



## **Cb-TRAM: Tracking and monitoring severe convection over the Mediterranean from onset over rapid development to mature phase using multi-channel Meteosat SEVIRI data**

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Cb-TRAM is a fully automated tracking and nowcasting algorithm. Intense convective cells are detected, tracked and discriminated with respect to onset, rapid development, and mature phase. In addition, short range forecasts are provided. The detection is based on Meteosat SEVIRI (Spinning Enhanced Visible and Infra-Red Imager) data from the broad band high resolution visible (HRV), infra-red  $6.2 \mu\text{m}$  (water vapour), and the infra-red  $10.8$  and  $12.0 \mu\text{m}$  channels. Areas of convection initiation, of rapid vertical development, and mature thunderstorm cells (cumulonimbus Cb) are identified. The tracking is based on geographical overlap between current detections and first guess patterns of cells detected in preceding time steps. The first guess patterns are obtained with the aid of an image matching algorithm providing complete fields of approximate differential cloud motion. Based on this so-called pyramid matcher also nowcasts of motion and development of detected areas are provided.

Cb-TRAM is operated in real time and output is provided in the form of thunderstorm objects formatted in XML. The objects contain thunderstorm location (polygons), nowcast contours and some additional parameters as e.g. cell centre, cloud top temperature and trend. Examples of application are presented for thunderstorm detection and tracking over the Mediterranean. These include the Mallorca storm of 4 October 2007 and the aircraft incident with hail encounter on the approach to Palermo on 1 October 2009.

Reference: Zinner, T., Mannstein, H., Tafferner, A. 2008: Cb-TRAM: Tracking and monitoring severe convection from onset over rapid development to mature phase using multi-channel Meteosat-8 SEVIRI data. Meteorol. Atmos. Phys. 101, 191-210