



## **Errors and limits for high resolution wave simulations in coastal areas**

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Increasing pressures on the coastal zone require detailed and robust predictions of met-ocean variables. For operational purposes this needs a high resolution grids that results in an efficient discretization and, at the same time, allows quantifying local errors and their transmission from meteorology to oceanography and from here to more applied variables typical of coastal and harbour engineering.

In this paper we shall compare two models, the SWAN v.41.10 with a triangular unstructured grid and the WAVEWATCH III v.5.16 on a multi-resolution spherical multiple-cell grid, for the Catalan coast. This coastal domain presents sharp gradients in orography and bathymetry which constitute locally a tough challenge for meteorological and oceanographic models alike, particularly for the case of winds blowing from land in between the coastal mountain chain openings.

The obtained results are compared against in-situ measurements and against satellite data (including the recently released Sentinel-3 data) in order to evaluate the relative performance of the two models compared with the existing regional CMEMS products for the Mediterranean Sea. The main limitations in coastal areas and their possible causes will be addressed.