

Statistical correlation analysis between large earthquakes ($M \geq 6$) occurred in Indonesia and significant TIR anomalies highlight using RST methodology on HIMAWARI-8/AHI TIR data

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Robust Satellite Techniques (RST; Tramutoli 1998, 2007) has been widely applied to monitor seismic areas looking for possible pre-seismic TIR anomalies through the use of different satellite packages.

Up to now, RST always used in combination with RETIRA (Robust Estimator of TIR anomalies; Tramutoli et al. 2005) index, has been implemented on TIR radiance acquired by polar (e.g. NOAA/AVHRR, EOS/MODIS) and geostationary (e.g. MSG/SEVIRI, MTSAT/IMAGER) satellites with the aim to study seismic events occurred in different country as India and Taiwan in Asia and Italy, Greece and Turkey in Europe.

In the recent years, in order to obtain an overall view of the possible relation between earthquake occurrence and Significant TIR Anomalies (STA) appearances, long-term correlation analysis have been carried out in different seismic regions (e.g. Greece, Italy, Japan, Turkey, Taiwan). Results achieved by the performed statistical analysis shown that on average more than the 80% of highlighted Significant Sequences of TIR Anomalies (SSTAs; Eleftheriou et al. 2016) are in some space-time relation with earthquakes with magnitude greater than 4 with false positive rates ranging between 7% and 40% depending on the considered region.

In this work, we have performed a statistical correlation analysis among TIR anomalies observed by the geostationary satellite sensor HIMAWARI-8/AHI, highlighted by using RST methodology and RETIRA index, and large earthquakes ($M \geq 6$) occurred in Indonesia during the periods July-October from 2015 up to 2018.

Preliminary results shown that more than 70% of SSTAs are, (on the basis of predefined correlation rules) in space-time relation with the occurrence of earthquakes with $M > 6$ being around 30% the false positive rate. Achieved results will be discussed in relation to the possible use of the proposed approach in the framework of a multi-parametric system for time-Dependent Assessment of Seismic Hazard (t-DASH).