Geophysical Research Abstracts
Vol. 15, EGU2013-11279, 2013
EGU General Assembly 2013

The CETEMPS Hydro-Meteorological chain during HyMex

Barbara Tomassetti, Emanuela Pichelli, Annalina Lombardi, Sabrina Gentile, Enzo Cerasani, Rossella Ferretti, and Marco Verdecchia

University of L'Aquila, Physics - CETEMPS, L'Aquila, Italy (rossella.ferretti@aquila.infn.it)

The Cetemps Hydrological model has been offline coupled with WRF-ARW and MM5 models in order to estimate the possibility of flood occurrence. CHyM is a distributed grid based hydrological model implementing an explicit parameterization of different physical processes contributing to hydrological cycle, the model can be forced with temperature and precipitation scenarios predicted by MM5 or WRF model. In addition this model implements the calculus of two different alarm indexes providing a map of the segments of hydrological network where floods are more likely to occur. The WRF simulations are characterized by two domains running independently. The larger domain covers Europe with a horizontal resolution of 12 km using as analysis the ECMWF model, instead, the inner one covers Italy with a grid spacing of 3 km using as boundary and initial conditions the output from the low resolution simulation. CHyM alarm maps are described and the results for cases study occurred during HyMeX campaign are shown (IOP4, IOP18 and IOP19). The three events, characterized by precipitation producing flash flood and/or an increase of the rivers level, are used to this purpose. Heavy precipitation occurred over Central Italy (CI) and North East Italy (NEI) during these events: the rainfall maxima reached more than 150 mm/24h producing floods over Marche and Abruzzo, during IOP4; 120-140mm/24hr were reached in the south side of Lazio region during IOP18, whereas 350mm/24h were accumulated during IOP19 in the NEI.
Emphasis is given to the possibility of coupling WRF and CHYM model providing an effective tool for operational flood alert mapping. Moreover, a comparison with the maps obtained forcing CHyM with MM5 is performed.