EMS Annual Meeting Abstracts
Vol. 11, EMS2014-113, 2014
14th EMS / 10th ECAC

Coupled ocean-atmosphere-wave modeling of Sant Jordi Bay (NW Mediterranean Sea)

Manel Grifoll (1), Jorge Navarro (2), Elena Pallarès (1), Pedro Jimenez (2), Manuel Espino (1), and Ana Palomares (2)

(1) LIM, Technical University of Catalonia, Barcelona, Spain (manel.grifoll@upc.edu), (2) CIEMAT, Madrid, Spain

In this work, the results of the implementation of a coupled ocean-atmosphere-wave model in Sant Jordi Bay (NW Mediterranean Sea) are presented. Our study area is characterized by persistent and energetic cross-shelf winds during fall and winter. During these periods, seaward winds occurs developing particular wave conditions (relatively large significant wave height) and two-layered cross-shelf water circulation. The COAWST (Coupled-Ocean-Atmosphere-Wave Sediment Transport Model; Warner et al., 2010) system was implemented in the region considering a set of downscaling nested meshes to obtain high-resolution outputs in the region. Wind, wave and water current were compared with available observations with an acceptable level of agreement. The model reproduces the main physical patterns in the area dominated by a strong spatial variability in the wind field. The wind variability influences the water circulation patterns and the wave climate. A set of numerical experiments were developed to test different atmosphere-ocean transfer formulations.

References

Warner, J.C., Armstrong, B., He, R., and Zambon, J.B., 2010, Development of a Coupled Ocean-Atmosphere-Wave-Sediment Transport (COAWST) modeling system: Ocean Modeling, 35 (3), 230-244.