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On the possible impact of SSTAs (Significant Sequences of TIR Anomalies) analysis on operational short-term earthquake forecast in the Hellenic arc.

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Significant progresses have been made in the field of the earthquake forecasting, in terms both of refinement of data-analysis methodologies and introduction of new observational technologies. Despite this, our present capabilities to provide useful and effective indications about impending large earthquakes are far from their operational use. In order to reduce some uncertainties of earthquake forecast systems, a general consensus in the scientific community has been reached on the adoption of a multi-parametric, instead of single parameter, approaches.
Up to now, on the basis of statistical analyses different parameters (seismological, chemical, physical, biological, etc.) have demonstrated their not casual relation with earthquake occurrences, and could be included in a multi-parametric system devoted to short-term earthquake forecasting. Among these parameters, also Significant Sequences of TIR Anomalies (SSTAs) highlighted by Robust Satellite Techniques (RST) can be considered as one of the possible candidates within a multi-parametric approach to a time-Dependent Assessment of Seismic Hazard (t-DASH).
Statistical analyses of long-term dataset of TIR satellite observations over different seismic area (i.e. Greece 2004-2013, Italy 2004-2014, Turkey 2004-2015, Japan 2005-2015, South-West United States 2006-2011 and Taiwan 1995-2002) shows that the 75% (average value) of the SSTAs identified by RST technique occur in a pre-fixed space-time window around the occurrence time and location of earthquakes with $M \geq 4$.
In this paper, the results of the correlation analysis between SSTAs observed over the Hellenic Arc in the period 2005-2015 and earthquakes ($M \geq 4$) occurred in the same area and period will be shown. Preliminary results show that, when just this area is considered, all identified SSTAs are preceded or followed by seismic events (i.e. false positive rate go to zero). The potentiality and the possible impact of such an approach in improving the present operational earthquake forecasting capabilities (and real time seismic risk reduction capacity) at local and regional scale will be also discussed.