COMPUTER ALGEBRA APPLIED TO MATHEMATICAL CARTOGRAPHY.

A study of the angular distorsion in the UTM projection.

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ABSTRACT

It's a well known fact that the conformal Gauss-Kr ger projection, and its variant the UTM, are not strictly conformal because of the truncation of the terms and then none of the Cauchy-Riemann conditions are satisfied. In this work we prove this fact and we evaluate the angular distorsion for the Hayford ellipsoid, proving that the projection is practically conformal.

In order to evaluate the maximum angular distorsion we use the semiaxes of the Tissot indicatrix ellipse, according to the procedure described in [1], p 103 ss or [3], p. 23 ss.

The third part of this work, which is under construction, is a package with useful functions for the UTM projection, including:

- Direct and Inverse transformation.
- Grid Convergence.
- Local scale-factor.
- Correct to a line of finite length.
- The chord to arc correction.

KEYWORDS
Geodesy, Cartography

SOURCES

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