Worldmap projections

Ron Pennders, PA2ION, 2017.

This document shows examples of azimuth projection of wordmaps calculated by the program DisDir2XY and results are presented with VBAMap. Both are home made programs (VB6 resp. VB2010).

Figure 1: a common wordmap on the basis of WGS-84 coordinates. Our globular earth can not be drawn on a paper or screen without distortion: points of the north and south pole has to be drawn as top – and bottom lines respectively.
Note: Nor exact distance and direction of two points can be derived in such map without separated, intensive calculation actions.

Shortest route, overtaken countries, distance and direction are important at worldwide radiocommunication, aviation etc.
The azimuthal projection of the world map objects enables for one specified point fast info of distance and direction by the fact that all map objects of the world are drawn around that point on base of their real distances and directions.

Largest distortion of azimuthal maps occurs for the reference point nearby the opposite point of the earth map (distance ~20,000km) where a WGS84 point is transposed into a circle. Nearby the reference point in the map center is a limited distortion .

Note the large differences of continent postions and forms in azimuthal maps (fig. 2-7). Views on the world strongly depend on your position.

Figure 1: Linear projection of WGS-84 units

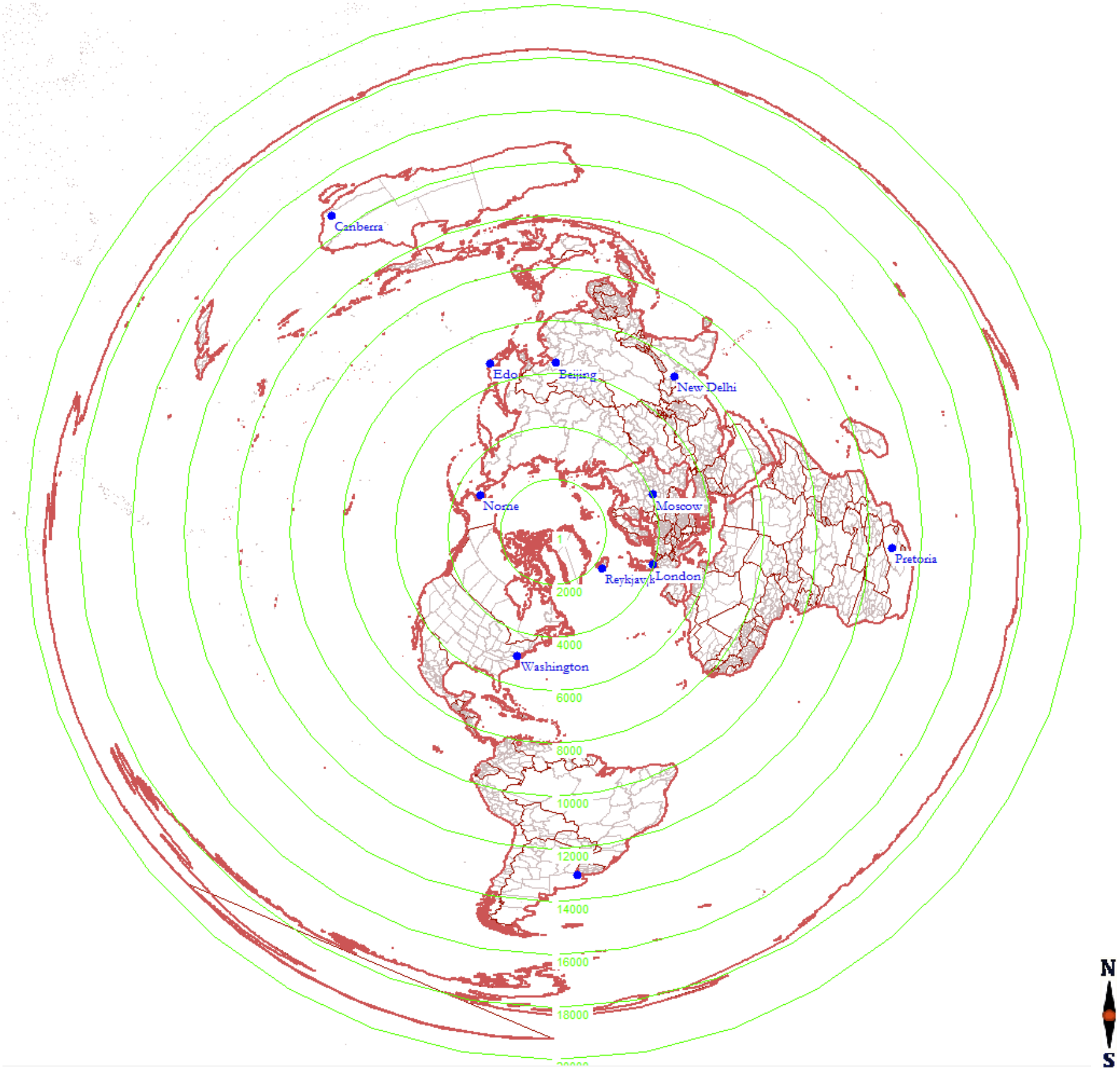

Figure 2: Azimuthal map: 'Alert' (North Canada) as map center

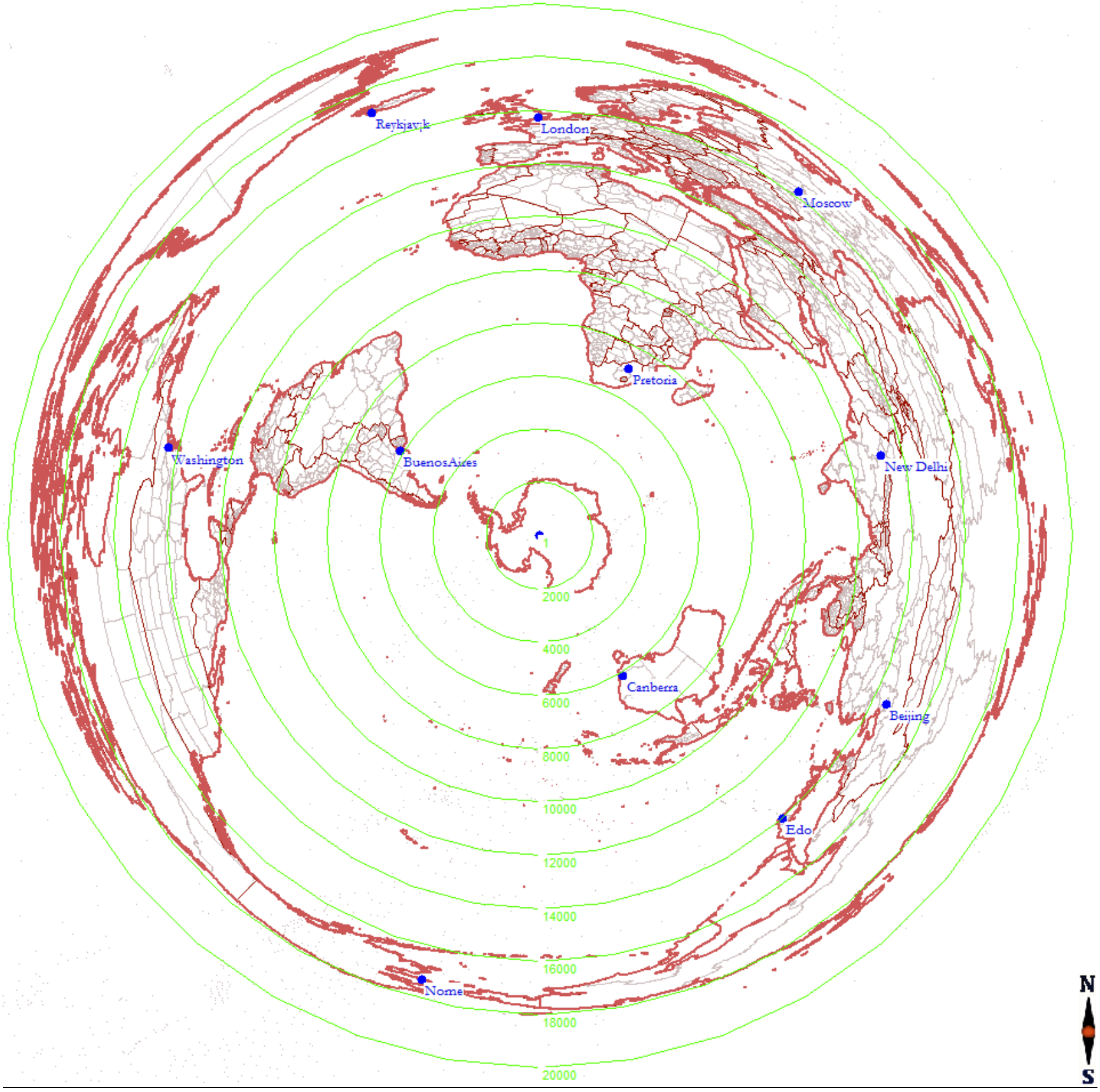

Figure 3: Azimuthal map: nearly 'South pole' as map center (coordinate: 0.1,-89.90)

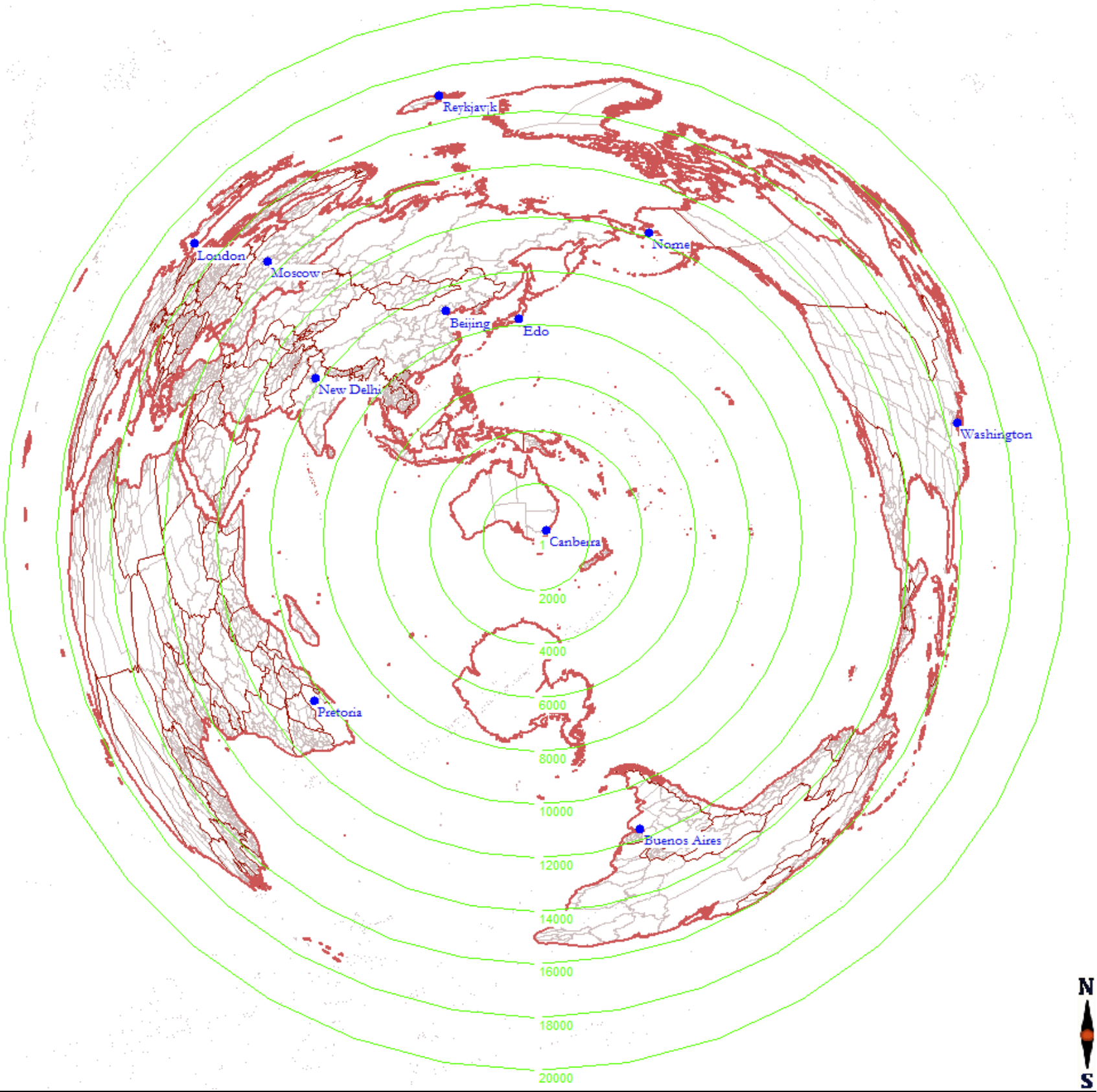

Figure 4: Azimuthal map: 'Melbourne' as map center

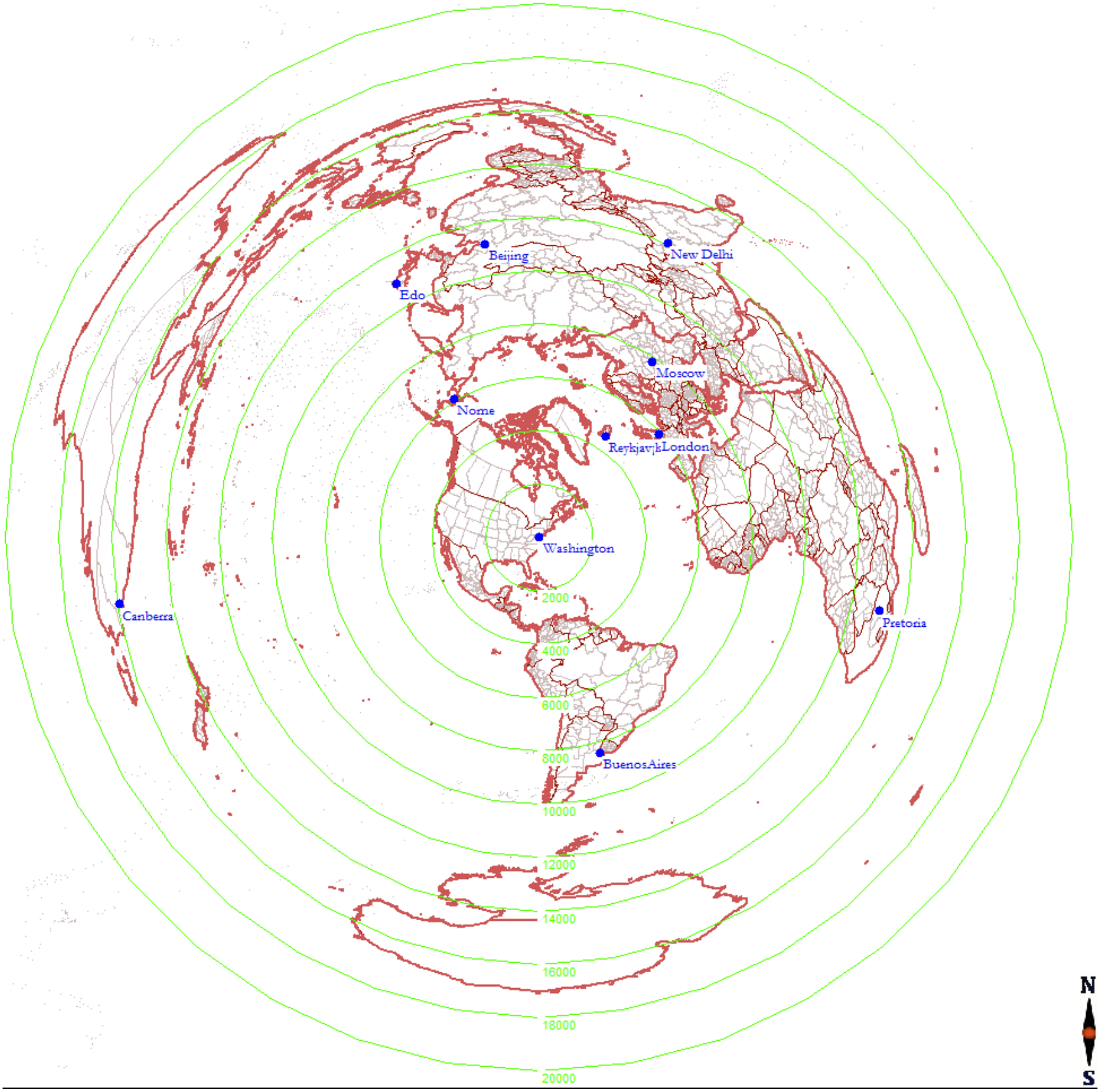

Figure 5: Azimuthal map: 'Washington DC' as map center

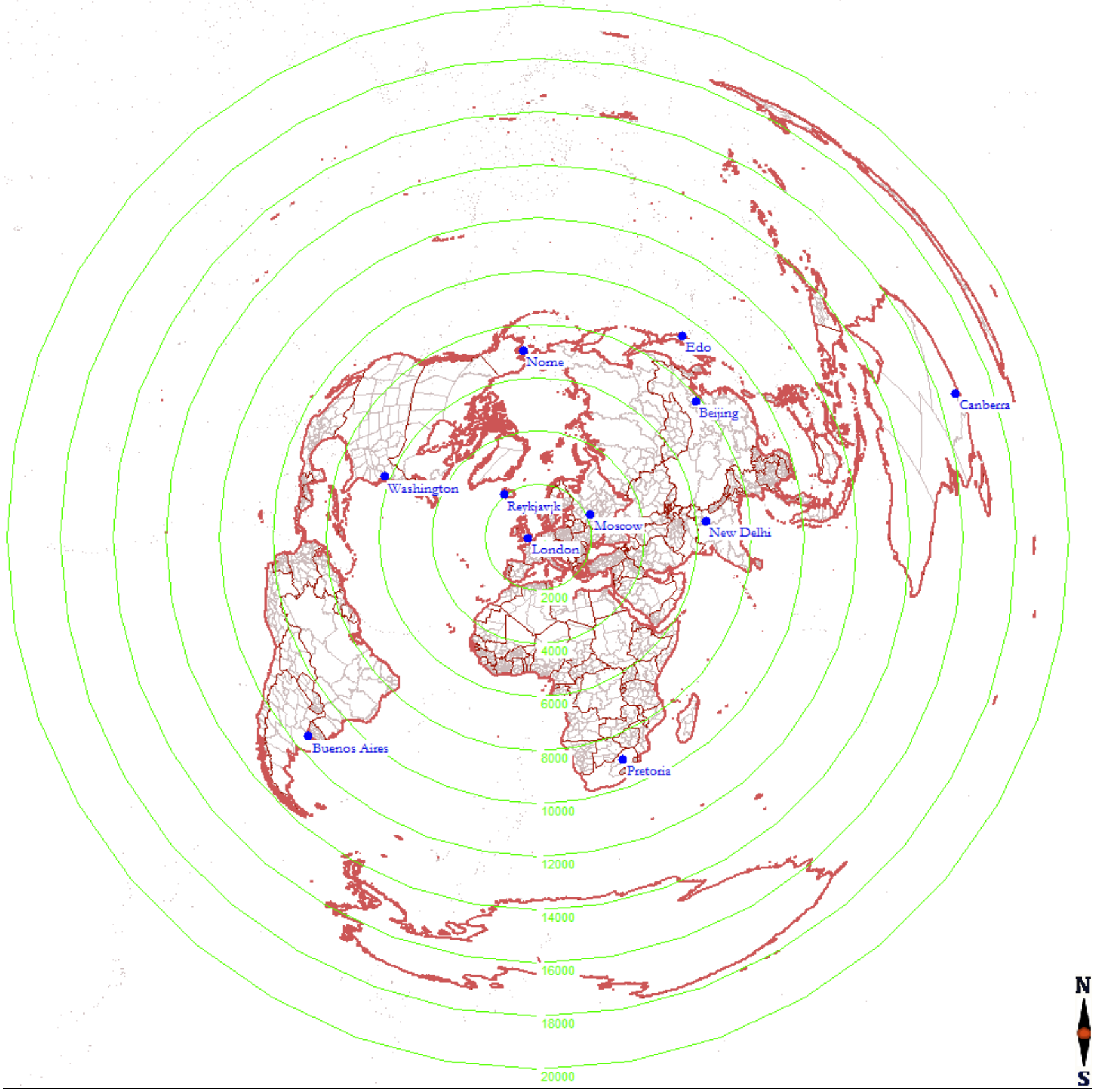

Figure 6: Azimuthal map: 'Dutch HAM station PA2ION' as map center (QTH=JO22OC)

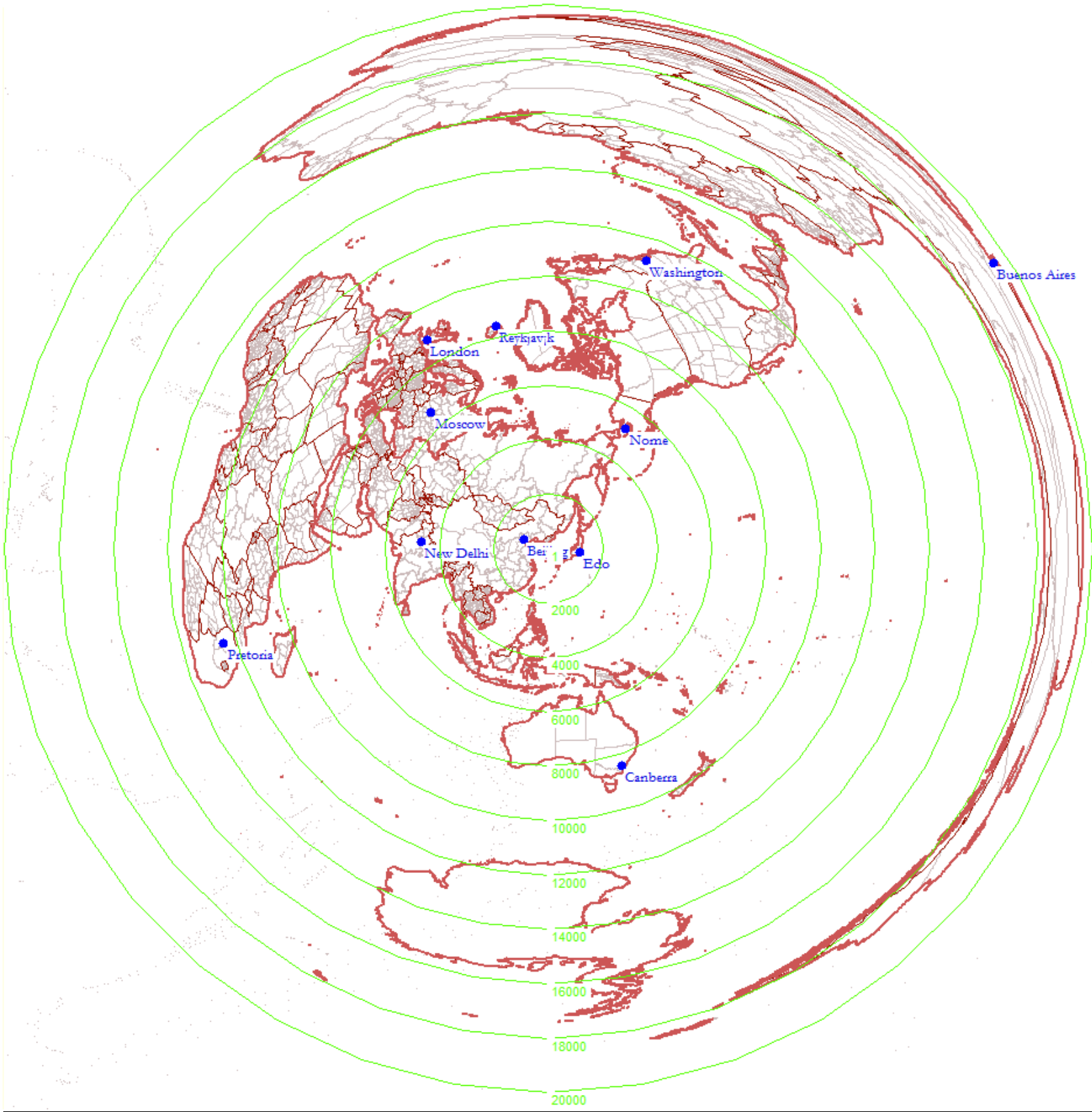

Figure 7: Azimuthal map: 'Seoul' as map center