

Rigorous Deformation Analysis: from Conventional to Continuous

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ABSTRACT:

With the well-accepted use of Global Positioning System (GPS) in the surveying field today, GPS is widely used for monitoring some natural phenomena and man-made structures for providing useful information to assess seismic hazards and risks. This paper describes a software system for continuous GPS deformation detection and analysis via robust method, named ConDAS that currently being developed at Universiti Teknologi Malaysia. It is a software system that designed to cooperate with high precision GPS processing software - Bernese. The main components of ConDAS are: parameter extraction (from Bernese output), deformation detection (via IWST and S-transformation) and graphical visualisation. All these components are integrated in one environment using MATLAB. ConDAS runs under Windows operating system, is accessible for presenting the results of deformation detection, both numerically and visually. A deformation monitoring network (three stations from ISKANDARnet added to four nearby IGS stations) was designed to detect the displacement by implementing ConDAS. This paper highlights the architecture, the design of the software system and the results. Test results showed that the system performed satisfactorily.