Geophysical Research Abstracts
Vol. 15, EGU2013-4587, 2013
EGU General Assembly 2013

Characterizing the coastal dynamics behaviour within the Gulf of Naples using modelling, HF radar and in situ measurements

Ilaria Iermano (1), Daniela Cianelli (1,2), Pierpaolo Falco (1), Marco Uttieri (1), and Enrico Zambianchi (1)

(1) 1 Department of Environmental Sciences, University of Naples "Parthenope", Centro Direzionale di Napoli Isola C4, 80143 Naples, Italy, (2) ISPRA – Institute for Environmental Research and Protection, Via di Casalotti 300, 00166 Rome, Italy

The integration of numerical models in coastal observatories represents a current challenge for the scientific community, constituting a frontier both for research purposes and for a variety of practical applications, ranging from coastal protection to search and rescue activities, or support to engineering works and operational structures.
Here we present the monitoring network installed in the Gulf of Naples, our recent advances in coastal and in-situ observations and the integrated ocean-atmosphere modelling approach, through connections to the state of the art and still opened research issues that will be the challenges for the next years.
Currently, the monitoring network of the Gulf of Naples is composed of moored instrumentation and a HF radar system composed of three antennas that provide hourly data of surface currents for the entire Gulf at a spatial resolution of 1 km.
The ocean model configuration is a ROMS (Regional Ocean Modeling System)-based code, configured on the region (∼13-15E, 40-42N).
The increasing availability of long-term observations, the large dataset recently acquired in sea-truth campaigns and numerical output from meteorological and ocean models allow us to use these integrated tools to characterize the coastal dynamics processes, and thus provide quantitative support to decision makers in the field of management strategy on oil spill and search and rescue operations, vulnerability of coasts and correct management strategies of the environmental heritage.
This talk presents diverse scientific issues recently addressed by the DiSAm (University of Naples Parthenope) in the broad activity of developing and tuning of the oceanic components of modeling system.
We will show some numerical model results in the Gulf of Naples basin in response to high resolution atmospheric forcing provided by the SKIRON model focusing mainly on the seasonal circulation and on the mesoscale and submesoscale variability associated with the current system of the basin.
A particular attention is devoted to the analysis of the fate of waters originated inside the Gulf and in the Tyrrhenian Sea, which circulate in the area, giving insights as to the water renewal mechanisms of individual subareas.
The results of simulations are compared with eulerian synoptic measurements of surface currents provided by the HF radar system installed on the Gulf's coasts, showing a very good agreement between the two data sets.