



## Design and implementation of an integrated coastal observing system at regional scale

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Coastal marine environment is increasingly subject to multiple pressures and stressors produced by the effects of both natural inputs and human activities. Depending on the location and the intensity of these pressures the marine ecosystem, particularly sensitive areas, may be affected. An important disturbance which affects coastal areas can derive from impacts directly connected to the ports expansion: dredging activities, changing in coastal dynamics, etc. The main environmental effects can be associated with suspended sediments and increases in turbidity into the water column, which can have adverse effects on marine animals and plants by reducing light penetration and by physical disturbance. In addition, the change of coast morphology, due to the infrastructure construction, can affect local circulation, sediment transport and shoreline changes. New approaches in coastal infrastructures design are emerging, in order to increase the harmony between project realization and the environment. One of these approaches is represented by Building with Nature, recommended by the European Commission also for dredging and ports development. However, the study of these complex processes needs a multidisciplinary approach able to analyze the response of natural systems to the variations generated by specific interventions and distinguish the variations induced by climatic trends and territorial changes. This strategy was applied along Latium coast, which is an area affected by Tiber river which strongly influences coastal evolution and at the same will be interested by a new important infrastructure, the port of Fiumicino. The project will represent a modern integrated coastal observing system composed by in situ observations, numerical models, remote sensing and informative systems which will be interconnected in order to correctly assess the potential effects of the infrastructure on ecosystems, coastal morphology and uses.