Recurrent method with GNSS data for 3D displacement analysis and prediction time-variable dynamic model in Central Vietnam

Ngoc Ha Hoang (Vietnam)

Key words: Deformation measurement; Engineering survey; GNSS/GPS; Recurrent method; Network adjustment; GNSS; Displacement; Deformation analysis

SUMMARY

Nowadays, with the application of GNSS technology, solving the displacement problem is not only detecting, but also monitoring and studying the displacement process according to variables. With the impact of climate change, natural disasters and the impact of rising sea levels, in some areas of Vietnam, deformation displacement phenomena such as subsidence and horizontal displacement have appeared. In the report based on the use of 3D data obtained from the results of monitoring network measurements using GNSS technology according to time cycles, the focus is on analyzing the 3D dynamic displacement model of a region in the Central region of Vietnam. The new point of the proposed solution is to build a recursive method combining Kanmal filter theory to calculate and determine displacement parameters in the dynamic model. The displacement analysis was tested in 3 measurement cycles and the forecast results were compared with the observation results of cycle 4. The research results can serve for basic investigation in localities with the possibility of subsidence or deformation due to geological faults or environmental impacts.

Recurrent method with GNSS data for 3D displacement analysis and prediction time-variable dynamic model in Central Vietnam (13796)
Ngoc Ha Hoang (Vietnam)

FIG Congress 2026
The Future We Want - The SDGs and Beyond
Cape Town, South Africa, 24–29 May 2026