

A.Goward Brown<sup>1</sup>, S.Ward<sup>1</sup>, B.Powell<sup>1</sup>, M.Piano<sup>1</sup>, G.Walker-Springett<sup>1</sup>, P.Haywood<sup>1</sup>, S.Rowlands<sup>1</sup>, S.Spall<sup>2</sup>

Centre for Applied Marine Sciences, Bangor University, Menai Bridge, LL59 5AB
Knowtra Ltd, 19 Trinity Square, Llandudno, Conwy, LL30 2RD



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## SEACANS2:

## Modelling Tidal Stream Energy Extraction in 3-D Models

**AIMS:** To provide Knowtra Ltd with a new numerical modelling product and enhancing our understanding of interactions between tidal stream arrays and the marine environment.



In collaboration with Knowtra Lts SEACAMS2 is looking at techniques of effectively modelling tidal stream array's within a 3-D regional ocean model in order to investigate interconnectivity between tidal stream sites and environmental conditions.



Fig. 1 – An example of neighbouring leased tidal stream sites around the coast of Anglesey.

Fig.2 – An example of where energy extraction at one site influences the resource at neighbouring locations

## **METHODS:**

Using the Regional Ocean Model (ROMS) the source code has been amended to read in a NetCDF file containing the tidal stream array parameters. This enables users of the code to easily create the turbine array layout and paramaterise the turbines before loading into ROMS. The next step of the project is to incorporate this into a dynamically 2-way nested model with multiple arrays to examine interconnectivity between neighbouring tidal stream sites. Previous studies have shown that extracting energy will influence neighbouring sites with local asymmetry as a controlling factor in the level of interconnectivity.

> Contact Alice Goward Brown Email a.j.gowardbrown@bangor.ac.uk Tel 01248388174

