EGU22-9690
https://doi.org/10.5194/egusphere-egu22-9690
EGU General Assembly 2022

Lesson learnt after long-term (>10 years) correlation analyses between satellite TIR anomalies and earthquakes occurrence performed over Greece, Italy, Japan and Turkey

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In the recent years, in order to evaluate the possible spatial-temporal correlation among anomalies in Earth's thermally emitted InfraRed radiation and earthquakes occurrence, several long-term studies have been performed. Different seismically active areas around the world have been this way investigated by using TIR sensors on board geostationary (e.g. Eleftheriou et al. 2016, Genzano et al., 2020, Genzano et al., 2021, Filizzola et al., 2022) and polar (e.g. Zhang and Meng, 2019) satellites. Since the study of Filizzola et al. (2004) the better S/N ratio achievable by the geostationary sensors (compared with the polar ones) made this kind of sensors the first choice for this kind of long-term analyses.

In this paper the lesson learnt after 20 years of satellite TIR analyses are critically analyzed in the perspective of the possible inclusion of such anomalies among the parameters usefully contributing to the construction of a multi-parametric system for a time-Dependent Assessment of Seismic Hazard.

The more recent results achieved by applying the RST (Tramutoli et al., 2005, Tramutoli 2007) approach to long-term (>10 years) TIR satellite data collected by the geostationary sensors SEVIRI (on board MSG) - over Greece (Elefteriou et al., 2016), Italy (Genzano et al, 2020) and Turkey (Filizzola et al., 2022) – and by JAMI and IMAGER (on board MTSAT satellites) over Japan (Genzano et al., 2021) will be also presented and discussed.

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How to cite: Satriano, V., Colonna, R., Corrado, A., Eleftheriou, A., Filizzola, C., Genzano, N., Katsumi, H., Lisi, M., Pergola, N., Filippos, V., and Tramutoli, V.: Lesson learnt after long-term (>10 years) correlation analyses between satellite TIR anomalies and earthquakes occurrence performed over Greece, Italy, Japan and Turkey, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-9690, https://doi.org/10.5194/egusphere-egu22-9690, 2022.