



Wave-Current Interactions in a wind-jet region

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The Wave-Current Interactions (WCI) are investigated examining the influences of coupling two numerical models. The Regional Ocean Model System (ROMS; Shchepetkin and McWilliams, 2005) and the Simulating Waves Nearshore (SWAN; Booij et al. 1999) are used in a high resolution domain (350 m). For the initial and boundary conditions, data from the IBI-MFC products have been used and the atmospheric forcing fields have been obtained from the Catalan Meteorological Service (SMC).

Results from uncoupled numerical models are compared with one-way and two-way coupling simulations. The study area is located at the northern margin of the Ebro Shelf (NW Mediterranean Sea), where episodes of strong cross-shelf wind occur. The results show that during these episodes, the water currents obtained in the two-way simulation have better agreement with the observations compared with the other simulations. Additionally, when the water currents are considered, the wave energy (and thus the significant wave height) decrease when the current flows in the same direction as waves propagate. The relative importance of the different terms of the momentum balance equation is also analyzed.