

Numerical modelling of some extreme weather events on the Romanian coast of the Black Sea

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In the last years in Romania as well as in other european countries a series of extreme phenomena have been observed: flash floods, strong wind, storms with characteristics of tornadoes and large hail. These phenomena usually produce material damage and loss of human lives. Therefore, it is mandatory to produce weather forecasts and warnings with a high degree of precision for extreme phenomena.

In this study we aim to investigate the capabilities of two numerical weather prediction models in the forecasting of extreme events. We employ the COSMO model, run in operational regime at National Meteorological Administration Bucharest, as well as the WRF model, to analyse several extreme weather cases observed in Romania during 2009-2010. These cases are generally characterized by strong winds and /or heavy rainfall over quite small areas. The numerical simulations were performed at horizontal resolutions of 3-7 km. The cases were analysed with respect to synoptic situations, evolution of the wind field and associated parameters (wind curl, vorticity), characteristics of the relative humidity fields, in the attempt to evaluate the performances and limitations of the two models in forecasting in due-time of such events.