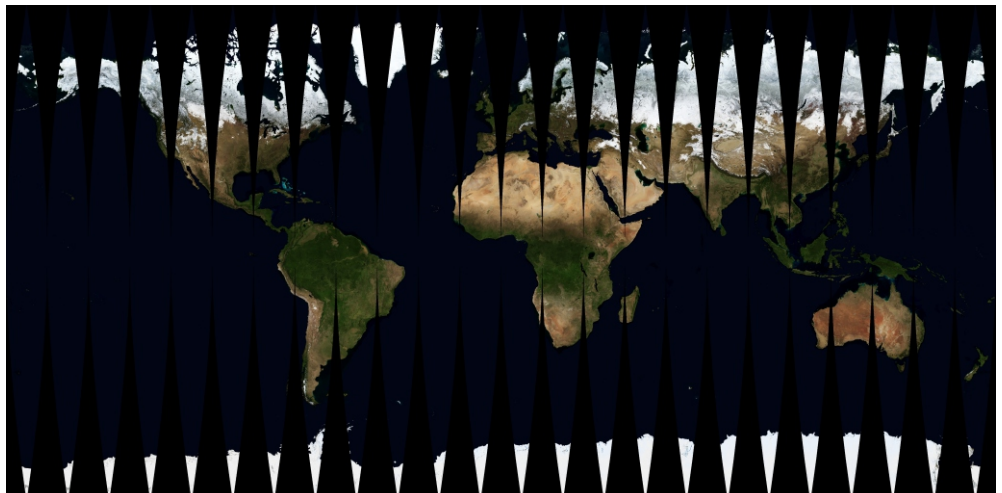
* NOTE: I created a program that produces polar-compressed projections from equirectangular images. it is a stand alone program and is NOT included in the your program download. The conversion program will change any equirectangular or 360 panorama into a polar compressed image. available upon request.



A Polar Compressed Image

I have many images that have already been converted including Mars, Venus, Jupiter, Moon, Saturn and scenic views like beaches, mountains, landscapes and interior structures.

You can create and convert your own images with my utility available for download.

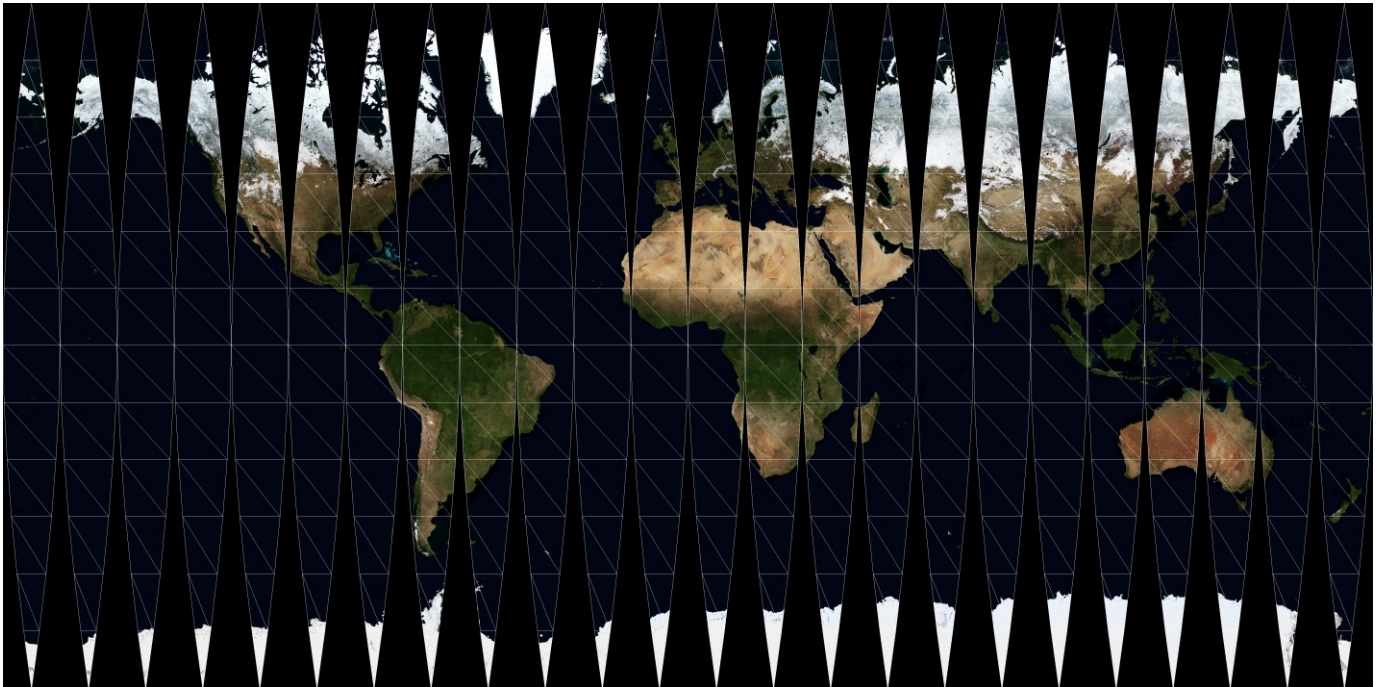


WHAT'S NEXT?

The next thing to do is create all of the poly coordinates for each of the three maptriangle values and also the matching x,y image coordinates to map the image onto each poly.

Producing all of the data required to create the 528 poly sphere and to map a triangular image to each of them was a bit tedious. Fortunately, the stand alone program I made that creates the Polar compressed images ALSO calculates and provides all of the maptriangle data required. The program you downloaded has all the DATA values HARDWIRED in the code...

This Polar Compressed map shows the 528 polys to be mapped to the sphere



The Earth, Moon and Space projections are mapped to this 528 Poly Sphere

