Investigating contrasts between continental and maritime precipitation over Mediterranean basin based on CDRD Algorithm methodology

A. Mugnai (1), D. Casella (1), M. Formenton (1), W.Y. Leung (2), A. Mehta (3, 4), P. Sanò (1), E.A. Smith (4), G.J. Tripoli (2) and S. Yang (4, 5)

(1) Institute of Atmospheric Sciences and Climate, Italian National Research Council, Roma, Italy, (2) Dept. of Atmospheric & Oceanic Sciences, University of Wisconsin, Madison, Wisconsin, USA, (3) Joint Center for Earth Systems Technology, Univ. of Maryland in Baltimore County, Baltimore, Maryland, USA, (4) NASA/GSFC, Laboratory for Atmospheres, Greenbelt, Maryland, USA, (5) Dept. of Computational Science, George Mason University, Fairfax, Virginia, USA

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

Almost all published research concerning the climatological properties of precipitation over the Mediterranean basin has been based on use of rain gauge and radar data taken from continental sites surrounding the Mediterranean Sea, and then used to represent precipitation processes over the entire basin. Observations obtained from satellite taken directly over the Mediterranean Sea have not yet seriously impacted the climatological literature [see Lionello, P., P. Malanotte-Rizzoli, and R. Boscolo (eds.), 2006: *Mediterranean Climate Variability*. Elsevier, Amsterdam, 9 chapters.].

This talk addresses retrieval of precipitation over the entire Mediterranean basin – continent and sea – based on use of passive microwave satellite observations used within a physically-based Bayesian algorithm in which a cloud resolving model (CRM) run over a regional domain (i.e., the Mediterranean basin) is used to provide microphysical, hydrometeorological, thermodynamical, and dynamical information to the Bayesian database underpinning the algorithm. The methodology is referred to as the Cloud-Dynamics-Radiation-Database (CDRD) technique – highlighting an improvement to our previous methodology which we referred to as the Cloud-Radiation-Database (CRD) technique because we had not yet incorporated information from the full range of variable provided by the CRM into the Bayesian database.

This presentation briefly reviews the main design features of the CDRD algorithm, and then proceeds to describe some of the similarities and contrasts between precipitation processes over land and sea environments. The implications of these differences are then examined in light of developing a representative precipitation climatology over the entire Mediterranean basin.