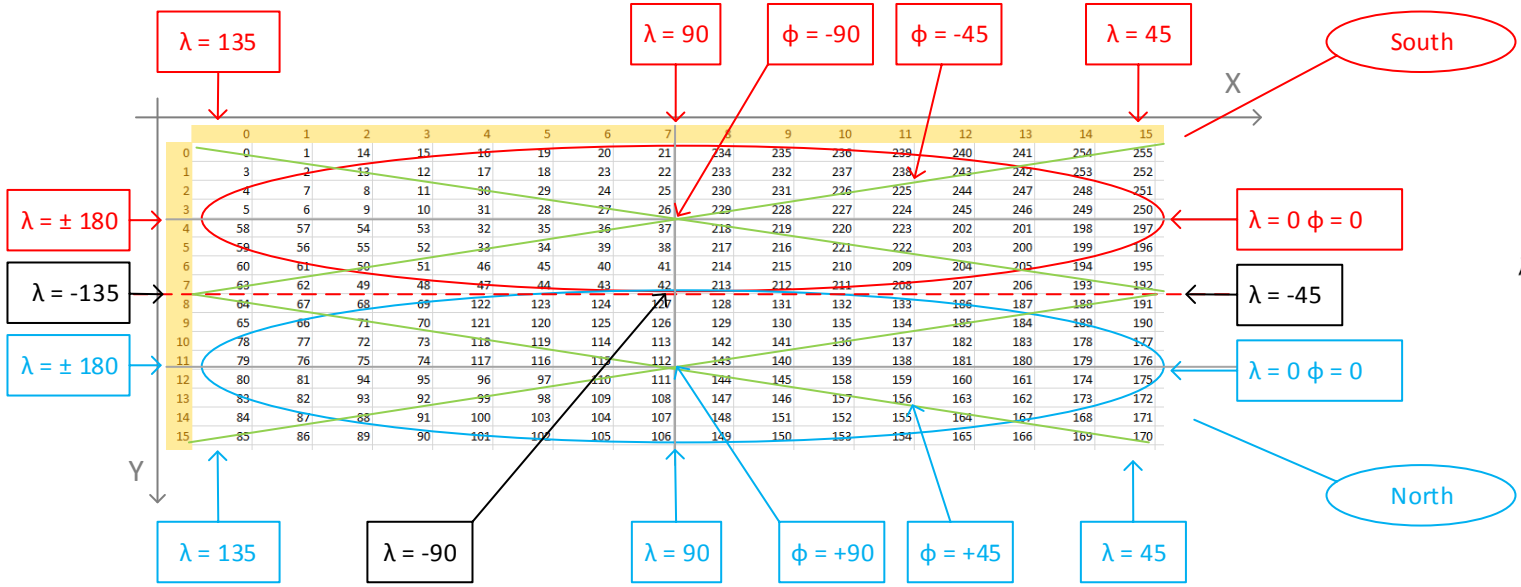
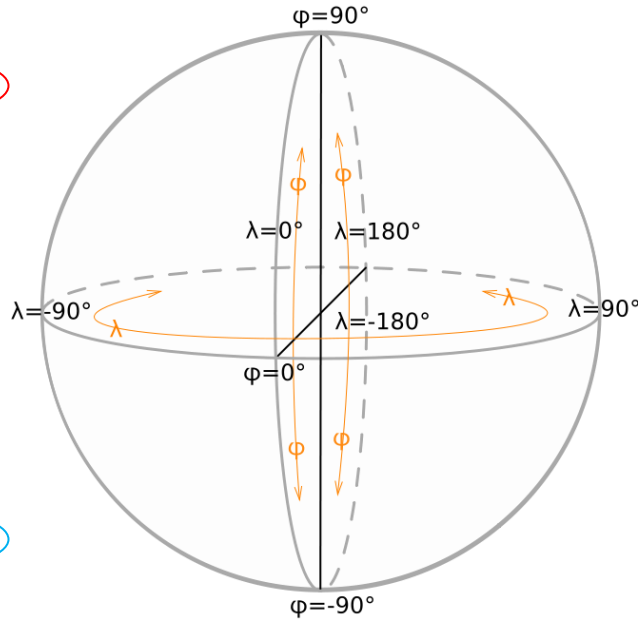
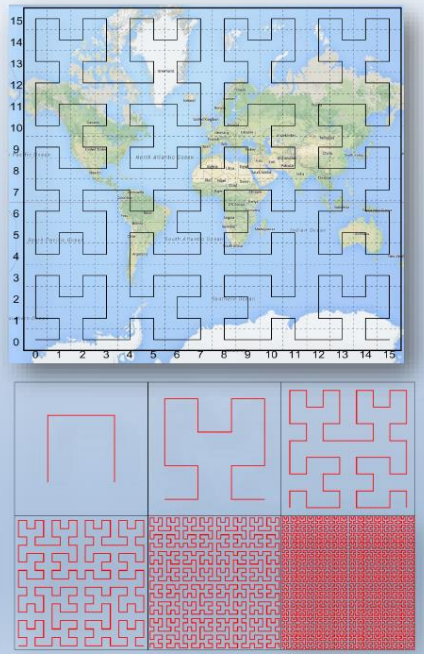


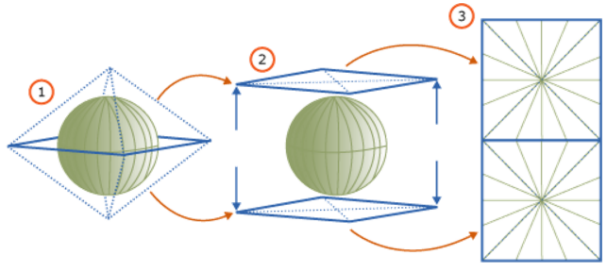


Hilbert Curve Precision



- Precision determined by the 'depth' of the curve. In this example globe is defined by a 16X16 grid.
- Resolution is 22.5 degrees latitude and 11.25 degrees longitude per cell.
- Each elbow (discrete point) in the Hilbert SFC maps to a grid cell.
- The precision, defined in terms of the number of bits, of the Hilbert SFC determines the grid. Thus, more bits equates to finer grained cell.

The following illustration shows a schematic view of the three-step decomposition process. In the pyramids, the dotted lines represent the boundaries of the four facets of each pyramid. Steps 1 and 2 illustrate the geodetic ellipsoid, using a green horizontal line to represent the equatorial longitude line and a series of green vertical lines to represent several latitude lines. Step 1 shows the pyramids being projected over the two hemispheres. Step 2 shows the pyramids being flattened. Step 3 illustrates the flattened pyramids, after they have been combined to form a plane, showing a number of projected longitude lines. Notice that these projected lines are straightened and vary in length, depending on where they fall on the pyramids.



Once the space has been projected onto the plane, the plane is decomposed into the four-level grid hierarchy. Different levels can use different grid densities. The following illustration shows the plane after it has been decomposed into a 4x4 level-1 grid. For the purposes of illustration, the lower-levels of the grid hierarchy are omitted. In actuality, the plane is fully decomposed into a four-level grid hierarchy. After the decomposition process finishes, the geographic data is read, row by row, from the geography column, and the tessellation process is performed for each object in turn.