A tidal model of the Iberian Atlantic shelf: first results

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Abstract

Barotropic tides in the Iberian Atlantic shelf were simulated using a finite element model. The model was validated with data from twelve coastal gauges. The model reproduces the known behavior of semi-diurnal tides, which propagate northward as Kelvin waves, and predicts the existence of amphidromes in the Strait of Gibraltar for the diurnal waves. Model results were then used to specify boundary conditions for a tidal model of the Guadiana estuary. Results show that the spatial variability of tidal boundary conditions in estuarine models can be necessary for the accurate representation of the mixing between estuarine and ocean waters.

Keywords: Tidal model, boundary conditions, Iberian Atlantic Shelf, Guadiana estuary.

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