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VISUALIZATIONS OF UNCERTAINTY IN PROJECTIONS

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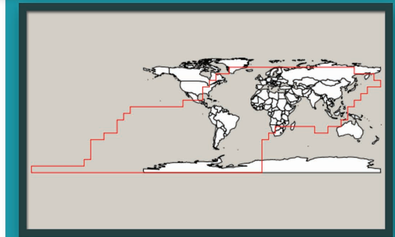
OVERVIEW

Large errors in area and distance calculations occur if the appropriate projection is not selected for regional to global scale analysis. Projections can also greatly distort the shape (form) of areas on maps. Here we present a new interactive tool that allows simultaneous visualizations of area, distance, and shape distortions in common map projections.

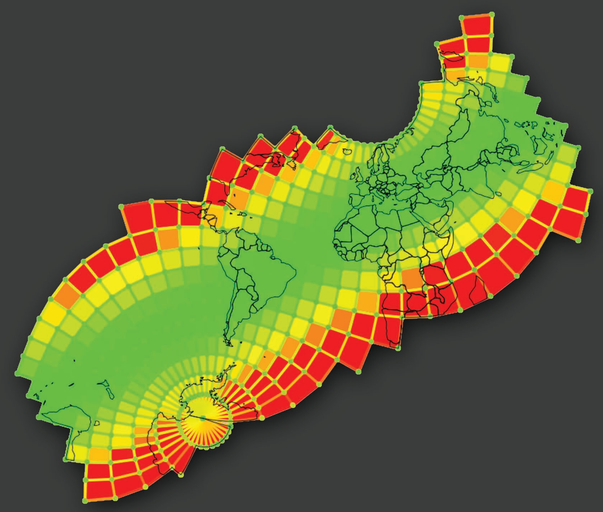
Available settings include; projection method, projection parameters, and the limits of allowable error. The amount of error relative to the limits is presented using color ramps along lines of latitude and longitude (distance distortion), filled polygons (area distortion), and points (form distortion). Boundaries which can be used to clip data to within the region of desired uncertainty are also provided.

The tool has been implemented in a new GIS application, BlueSpray, and is available at www.schoonerturtles.com. We also have plans to provide the tools as an applet on the World-Wide-Web and/or a standalone utility.



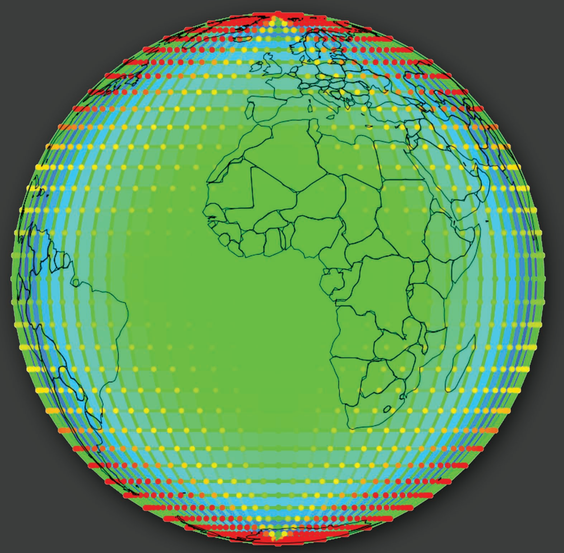
PROJECTION SETTINGS

Projector:	Geotools Projector
Method:	Hotline Oblique Mercator
Longitude Of Origin	0
Latitude of Origin	30
Azimuth	60
Scale Factor	1.0
False Easting	0
False Northing	0

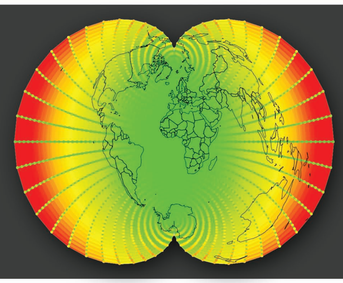


PROJECTION SETTINGS

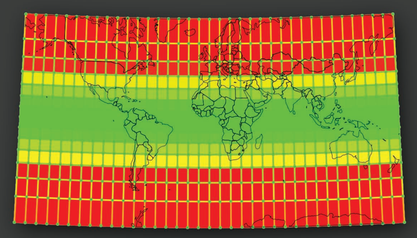
Projector:	Geotools Projector
Method:	Orthographic
Longitude Of Origin	0
Latitude of Origin	0
Scale Factor	1.0
False Easting	0
False Northing	0



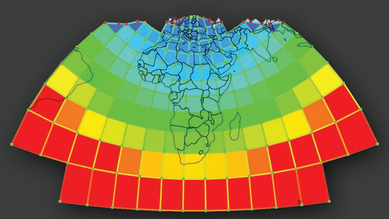
Projector:	Geotools Projector
Method:	Polyconic
Longitude Of Origin	0
Latitude of Origin	0
Scale Factor	1.1
False Easting	0
False Northing	0



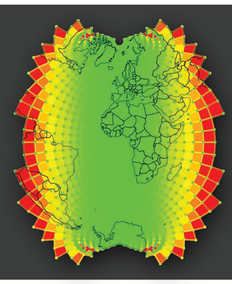
Projector:	Geotools Projector
Method:	Lambert Conformal Conic
Longitude Of Origin	0
Latitude of Origin	1
Scale Factor	1.0
False Easting	0
False Northing	0



Projector:	Geotools Projector
Method:	Krovak
Longitude Of Origin	49.5
Latitude of Origin	4.833333333333333
Azimuth	0.288139722222222
Scale Factor	50000
False Easting	0
False Northing	0



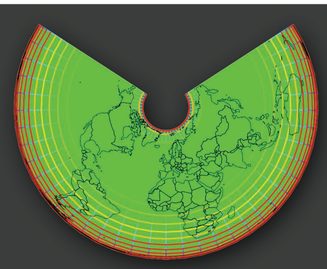
Projector:	Geotools Projector
Method:	Transverse Mercator
Longitude Of Origin	0
Latitude of Origin	0
Scale Factor	1.0
False Easting	0
False Northing	0



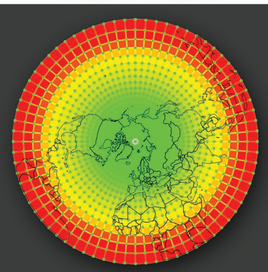
NO DISTORTION

MAX MAX

Projector:	GDAL Projector
Method:	Albers Conic Equal Area
Longitude Of Origin	60
Latitude of Origin	30
Azimuth	0.0
Scale Factor	0.0
False Easting	0.0
False Northing	0.0



Projector:	Geotools Projector
Method:	Stereographic North Pole
Longitude Of Origin	0
Latitude of Origin	90.0
Scale Factor	1.0
False Easting	0
False Northing	0



References

Mulcahy, K. A. and K. C. Clarke (2001). "Symbolization of Map Projection Distortion: A Review." Cartography and Geographic Information Science 28(3): 167-182.

Snyder, J. P. (1987). Map Projections: A Working Manual. Professional Paper. USA, United States Geological Survey: 385.

Snyer, J. P. (1993). Two Thousand Years of Map Projections. Chicago, USA, The University of Chicago Press.

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