



Cooperating the BDS, GPS, GLONASS and strong-motion observations for real-time deformation monitoring

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An approach of cooperating the BDS, GPS, GLONASS and Strong-Motion (SM) records for real-time deformation monitoring was presented, and it was validated by an experiment data. For this approach, the GNSS data was processed by the RTK technology to retrieve the GNSS displacement, and the SM data was calibrated to get the raw acceleration, a Kalman filter was used to combine the GNSS displacement and the SM acceleration to obtain the integrated displacement, velocity and acceleration. The validation results show that the advantages of each sensors are completely complement; for the SM, the baseline shifts are estimated and corrected, high-precision velocity and displacement are recovered, and for the GNSS, the SM's high-resolution acceleration are used to reduce the GNSS noise, thus high-precision and broadband deformation information can be real-time obtained, it will be useful for the high-building, dam, bridge, landslide's deformation monitoring.