



Sensitivity study on physics parameterisations with WRF-ARW model of a Northern Spanish coastal trapped perturbation 'galerna'

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There is a well known atmospheric phenomenon at the Northern Spanish coast, locally known as "galerna", that fits on the characteristics of a coastal trapped perturbation (CTP). It consists of a violent transition from weak variable land-sea winds (S), to strong sea-land winds (WNW), that can have sustained intensities of 20 m/s and gusts up to 29 m/s. This atmospheric phenomenon propagates from West to East along the northern Spanish coast (up to 500 km), generating also abrupt changes in temperature, pressure and humidity. Although the impact of these phenomena along the Atlantic Spanish coastline has been mitigated due to a quite good forecasting, a better understanding is still needed in order to decrease their potential of destruction on the coastal areas.

The aim of this work is to analyse the dynamics of the July 25th 1995 'galerna' considered a characteristic northern Spanish CTP. The study shows the capability of the WRF-ARW model in reproducing this phenomenon. The sensitivity study is carried out by means of 16 simulations with different combinations of convection, planetary boundary layer, surface layer, microphysics and low/short wave radiation schemes. The model output have been compared with different observations. In general, the results show that the intensity of the 'galerna' is very sensitive to physical schemes, while its propagation shows a lower sensitivity.