



Energy diagnostics of the marine circulation in the Gulf of Naples based on HF radar data and numerical simulations

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We present an analysis of the energy associated with the surface current field measured by a CODAR HF radar system (managed by University of Naples Parthenope) in the Gulf of Naples (Tyrrhenian Sea). The total flow is decomposed into a mean and a fluctuating component obtained through a running average with $T=24$ h. The associated kinetic energies have been analysed in relation to the wind stress work (WSW) obtained from wind data measured by a weather station located in the Port of Naples (managed by Istituto Superiore per la Protezione e la Ricerca Ambientale, ISPRA) during the periods from 24 May to 6 June and from 24 November to 8 December 2008.

In spring, the kinetic energy associated with the fluctuating flow (FKE) prevails over that associated with the mean flow (MKE); on the contrary, in autumn, the MKE prevails over the FKE. Moreover, good correlation is found between the WSW and the FKE during autumn in the outer part of the Gulf, while lower correlations are found during spring. Further analyses are carried out by means of weekly hindcasts performed with a high-resolution ocean circulation model implemented in the wider area of the Campania coastal system. This has allowed us to identify further effects that, in addition to the WSW, could play a role in determining the observed seasonal variability.