

Storm surge forecasting and predictability in the Goro lagoon (Italy)

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The Goro lagoon is a transitional environment and is part of the Po delta system in the northern Adriatic Sea (Italy). Clams farms are extended throughout the lagoon which has a fundamental importance for the local economy. Every year the lagoon is threatened by storm surge and flooding events, especially the Goro harbour that is exposed to high tides and strong wind set-up due to Scirocco wind blowing from south-east. Here we show a three-step modelling chain that will downscale the Arpae Adriatic Sea forecasting system, nested in the Copernicus Marine Environment Monitoring Service, to the coastal area with 10 m resolution with an unstructured grid model arriving at 10 m resolution on the coastal and canals.

The forecasting model, so-called Golfem (Goro lagoon finite element model), is a high-resolution unstructured grid hydrodynamic model based on SHYFEM (Umgiesser et al., 2004) that solves the primitive equations for the ocean and was successfully calibrated and validated for the Goro lagoon with one year local data. Skills in storm surge forecasts is assessed and various uncertainties are diagnosed contributing to the forecast error, among others the quality of the atmospheric forecast, the lateral boundary conditions and the freshwater inputs to the lagoon.