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The MW-IR Precipitation Evolving Technique (PET)

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Several combined microwave-infrared (MW-IR) algorithms have been proposed in the past. Their aim is the generation of High Resolution Precipitation Products (HRPP) using the IR measurements from geostationary satellites to enhance the spatial resolution and the temporal sampling of the intermittent rain fields estimated from passive MW sensors aboard low earth orbiting (LEO) satellites.

The Precipitation Evolving Technique (PET) produces a quasi real time HRPP. PET drives the evolution (shape and intensity) of the last available MW-estimated rain field using iterative and statistical multi-scale pattern recognition procedure computed over two consecutives IR images.

This allows effectively recognizing homogeneous cloud structures and their movements in the system by combining together the displacements occurring at each spatial scale.

Since such an approach is spatially limited by the extension of the last MW swath coverage and it does not solve extinction and/or generation of precipitating cloud structures, ad hoc calibration procedure completes the algorithm.

The prototype version of PET is presently running and evaluated over Italy in the frame of PROSA (Prodotti di Osservazione Satellitare per Allerta meteorologica). We have applied an improved version of PET to the analysis of some severe storms recently occurred in Mediterranean area. Details about the algorithm and results will be shown.