



1 Impact of operational oceanography on wave modeling, in the Mediterranean Sea.

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The present study is focused on wave modelling at regional scale. The goal is to evaluate the errors of the third generation Wave Model WAM, over the Mediterranean Sea, and to estimate a possible impact of surface current on the modeled significant wave height (SWH). For this purpose the SWH altimeter data from TOPEX, Jason, ENVISAT and GFO, corrected according to Queffeuou (2003, 2004), are used as measurement reference. WAM has been implemented over the Mediterranean Sea with a 0.25x0.25 degree resolution. Wind forcing fields, every 6 hours, are from the French atmospheric model ARPEGE. Runs were performed over 2 three-month periods, in winter (January to March 2003) and summer (July to September 2003). During these periods, the Jason and TOPEX orbits are such as the Jason ground tracks are exactly located at mid-distance of the TOPEX ones, resulting in a fine altimeter spatial sampling. For comparison, the model SWH data have been interpolated to both location and time of the altimeter measurements.

Systematic errors of the wave model for both winter and summer seasons are found. These model errors could be mainly attributed to wind errors. However, relatively strong ocean currents are often reported in the Mediterranean Sea and may introduce also some wave model errors when they are not taken into account. In order to distinguish between wind errors and current errors, we performed model runs with and without current input. Thanks to operational oceanography, we had an unprecedented

opportunity of downloading ocean currents data, at high enough resolution, from several operational oceanographic centers. Here we used the daily surface current data from Mercator.

First results show that over the Mediterranean Sea, input of surface currents in the wave model has a very small local impact in term of SWH but a significant one in term of mean wave period, particularly in areas where many gyres and meanders of high magnitude are observed. Two experiments have been performed corresponding to data from two different Mercator model versions. In the first one, for 2003 winter and summer, Mercator oceanographic data were obtained with assimilation of sea surface height data from altimetry only. In the second one, for 2006 winter and summer, assimilation of additional altimeter and in situ data was used.