

Computation of Continuous Displacement Field from GPS Data – Comparative Study with Several Interpolation Methods.

Belhadj Attaouia (Algeria)

Key words: Deformation measurement; Auscultation network; GPS measurements; Continuous displacement field; Interpolation methods; Cross-validation.

SUMMARY

it is impossible to collect observations in a comprehensive manner at any point of a site of study for practical reasons (cost, inaccessibility. Etc.). However, the continuity of the space is the basic hypothesis for subsequent analysis. The underlying problem is the interpolation. We seek through this document to defining the best method for predicting an continuous displacement field.. The methodology consists in using several all reliable interpolation methods . And through a cross-validation determine the most effective method for the data used. The application focuses on the auscultation network of tank «LNG" industrial complex "GL4Z" Arzew (Algeria). Constitute 56 points of GPS observations. The results of this comparative study interpolation of displacement, show that the best approach is the natural neighbor(RMSQs minimums)... Only the disadvantage is its irregularly representation based on delaunay triangulation. However, we retain interpolation radial basis function multilog method presents an good results with simple algorithm (comparable to kriging).