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## **Predicting increased risk of an extreme wave: operational spectral wave modelling**

The Met Office performs operational wave forecasting, implementing a second generation spectral wave model. The model allows analysis and forecasting of sea-state, which is of particular importance to shipping, off-shore installations and coastal defence networks. Resources dictate that operational ocean wave forecast models are based on the evolution of the wave energy spectrum, and thus are statistical representations of the sea-state and are fundamentally unable to give predictions of individual wave events, such as a rogue wave.

However being able to forecast, in an operational context, specific regions in which there may be increased risk of an extreme wave would be of great benefit. Therefore, spectral diagnostics are being developed to try and quantify increased likelihood of occurrence of extreme or damaging waves in a given sea-state. For example, it is possible for a spectral model to identify between regions of high sea-state that are still strongly wind-forced, and regions with high sea-state that are not, by analysing the shape of the underlying spectra.

In this presentation we give a brief overview of the Met Office operational wave forecast model and present hindcast model runs which compare the JONSWAP-gamma, Benjamin-Feir index and Goda parameter spectral diagnostics in specific cases of interest.

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