

The dredging of the Oil Port of Genoa Multedo (Italy): the *on-site* monitoring solutions

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Introduction: During the pre-dredging phase (presented at the SedNet Conference in Oslo, 2008 [1]) and the monitoring of the dredging operations of the Port of Genoa (presented at the SedNet Conference in Hamburg, 2009 [2]), we defined the “normal” conditions of the port and studied the evolution of the turbidity layers.

Particular attention was then given to a new dredging phase conducted in the Oil Port, located in the western part of the Port, near a number of swimming beaches and near the eastern entrance to the new Voltri Container Terminal and the Genoa Airport.

A number of storms that had recently damaged the off-shore oil-pumping platform (an artificial island connected to the port by a pipeline) had made dredging here essential.

To make the monitoring system more efficient a vessel equipped with a Vertical ADCP and a CTD coupled with a turbidimeter followed all the dredging operations (removal and transport of dredged sediments in areas not covered by the fixed monitoring system [2]).

The data we obtained from the instruments described above were then elaborated to provide us with a detailed, high-resolution spatial description of the dynamics of the port waters.

Methods: The dynamics of the area have been studied on the basis of all the parameters considered essential for understanding the processes taking place there: the concentration of the suspended sediment (TSS), the physical characteristics of the water column, the winds and currents determining the hydrodynamic characteristics of the area, and the sea traffic. This analysis has provided the normal values in the Oil Port Area, and indicated the critical and maximum values for the work.

In Fig.1 we show the study area.

Results: We have obtained vertical and horizontal measurements for the entire area involved in the dredging. ADCP, and TSS and turbidity measurements have supplied a detailed picture of the dynamics of the area

Discussion: This method has enable us to follow the possible outflow of dredged material out of the Oil Port, the cause of potential environmental problems, and determine eventually when to call a halt to the work (event never happened).

References:

[1] Capello et al. (2008). SedNet Conference 2008, Oslo (N) - <http://www.sednet.org/library/library-sednetconference5.htm>

[2] Capello et al. (2009). SedNet Conference 2009, Hamburg (D) - <http://www.sednet.org/library/library-sednetconference6.htm>



Fig. 1: Area of the Oil Port of Genoa Multedo: the yellow ellipse represents the dredged area and the broken yellow ellipse the position of the damaged off-shore oil platform.