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## Could nested grids be replaced with a multi-resolution grid in wave models?

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The spherical multiple-cell (SMC) grid has been implemented in the latest version of the WAVEWATCH III model and validated with altimeter and buoy observations. A particular feature of this grid is that high resolutions can be applied in specific areas of interest within the same grid. This feature has been explored to resolve small islands and coastline details to improve swell propagation. It has also been extended to include a mesoscale and higher resolution area around UK waters.

Comparisons with altimeter data and buoy wave spectra have confirmed that the model produces results comparable with a global regular grid model at the base resolution(25km) and yields improved results in the high resolution regions.

Comparison with a regional model at the high resolution of 12 km also shows that the global multi-resolution model performance is close to the regional model in the high resolution area. Improvement is expected if regional high resolution wind forcing could be used to drive the high resolution part of the global model, as in these experiments the whole domain was driven by the 25km wind forcing.