



## **Circulation during storms and dynamic of suspended matter in strongly anthropized coast**

Francesco Paladini de Mendoza, Simone Bonamano, Natalizia Consalvi, Riccardo Martellucci, Daniele Piazzolla, and Viviana Piermattei

(f\_paladini@unitus.it)

The Gulf of Gaeta is located in the western margin of central Italy with a characteristic exposure to the meteorological events respect the typical western and south-western exposure of coast. This morphology lead to natural sheltered area where fine sediment settling. Humans taking advantage to this natural morphology placed a lot of marine activities such as ports and fish farms. In last years port have developed with dock expansions and dredging works that could interfere with surrounding coastal ecosystems. The present study investigates the dynamic of the Gulf of Gaeta with a focus on the dynamic processes that affect turbidity level. The study was conducted with the use of MODIS imagery and water samplings, troughout is was possible define the distribution patterns of suspended solid load at regional scale and define the main source and average fluctuation of turbidity. X-band radar was used to monitor waves and circulation during storm events. Meteorological stations and wave buoys measure physical factors that influence the study area and water quality station within the gulf records changes in turbidity level over the time. The analysis reveals the strong influence of nearby rivers in the modulation of average values of total suspended matter concentration in the coastal area within a range of 6.5 and 8.5 mg/l. Inside the Gulf high and low level of turbidity represented as 95th and 5th percentile of the turbidity distribution find linkage with the local meteo-marine conditions. In particular wind and wave conditions play an active role trigger local processes that modulate high and low levels of turbidity. The knowledge about the dynamic processes that affect turbidity level give an important tool to define the impact degree of human activities on marine ecosystems and thresholds not to be exceeded during coastal works in order to improves the coastal management strategy.