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Modelling framework for coastal-scale oceanographic predictions

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High resolution meteo-oceanographic modelling is required to solve coastal–scale oceanographic processes. And yet the local scale variability in orography and bathymetry (wind jets, diffraction, ...) produce gradients not always well captured by the models, resulting in errors well in excess of those found for open sea conditions.

In this paper we shall look at a nested modelling suite for 4 contrasting environments: the Catalan Coast in the north western Mediterranean, the German Bight in the North Sea, the Liverpool Bay in the Irish Sea and the Gulf of Venice in the north Adriatic Sea. The physical conditions range from micro to macro (astronomical tide) and from small to large storm surges. Wave conditions go from mild to medium energy and the degree of coastal irregularity presents also a wide variability. In all cases (from the EU FIELD_AC research project) the oceanographic domain can be considered as semi-enclosed.

The presentation will explore how the different combinations of models, including the continental discharge as part of the land boundary conditions, affect the quality of results. Some discussion regarding how to best combine models and local observations for robust coastal predictions will also be included.