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A study of a flash sea storm over the Gulf of Genoa during 8-9 December 2006

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The Gulf of Genoa is one of the areas in Mediterranean sea where strong winds can be enhanced by costal effects and where waves can increase in short time thanks to the exposition to different fetchs, causing often mayor damages.

During autumn and winter, dominant winds flow from the northern sectors (Tramontana and Grecale) and from southern sectors (Scirocco and Libeccio), in relation with the synoptic evolution of mid-latidude cyclonic perturbations (1).

In this work we have analysed a case of strong SSE flow, associated with the deepening of a cyclone over the Gulf of Genoa along the night of 8-9 December 2006.

During this event, the sea increased in a rather short time with highest waves moving from the Western to the Eastern coast. In the Port of Vado Ligure the breakwater was overcame by waves and this caused serious damages with a person killed. People who was present refer of extraordinary waves of 7-8 m.

One of the forcing could be found in a tongue of strong wind, formed by the confluence of two different wind regime (and two fetch): the previous regime from SSE with fetch from offshore Eastern Corsica and the one for SSW with a longest fetch. During the transition of the two regimes the tongue could be formed, with a flash sea storm

enhanced by local bathymetry.

In this study we want to describe the event with maximum of details, thanks to the help of local stations, buoys and satellite measurements. The event has also been simulated by using high resolution meteorological (WRF) and wave (Wavewatch III) models, carefully calibrated with above mentioned observational data (2). This allows a detailed reconstruction of the the event and help to understand the causes of its extreme character.

1) Littmann T. 2000, An empirical classification of weather types in the Mediterranean basin and their interrelation with rainfall. Theor. Appl. Climatol. Volume 66, 161-171

2) Booij N., Ris R.C. and Holthuijsen L.H.;- A third-generation wave model for coastal regions. Model description and validation -. Journal of Geophysical Research (1999), 104 C4, 7649-7666.