



Modelling of an exceptional storm

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An explosive cyclogenesis storm, named "Klaus", hit the coasts of southern France and northern Spain in late January 2009, causing fatalities and serious damages in both countries. After crossing the Pyrenees range, entered the western part of the Mediterranean Sea with still unabated violence. The ensuing waves were estimated as possibly the highest ones in the last 10~20 years.

Given the exceptional character of the storm, it was of interest to analyse the evolution of both the wind and wave fields. In particular we were interested in how well the various operational models could forecast the storm.

A number of meteo-oceanographic centres produce daily forecast in the Mediterranean Sea. We collected the data from seven different model systems with the aim of a) intercomparing their wind and wave fields, in so doing deriving an estimate of their reliability in such extreme conditions, b) comparing their results with available measured data, including satellite and buoys.

The overall results make evident how the performance of the different model systems can change dramatically when dealing with a storm of exceptional character. In particular the strong gradients, in space and time, of the driving wind field stress the need for a relatively high frequency rate of the flow of information from the meteorological model to the wave one.