

SEDIMENT TRANSPORT MODELLING IN THE TREPORTI CHANNEL, VENICE LAGOON, ITALY

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Abstract. The object of this work is to study and to describe the mobility of various types of non-cohesive sediment considering the hydrodynamic conditions in the channel of Treporti in the lagoon of Venice.

To reach this aim the study has been subdivided into one experimental phase and one modeling phase. In the experimental phase, a campaign of sampling and the granulometric analysis of the Treporti channel sediments were done in order to obtain a detailed map of the grain size distribution, which was compared with reported data. In the modeling phase a sediment transport model Sedtrans96 has been applied for 4 different grain sizes (500, 250, 200, 150 μm) and two different periods. First the total sediment transport through the 8 sections has been calculated on a period of 12 hours using ideal values of wind (bora, scirocco) and tide. A second set of simulations were carried out for one year (1987) and forced with real values of wind and tide. The results obtained from granulometric analysis show the absence of a clear trend of the grain size distribution in the Treporti channel. This situation is compatible with the model results that show a sediment transport from the lagoon into the Adriatic Sea.

Keywords: Venice lagoon, Sedtrans96, sediment transport modeling, finite elements