

Data monitoring and sea level forecasting in the Venice Lagoon: the ICPSM's activity

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ABSTRACT A complete description of the Istituzione Centro Previsioni e Segnalazioni Maree (ICPSM) of the Venice Municipality is given, together with some notions about the characteristics of the tide and the wave motion in the Venice Lagoon. The monitoring network of the ICPSM, for the observation of oceanographic and meteorological parameters in the lagoon and in the northern Adriatic Sea, is described in its different parts: the tide gauge and meteorological monitoring network, the meteorological stations at the Venice Lido Hospital, the wave gauge network and the Acoustic Doppler Current Profiler at the Chioggia inlet. The procedures adopted for the data quality control are reported. The data exploitation is displayed in all its different aspects from the sea level forecast to the daily information activities and the operative plan in case of exceptional high tide.

1. Introduction

High waters in Venice cause serious damage to the urban structure and compromise daily activities of the city. An accurate and reliable forecast of such events allows us to quickly alert the population, minimizing inconveniences due to the phenomenon.

Motor boat traffic produces strong stress to the foundations of buildings and to the natural lagoon environment. Regulation monitoring and control of the wave motion has become necessary to fight the erosion.

In 1981, the Istituzione Centro Previsioni e Segnalazioni Maree (ICPSM) was founded as an office of the Venice Municipality, to develop an operational forecasting system for the sea level in Venice. At present ICPSM's official tasks are:

- observation of the sea level and weather parameters;
- water level forecasting;
- give information to the city and alarm in case of flooding events;
- wave motion monitoring.

Sea level, waves and related meteorological parameter observation is carried out through a monitoring network, covering the city, the inner Venice Lagoon and the northern Adriatic Sea.

The water level forecast is performed by means of numerical models.

Citizens are informed about tidal phenomena and alarmed in case of an incoming high water event through a number of procedures and devices, some of which are automatic and the others are activated manually. A dedicated web site (<http://www.comune.venezia.it/maree>) describes the ICPSM's activity and gives access to some data of the observing stations.

The monitoring network, supplying observed data in real time, is the core of the whole of

