



## **Application of robust satellite techniques for seismically active areas in the tropics: the January 21, 2003 Colima (Mexico) earthquake**

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The Earth's thermally emitted radiation measured from the NOAA/AVHRR satellites in the thermal infrared spectral range referred as TIR signals and expressed in units of brightness temperature (BT) were corrected for natural (atmospheric transmittance, surface temperature, spectral emissivity and orography) and observational (time of the day, season, and satellite zenithal angles). Such contributions were preliminarily evaluated as natural/observational noise in order to permit a suitable definition of TIR anomaly, in terms of a signal-to-noise ratio, S/N in the context of the considered seismogenic area monitored by NOAA satellites whose signals are received at our ground station on real time basis. The corrected TIR signals were analyzed for each satellite time slot of the day for the period 1996-2007 each January month and separated in about two weeks before and two weeks after the event for a spatial distance from the epicenter area located at the Pacific coast down to the city of Colima. The results are expressed using a Geographic Information System (GIS) and spatial analysis techniques which show isothermal lines from a grid with spatial average on a 3x3 km<sup>2</sup> window. The Maroata-Cuyutlan earthquake of January 21, 2003 is considered as validation test whereas TIR data for periods of relative calm define the refutation data set for the same seismogenic area