



Precipitation retrieval and analysis by means of combined satellite observations, lightning data and cloud model simulations

A. Mugnai (1) for the ISAC-GSFC-AOS Team

(1) Istituto di Scienze dell'Atmosfera e del Clima, CNR, Roma, Italy

(a.mugnai@isac.cnr.it / Phone: +39 06 4993.4575)

We have developed a unified precipitation retrieval and analysis framework that combines passive-microwave satellite observations in conjunction with ground-based and space-based lightning measurements and with atmospheric simulations produced by a cloud resolving model (CRM). In particular, this framework includes the Cloud Dynamics and Radiation Database (CDRD) approach for passive-microwave (MW) precipitation retrieval, which is based on extending the Cloud-Radiation Database (CRD) method used by most physically-based MW algorithms, particularly Bayesian algorithms, by incorporating an extensive mix of the CRM's dynamical, thermo-dynamical and microphysical variables – that are not used in the CRD approach – so as to reduce the retrieval uncertainty and improve the retrieval performance.

In this study, we describe how this unified framework is implemented within the new European Union FP6 FLASH project, that aims at improving the monitoring, now-casting and forecasting of the hazardous, flood-producing storms that intermittently strike the Mediterranean coastal regions.