



## **High Resolution Modelling of Tidal Resources, Extraction and Interactions Around the UK**

Mark Liddiard, Samantha Dawson, Sebastian Bourbon, and David Todd  
HR Wallingford, Coasts & Estuaries, Wallingford, United Kingdom (d.todd@hrwallingford.com)

The Energy Technologies Institute (ETI) commissioned SMARTtide, a Continental Shelf Model of Northern European waters. Its principal aims were to assess the tidal energy potential around the UK, to inform the design of energy harnessing schemes, to understand the interaction between different tidal range and tidal stream energy schemes, and to evaluate their impact on Northern European coasts. To that effect, coarse and detailed resolution versions of the model were developed.

The project considered a range of possible tidal schemes developed from now to 2050 in a range of combinations to assess interactions. Key findings of the project highlighted that (1) prime current tidal sites can be identified, (2) tidal energy extraction can create far-field effects spatially potentially impacting other arrays and (3) there is a potential to optimise UK Tidal resource development in the UK for any variable.

This makes SMARTtide a suitable tool for the tidal power industry to predict future tidal energy scheme scenarios, and for the interaction between different energy schemes. SMARTtide is now publically available through a Fee for Service, hosted by HR Wallingford on behalf of the ETI. The SMARTtide model has been used by tidal energy developers in both the UK and France to investigate potential tidal stream and tidal range developments.