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Wave and tidally generated bed stresses on the UK continental shelf

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The UK continental shelf experiences large tidal ranges, and winter storm events, which generate strong near-bed currents. We aim to determine the relative impact of bed stresses produced by waves and tides. A ten year simulation of the continental shelf has been performed, using the a 3D baroclinic model (POLCOMS) for the tidal component, with waves simulated using the spectral Wave Model (WAM). The model has been validated using seabed lander data at a site in the Southern North Sea, and at a second site in Liverpool Bay.

The ten year data set allows us to study the typical frequency of bed disturbances generated by waves and tides and consider their importance for thresholds of motion. Finally potential pathways for sediment transport can be predicted. As well as considering the mean state to develop a climatology, we make predictions about extreme events. By using a generalised extreme value method we can extrapolate outside our data set and draw conclusions about the probability of rare storm events and their associated bed stresses.