



A study of the 1 - 2 January 2010 sea storm over the Ligurian Sea

F. Pasi (1,2), A. Orlandi (1,2), S. Gallino (3), and L. Onorato (3)

(1) CNR – IBIMET, Via Caproni, 8 50145 Firenze, Italy, (2) LaMMa Consortium, Via Madonna del Piano, 10 50019 Sesto Fiorentino (FI), Italy, (3) CMIRL, Meteo idrological Center , Genova, Italy

During the last day of 2009 a wide low pressure system has generated a very large area of south-westerly gale force winds over Western Mediterranean sea and a resulting sea state from very rough to high over the whole area. Over the Ligurian sea (NW Mediterranean), where the main south-westerly was lighter and then replaced by strong north-westerly flow, the sea state was a combination of a very tuned swell coming from the south-west with nearly oceanic peak wave period and a north-westerly wind sea with shorter period. This kind of sea state and a simultaneous record astronomic and barometric high tide has caused widespread and more than expected damages to coastal structures.

In this study we try to investigate the structure of such a combined sea state by analysing numerical weather prediction data coming from atmospheric and wave models and comparing them with data coming from ondametric buoys and meteorological stations in the area of the Ligurian Sea. As a results we found that the forecasting model chain has almost correctly predicted the first peak in wave height (mainly due to the south-westerly swell) while significantly underestimated the combined sea state due to the contribution of the north-westerly wind sea.

By analysing the structure of directional wave spectra forecasted by the model and measured by the buoys, we will try to find the reasons of model deficiencies in forecasting the time evolution of significant parameters characterising sea state.