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Simulations of deep convection in the Mediterranean area using 3DVAR of conventional and non-conventional data

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In autumn, deep convection in the Mediterranean region is a common phenomenon. The local events, characterized by deep convection, are still a difficult task even if a high resolution numerical weather prediction is used. Three flood cases, produced by convection either embedded in a large scale system or locally developed, are presented. All of them were not correctly forecasted: Sardinia (Cagliari, 13 Nov 1999); Calabria (Soverato, 7 Sep, 2000) and Sicily (Catania Sep, 16 2003). The first case occurred during the Mesoscale Alpine Programme (MAP) campaign, therefore a lot of observed data are available; for the second one only data from SSM/I and local raingauge are available; the third one occurred during the operational experimentation of the TOUGH project. The last one was not well predicted even using the operational assimilation of ground based GPS. To improve the forecast of these cases, the assimilation of several data set is tested. The variational assimilation performed using 3DVAR of GPS, SSM/I and surface and upper air data is used to improve the Initial Conditions of the Sicily case. GPS PW and surface data are use for the Sardinia case, whereas for the Soverato case only SSM/I data are assimilated. The experiments are performed using the MM5 model from Pennsylvania State University/National Center for Atmospheric Research (PSU/NCAR). The results show that the assimilation of the

retrieved quantities produces large improvement in the precipitation forecast. Large sensitivity to the assimilation of surface data and Brightness Temperature from SSM/I is found.