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A microphysical study using radar/satellite data and WRF high resolution model simulations for two events: Deep convection in the tropical area and a storm in the Mediterranean area.

S. Gentile (1), R. Ferretti (1), F.S. Marzano (2), M. Montopoli (3), and N. Cimini (1)

(1) Centre of Excellence CETEMPS, Department of Physics - Atmospheric Sciences University of L'Aquila, (2) CETEMPS/Department of Electronic Engineering, Sapienza University of Rome, (3) University of L'Aquila, CETEMPS-Dept. of Electrical and Information Engineering

A microphysical study has been performed using two different events to the aim of better understanding the dynamics and triggering factors leading to the development of storms. It is known that at high resolution, when the convection is explicitly resolved, the microphysics directly control the development of convection and so the evolution of the storm.
The first event is a deep cyclone, located in the northern tropical part of Australia (Hector, one of the highest storm in the world) and the second one a Mediterranean storm. The investigation has been performed using the observed data from radar e/o satellite, like TRMM Precipitation Radar, TRMM Microwave Imager, CLOUDAT and C-band Radar.
We focused on the vertical distribution of hydrometeors both the static part (cloud ice and cloud water) and the precipitating one (rain, graupel and snow). We compared the observations with the high resolution outputs from the new generation mesoscale model WRF (Weather Research and Forecasting), analyzing the impact of a two moment parameterization. The results suggests that the model well reproduces the dynamics of the events; and the comparison with observations shows a good model ability in reproducing the microphysics for both the amount and the vertical distribution of hydrometeors. In addition a further comparison has been performed with the high resolution MM5 simulations.