



Passive-microwave precipitation retrieval from space using the Cloud Dynamics and Radiation Database (CDRD) approach: Application to case studies of the EU FLASH project.

Paolo Sanò, Daniele Casella, Stefano Dietrich, Francesco Di Paola, Marco Formenton, and Alberto Mugnai
Istituto di Scienze dell'Atmosfera e del Clima (ISAC), Consiglio Nazionale delle Ricerche (CNR), Roma, Italy
(paolo.sano@artov.isac.cnr.it / Phone: +39 06 4993.4337)

Within the European Union FP6 FLASH project, we have generated a cloud-radiation database (the FLASH database) using numerical simulations of 23 FLASH heavy-precipitation events over the Mediterranean region, that have been performed by means of the University of Wisconsin – Nonhydrostatic Modeling System (UW-NMS) in conjunction with an appropriate radiative transfer scheme that simulates the upwelling brightness temperatures (TB's) that would be measured by satellite-borne microwave radiometers. At the same time, we have developed a new approach for precipitation retrieval from space – which we call the Cloud Dynamics and Radiation Database (CDRD) approach – that incorporates lightning and environmental/dynamical information in addition to the upwelling TB's so as to reduce the retrieval uncertainty and improve the retrieval performance. In this paper, we describe the FLASH database for heavy precipitation events, the CDRD algorithm, and our retrieval results for a series of case studies that have been considered within FLASH. In addition, we show the comparison of these retrievals with available ground validation data.