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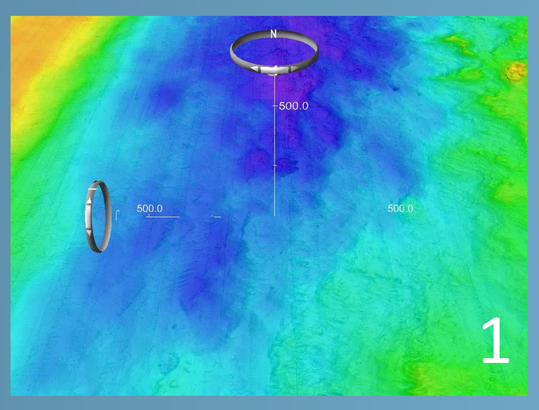
SEACAMS2: Researching interactions between marine environmental processes and Marine Renewable Energy (MRE) related infrastructure

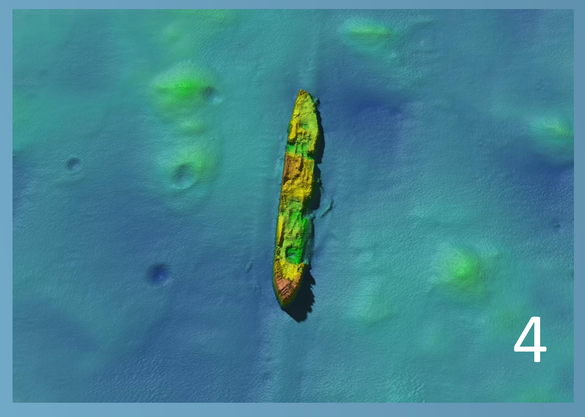
AIMS:

- To investigate medium energy, deep water (60m+) offshore environments using geo-scientific survey methods to improve the structural design, site selection and array configuration of MRE related seabed foundations, development of appropriate survey methodologies and future monitoring strategies.
- To research the effectiveness of submerged structures as analogues for predicting the long-term (decadal) impacts of MRE infrastructure on physical marine processes.

RATIONALE:

This project will provide new insights into medium energy, deep water (60m+) offshore environments using geo-scientific survey methods to help companies improve the structural design, site selection and array configuration of MRE related seabed foundations, develop appropriate survey methodologies and design future monitoring strategies. The research will additionally generate insights into seabed processes and the potential influence MRE related infrastructure may have on the marine environment through examining numerous shipwrecks in similar marine environments.





1) MBES grid model of Holyhead Deep 2) Minesto foundation under construction 3) MBES survey of the foundation two days after deployment 4) MBES model of SS Damao (torpedoed in 1918) off Bardsey Island in 80m water depth and similar tidal flow regime to that at Holyhead Deep (note depth charge impact craters created during WWI or more likely WWII).

METHODS:

- High resolution multibeam sonar (MBES) data has been collected by the SEACAMS team over a period of several years from areas of interest within and adjacent to Holyhead Deep. Additional data sets obtained by external organisations will also be sourced to determine aspects of temporal and spatial bathymetrical variability.
- High resolution MBES data was collected immediately prior to deployment of the Minesto foundation, and at several times following deployment after Neap and Spring tides, further surveys are planned at monthly intervals (subject to appropriate conditions etc) between 2018/19.
- Additional high resolution multibeam surveys have been undertaken over numerous (40+) wreck sites in similar water depths, tidal regimes underlain by similar substrates in order to gain insights into the potential impacts similar MRE foundations may have over varying timescales and to assess the extent such structures have on the physical seabed environment.

OUTCOMES:

- Provide a detailed understanding as to the interaction between a typical MRE foundation and the physical seabed environment over 12 months following deployment in Holyhead Deep.
- Assist Minesto in designing future foundations and identify optimum sites for potential future deployments in Holyhead Deep.
- Provide new knowledge to MRE sector companies that will help them design appropriate monitoring strategies to allow them plan and mitigate against impacts of interactions between the marine environment and MRE infrastructure.

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