Wave propagation at the entrance of the Tagus estuary

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Summary

A hyperbolic numerical model based on the mild-slope equation is used to investigate wave transformation over the complex bottom geometry of the Tagus estuary entrance, where wave transformation is due to the simultaneous occurrence of the processes of refraction, diffraction, reflection and breaking. Wave climate analysis is obtained for a vital area, the access to the port of Lisbon, where there is no field data available. Model results reveal the sheltering effects of the existent submerged sand bars in the estuary entrance for the most energetic waves entering through the navigation channel. High frequency incoming waves, with lower energy, are less susceptible to dissipate energy through the process of wave breaking over the bars, thus causing higher disturbance into the channel.