

The contribution of Satellite TIR Surveys to the short-term time-Dependent Assessment of Seismic Hazard (t-DASH): a decadal (2005-2015) study over Japan

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From a multi-parametric approach a major reliability and increased space-time precision of short-term earthquake forecast, is commonly expected. Among the others, the fluctuations of Earth's thermally emitted radiation, measured by satellite sensors operating in the thermal infrared (TIR) spectral range, have been proposed since eighties as a potential earthquake precursor. Since 2001, the general change detection approach Robust Satellite Techniques (RST), used in combination with RETIRA (Robust Estimator of TIR Anomalies) index, showed good ability to discriminate anomalous TIR signals possibly associated to seismic activity, from the normal variability of TIR signal due to other causes (e.g. meteorological). In order to evaluate its possible contribute to an improved multi parametric system for a time-Dependent Assessment of Seismic Hazard (t-DASH), RST approach has been recently implemented on TIR radiances collected over Japan by the geostationary satellite MTSAT (Multifunctional Transport SATellites) in the period June 2005 - December 2015. Preliminary results of a correlation analysis performed over Japan in the considered 11 years long period, has shown that 80% of the observed SSTAs (Significant Sequences of TIR Anomalies) were in an apparent space-time relations with the occurrence of earthquakes (M greater than or equal 5) with a false positive rate of 20%.

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