



A review of an intense storm occurred in southern Italy

S. Federico (1,2), **C. Bellecci** (1,3)

1. CRATI Srl, c/o University of Calabria, 87036 Rende (CS), Italy
2. CNR-ISAC, via del Fosso del Cavaliere 100, 00133 Rome, Italy
3. Engineering Department, University of Tor Vergata, via del Politecnico 1, 00133 Rome, Italy

The Mediterranean region is often characterized by torrential rainfall and flash floods at different spatial and time scales and several cases have been studied, discussed and reported in different countries around the basin.

Unusually intense rainfall occurred on 11th-12th December 2003 over Calabria, southern Italy. Calabria climate is rather dry, yet heavy and high impact rainfall are not uncommon. More than 250 mm were recorded over a vast area in southern Calabria and one station reported about 660 mm in two days (more than half of the yearly total amount). Accumulated rain was greater over main peaks due to the orographic uplift and there was a partial shielding effect of mountain ranges that left more precipitation over Ionian coastal areas. Precipitation fell mainly during 12th December when the storm was more active over southern Calabria. Landfalls were reported in several villages and damages to properties was extensive.

The event is traced back, at synoptic and planetary scales, up to 5th December 2003 by National Centre for Environmental Prediction/National Centre for Atmospheric Research (NCEP/NCAR) reanalysis fields.

The role of tropical storm Odette is clearly shown as well as that of the Azores high. Even if non negligible water vapour sources are expected from the Mediterranean sea, unusually large precipitable water was present over the Atlantic mid-latitudes. It is shown that tropical storm Odette determined large evaporation from Atlantic Tropics and the cooperative action of synoptic scale and planetary scale pressure centres focused this humidity into a plume and conveyed it into the Mediterranean area.

Factor separation technique is performed, by a mesoscale model, in order to separate the effects of latent heat release from the Atlantic and the Mediterranean basin, as well as the orographic effects of Calabria mountains.