

Recent advances on long-term analyses of TIR satellite radiances in relation with earthquake occurrence.

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During last 25 years Robust Satellite Techniques have been applied all around the world to analyze long-term satellite TIR (Thermal InfraRed) radiances in the attempt to identify (isolating them from all the others possible sources) those anomalies (in the spatial/temporal domain) possibly associated to the occurrence of major earthquakes. Results achieved by processing multi-annual (more than 10 years) time series of TIR satellite images in different continents and seismic regimes, allow to identify common (or peculiar) elements of success/failure respect to the possibility to build and implement a multi-parametric system for a time-Dependent Assessment of Seismic Hazard (t-DASH).

In particular:


Thanks to a clear definition of (Significant Sequences of) TIR Anomalies (SSTAs) and well-defined validation rules, for earthquakes with magnitude greater than 4 the false positive rate is around 25% (average value over Greece, Italy, Japan, Turkey) oscillating from 7% up to 40% strongly depending on the considered region;;

Molchan error diagram analyses gave a clear indication that a non-casual correlation exist between RST-based SSTAs and earthquake occurrence time and location;

Identified possibly earthquake-related SSTAs are quite rare (sporadic) with quite limited (less than 0,05% of the total investigated) alerted space-time volumes.

In this paper the possibility to further reduce false positive rate by applying RST approach to Nocturnal Brightness Temperature Gradients variations, will be discussed in the case of recent earthquakes occurred in Italy.

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 Feedback/Corrections?