



Waves study in the Gulf of Naples by HF radar and buoy measurements

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An HF radar (25 MHz SeaSonde manufactured by CODAR Ocean Sensors Ltd.) has been operating in the Gulf of Naples (GoN) (Southeastern Tyrrhenian Sea) since 2004. HF radars use first-order echoes to determine surface currents, while second-order ones can be exploited to estimate the main parameters characterizing the wave field: wave direction, significant height (h_s) and period (p_s).

Waves were studied in the GoN at three radar sites over a range cell located between 5 and 6 km from the coast. This choice, based upon preliminary sensitivity studies, allowed us to analyze the surface gravity wave field over an area of the basin where the depth is deep enough to avoid breaking, but at the same time close to the coast where the sea echo intensity is sufficiently high to ensure good data quality.

The data acquired in the reference year 2012 are compared with the measurements collected over the same period by a directional waverider buoy installed offshore Capri island and managed by the Civil Protection Department of the Campania Region. The analysis aims at investigating the accuracy and the seasonal patterns of the wave parameters, showing the different responses of the wave field in different sectors of the GoN, and at verifying the agreement between the recordings of the two platforms. In addition, a coastal storm is studied to test the responsiveness of HF radars in critical environmental conditions. This work is a contribution to the Flagship Project RITMARE - The Italian Research for the Sea.