Subject: Maps - ellipsoids in map_set ('scale on the central meridian')
Posted by Andy Sayer on Thu, 16 Jan 2014 18:58:43 GMT
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I have been trying to use the WGS 84 ellipsoid with map_set, to map some data at a higher resolution than I normally work at. However, according to the documentation, the default ellipsoids are something else, so I need to know some parameters (which I think may explain why my coastlines are not currently lining up where they should):

http://www.exelisvis.com/docs/MAP_SET_Procedure.html

"ELLIPSOID
Set this keyword to a 3-element array, [a, e2, k0], defining the ellipsoid for the Transverse Mercator or Lambert Conic projections.
a: equatorial radius, in meters (a must be greater than zero)
e2: eccentricity squared. e2= 2 * f - f2, where f = 1 - b/a (a: equatorial radius, b: polar radius; in meters). e2 must be nonnegative and less than 1.
k0: scale on the central meridian
The default is the Clarke 1866 ellipsoid, [6378206.4, 0.00676866, 0.9996].
This keyword can be used with the CONIC or TRANSVERSE_MERCATOR keywords. For CONIC if ELLIPSOID is not supplied, a sphere of normalized radius 1.0 is used. For TRANSVERSE_MERCATOR if ELLIPSOID is not supplied, the default is the Clarke 1866 ellipsoid, [6378206.4, 0.00676866, 0.9996]."

From Wikipedia I have found the following: http://en.wikipedia.org/wiki/World_Geodetic_System

"The WGS 84 datum surface is an oblate spheroid (ellipsoid) with major (equatorial) radius a = 6378137 m at the equator and flattening f = 1/298.257223563.[6] The polar semi-minor axis b then equals a times (1-f), or 6356752.3142 m.[6]"

So, from that I have parameter a and can calculate e2. However, not being an expert in this terminology (something I am trying to get better about), I don't know what the parameter k0 ('scale on the central meridian') means - could anyone help me out? I also looked at the map_proj_init documentation (as that has various ellipsoid options) but didn't spot mention of a 'scale on the central meridian' there. The mapping code I am using is built around map_set so 'use map_proj_init' would not be the ideal response to this.

Should it be 1, 0.9996 like Clarke, or something else?

Thanks,

Andy