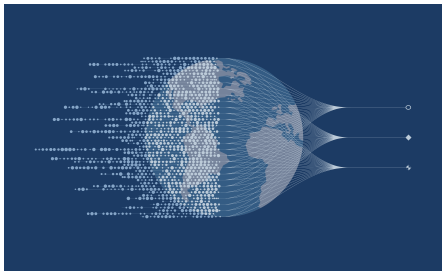

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real time deformation of the Mexican subduction zone using data of a seismogeodetic network

A seismogeodetic network of twenty stations was installed in the Mexican subduction zone to continuously monitor the deformation of the coast. The instruments combine the geodetic data and the strong motion data using a Kalman filter. The resulting real time deformation data shows an accuracy similar to post-processed data obtained several days after, using accurate orbital corrections. The seismogeodetic network shows that combining the geodetic receiver data with the strong motion records allows the possibility to monitor co-seismic deformation in real time with an accuracy similar to data processed several days after the event. An algorithm was developed to invert the real time seismogeodetic data using a static fault displacement approach based on Okada's formulation. The algorithm was successful in estimating the source dimensions and magnitude of great earthquakes (M > 8) in the Chilean and Japanese subduction zones. The results show that this type of instrument, combining geodetic and acceleration data, allows the rapid determination of magnitude and source characteristics of large and great earthquakes in subduction zones, which normally saturate regional stations. The coseismic deformation data are also used to calculate ocean floor displacement to estimate potential run-up heights and inundation areas of potential tsunamis.

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