

# Author's Accepted Manuscript

A high-resolution modelling study of the circulation along the Campania coastal system, with a special focus on the Gulf of Naples

Paola de Ruggiero, Ernesto Napolitano, Roberto Iacono, Stefano Pierini



www.elsevier.com/locate/csr

PII: S0278-4343(16)30161-3  
DOI: <http://dx.doi.org/10.1016/j.csr.2016.03.026>  
Reference: CSR3405

To appear in: *Continental Shelf Research*

Received date: 10 September 2015  
Revised date: 15 February 2016  
Accepted date: 23 March 2016

Cite this article as: Paola de Ruggiero, Ernesto Napolitano, Roberto Iacono and Stefano Pierini, A high-resolution modelling study of the circulation along the Campania coastal system, with a special focus on the Gulf of Naples *Continental Shelf Research*, <http://dx.doi.org/10.1016/j.csr.2016.03.026>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and a review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# A high-resolution modelling study of the circulation along the Campania coastal system, with a special focus on the Gulf of Naples

Paola de Ruggiero<sup>a\*</sup>, Ernesto Napolitano<sup>b</sup>, Roberto Iacono<sup>b</sup>, Stefano Pierini<sup>a</sup>

<sup>a</sup>Dipartimento di Scienze e Tecnologie, Università di Napoli Parthenope, Napoli, Italy

<sup>b</sup>ENEA - C.R. Casaccia, Roma, Italy

\*Corresponding author. Dipartimento di Scienze e Tecnologie, Università di Napoli Parthenope, Centro Direzionale, Isola C4, 80143 Napoli, Italy, paola.deruggiero@uniparthenope.it

## Abstract

A high-resolution modelling study of the circulation along the Campania coastal system (CCS) in the southern Tyrrhenian Sea is presented. The area includes three adjacent, semi-enclosed shallow basins (the gulfs of Gaeta, Naples and Salerno) facing the open deep sea, and represents an ideal site for investigating relevant dynamical processes of general interest in coastal oceanography. A Campania Regional sigma-coordinate Ocean Model (CROM) has been implemented in this region, with a  $1/144^\circ$  resolution; nesting with an operational circulation model covering the whole Tyrrhenian Sea with a  $1/48^\circ$  resolution is performed. Forcing is provided by surface momentum, heat, and freshwater fluxes computed from the non-hydrostatic SKIRON/Eta atmospheric modelling system outputs. A winter and a summer period of the reference year 2009 are analyzed in detail. The relative importance of the flow induced by remote large-scale currents through topographic interactions and of that induced locally by the wind are found to vary, even over a weekly time scale, in all of the three gulfs; the Gulf of Salerno appears to be the location where remote and local forcings are more often competing. An analysis of the high frequency variability shows that, besides the current changes induced by the typical mid-latitude atmospheric synoptic variability, inertial currents in the open sea and sea breeze-induced currents in the gulfs are present. Model-data comparison is performed in the CCS with altimeter data and satellite-derived turbidity distributions, and in the Gulf of Naples with the latter and with measurements performed with a high-frequency radar system. Significant model-data agreement is generally found.

Download English Version:

<https://daneshyari.com/en/article/6382883>

Download Persian Version:

<https://daneshyari.com/article/6382883>

[Daneshyari.com](https://daneshyari.com)