

Azimuthal Projections with Two or More Standard Parallels

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Abstract: The author has lately been trying to explain and demonstrate that the approach to map projections as mappings from sphere onto an auxiliary surface which is then developed into a plane is not right because it does not correspond to the mathematical basis of most map projections. In azimuthal projections, the projection plane is often put in such a position that it touches or intersects the sphere, interpreting that the projection only has one point without distortions or one circle along which there are no distortions. In normal or polar aspect azimuthal projections, this circle is the standard parallel.

This paper shows that relating the projection plane to a projecting sphere does not make much sense. Namely, it is demonstrated that azimuthal projections with two or more standard parallels exist. How does one explain a plane intersecting with a sphere in three concentric circles? It is not possible. Of course, such an azimuthal projection is not going to be applied widely. It was constructed only to show how awkward and unnecessary it is to relate the projection plane to the sphere so that projection distortions could be explained.

Keywords: azimuthal projections, distortions, standard parallels