Geophysical Research Abstracts, Vol. 7, 10750, 2005
SRef-ID: 1607-7962/gra/EGU05-A-10750

ON THE GENERATION OF ADVANCED CLOUD-RADIATION DATABASES FOR THE RETRIEVAL OF HEAVY PRECIPITATION FROM SATELLITE-BORNE MICROWAVE RADIOMETERS

A. Mugnai (1), F. Baordo (1), J. Hoch (2), C.M. Medaglia (1), A. Metha (3), E.A. Smith (3), and G.J. Tripoli (2)

(1) Istituto di Scienze dell'Atmosfera e del Clima, CNR, Roma, Italy; (2) Dept. of Atmospheric and Oceanic Sciences, University of Wisconsin, Madison, Wisconsin, USA; (3) Goddard Space Flight Center, NASA, Greenbelt, Maryland, USA

Physically-based algorithms for the retrieval of precipitation from satellite-borne microwave radiometers, make use of Cloud Radiation Databases (CRD's) that are composed of thousands of detailed microphysical cloud profiles, obtained from Cloud Resolving Model (CRM) simulations, coupled with the corresponding brightness temperatures (TB's), calculated by applying Radiative Transfer (RT) schemes to the CRM outputs. In addition, CRD's are usually generated on the basis of CRM simulations of past precipitation events and then utilized for the analysis of satellite observations of new events.

In this paper, we will discuss this approach in some detail, pointing out its potential and limitations. Then, we will present some preliminary results on a new approach that is aimed at reducing the retrieval uncertainty by: a), using dynamic variables together with the TB's within the CRD, so as to increase the number of constraints in the retrieval; and b), CRM simulations in forecast mode of the extreme events to be observed, so as to obtain a better first guess for the retrievals themselves.