



Spatial and temporal characteristics of transient anomalies on cGPS time series in Taiwan

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Transient anomaly on geodetic time series is a key constraint to understand physical behavior and mechanism of natural hazards. We first identify overall transient anomalies in Taiwan recorded by continuous GPS (cGPS) networks. Sparse estimation techniques is applied to estimate quantity of transient signals from cGPS time series. Systematic classification on transients for isolating each signal is established by weighting empirical trigger factors and criterion. Spatial and temporal characteristics of transient anomalies show contribution of seismic events, landslides, and slow slips. Seismic-related transients are sensitive to earthquakes on land ($M_w > 5.5$) in particular shallow source depths. Landslide-related transients in the Central Range are induced by typhoons and episodic heavy rainfalls. Slow-slip transients show remote triggering of surrounding great earthquakes. Preliminary linking between geodetic transient signals and natural hazards of Taiwan is well described. Unknown transients reveal surface and tectonic process may play important role in crustal deformation.