Geophysical Research Abstracts
Vol. 21, EGU2019-9734, 2019
EGU General Assembly 2019

Sea surface currents measurements off the Northern Tyrrhenian coastal site

Lorenzo Costanzo (1), Riccardo Martellucci (1), Milena Menna (2), Pierre-Marie Poulain (2,3), Riccardo Gerin (2), and Antonio Bussani (2)

(1) Università degli studi della Tuscia, Italy (costanzoloren@gmail.com), (2) OGS - Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, (3) CMRE - Centre for Maritime Research and Experimentation

Natural and human systems in the coastal zone are extremely vulnerable to environmental and socioeconomic changes. The environmental monitoring of coastal areas cannot disregard the knowledge of the water masses dynamics however the study of this dynamic is particularly complex as winds, waves and currents interact and vary on a very small spatial scales compared to the deep ocean.
The circulation of coastal waters is dependent on numerous physical mechanisms that can interact differently from case to case, and the study of the current dynamics in the coastal zone are very limited for the difficulty of accurately measure them with the necessary spatial and temporal resolution.
The purpose of this work is to analyze the surface circulation mechanisms in a strongly urbanized coastal area.
The study area is located in the Northern Tyrrhenian Sea along the coastline of Civitavecchia a port town located to the north of Rome. This area is a highly anthropized coastal zone in which human activities coexist with different precious marine ecosystems. In this context the study of coastal currents becomes fundamental for the assessment of the impacts of industrial activities, maritime traffic and urban development.
Currents measurements were made during the summer season that is characterized by an increment in cruise and tourist traffic as well as energy demand.
In summer, Tyrrhenian coastal circulation is often dominated by daily pattern of local breeze. The current dynamics of the herein investigated study area are analyzed thought the use of OGS low-cost “CODE” drifter and of an Acoustic Doppler Current Profiler during different surveys. The main objective was to observe the surface currents forced by the local winds typical of the summer season. The comparison between Drifter and ADCP data highlighted a good correlation between this two different measurements. The in situ data shows a great variability of coastal currents mainly forced by local wind circulation.