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| <b>Location</b>        | Venezia  |
| <b>Type of project</b> | Data analysis, numerical modelling and data management |
| <b>Client</b>          | Consorzio Venezia Nuovo                                |

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### **Description**

DHI has for more than ten years supported CVN in operation of an on-line storm surge and water level prediction system for Venice Lagoon. DHI has during this project updated the system to support the installation of the barrages (MOSES project) for protection of the lagoon. This has led to a broad early warning system including a number of complementary components: hydrodynamic water level and current forecasting (including data assimilation), statistical water level forecasting, sea and swell wave forecasting. All these components are embedded in the DHI's operational forecasting technology thus benefitting from its transparent structure and easy maintainability. Forecasts and measurements are managed in a database, which links up to a web dissemination component designed and operated by CVN.

The client benefits from the hindcast and forecast data for designing and in due time executing the gate closure strategy as well as for planning of operations in the Venice Lagoon such as the construction of the barrages.

The update of the forecast system undertaken in this project has included the following services: update of tidal constituents; update of coefficients in statistical water level prediction model EXCO2 and validation test; analysis of wind, waves, levels and fluxes in front of the Venice lagoon inlets with a higher frequency; development and operationalisation of a wave forecasting procedure; development, calibration and validation test of a Kalman Filter based forecasting procedure; development and validation test of a hybrid forecast procedure combining a statistical and deterministic model and finally maintenance of the operational system.