



Morphodynamics video monitoring and modelling of storm events at Jesolo, Northern Adriatic Sea

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Near-shore zone morphodynamic assessment is crucial for beach management and hinterland protection against flooding. To this aim, high resolution coastal models are a useful tool, as they allow to couple waves, currents and sediment transport processes for simulating short term morphodynamics and coastal flooding due to extreme storm events. Calibration and validation of high resolution modelling needs coastal in-situ observations. The collection of data representative of the state of the coastal environment, essential for proper set up and calibration of the numerical models, is nonetheless a challenging and expensive task.

In the framework of the Italian Flagship Project RITMARE—the Italian Research for the Sea, Subproject 3 (Coastal Waters), Workpackage 4 (Coastal Oceanographic Modeling), the North Adriatic littoral zone has been identified as one Strategic Test Area for the study of coastal dynamics and for the collection of a time series of integrated of integrated measurements to support comprehensive, detailed insight on coastal circulation, wave dynamics, sediment transport and coastal erosion.

More specifically, this activity proposes and validates a system for the monitoring and modelling of hydrodynamics and morphodynamics at the beach of Jesolo, about 30 km NE Venice. The system combines a video installation and a 2DH numerical model to simultaneously provide shoreline changes and maps of nearshore waves and currents and sediment transport. In this way the system can cope with issues such as beach flooding, shoreline evolution and morphodynamic nearshore changes.

The proposed poster will present first results of wave - currents – sediment simulations with the software Mike21, during selected storm events, and validation of results with in situ observation (shoreline, bar position) collected by the new video monitoring station.