



## **LaMMA operational chain for MSG-based rainfall estimations for the Mediterranean area: implementation and present applications**

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Satellite-based rainfall estimation techniques on synoptic and global scales are essential tools (in terms of spatial and temporal coverage) to support the monitoring and mitigation of the hydro-geological risks, in cooperation both with physical studies of the precipitating systems and their effects (on the theoretical side) and with in situ measurement networks (on the operational one).

In this frame, the La.M.M.A laboratory has implemented an operational chain that produces in a real-time fashion instantaneous rainfall estimates every 15 minutes for the Euro-Mediterranean area. The laboratory operability aims to maximise the possible benefits that the availability of these maps should lead to the nowcasting and forecasting activities.

The presented work deals with the design and the implementation of such an automatic procedure, which is based on a hybrid IR-MW technique (Turk, 2000a; 2000b). This technique dynamically correlates the brightness temperatures as measured by the geostationary satellites (MSG-1), and the rain rate levels, as measured by the passive MW sensors (SSM/I), through a statistical relation (Crosson et al., 1996).

Details of the algorithm and examples of the produced rainfall maps are shown, with their integration in application contexts. This kind of analysis is in fact a valuable tool

for supporting civil protection activities, to avoid or lessen dangers and damages due to alluvial events, landslips, torrential and fluvial floods. They can also have a role in forecasting the growing and health state of the vegetation, as well as on the agriculture productivity of 'risk' regions (e.g. the Sahel area).