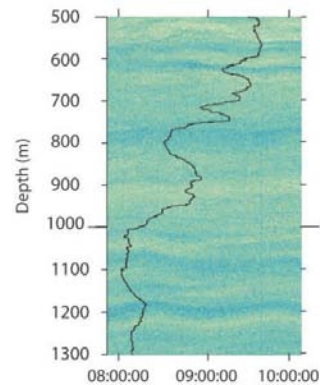


New Oceanic Internal Wave Images on Fish-Finder Echograms

Dr Stephen Jones and Prof. Tim Reston

Background Internal gravity waves within the ocean play an important role in the mixing and transport of heat, salt, nutrients and other suspended matter. Until recently, it has only been possible to observe deep internal waves by probing them directly. We have now discovered that echo-sounding technology traditionally employed to locate fish shoals can be used to image deep internal waves. This studentship offers the chance to apply this new technology to make detailed measurements of internal waves in the North Atlantic, and to gain new insights into the governing processes.



Work Plan The student will use fish-finding echograms to build up an atlas of internal waves in the Rockall Trough, NE Atlantic. We will quantify changes in internal wave properties from place to place and over time. New echogram-based internal wave observations will be compared with measurements from multi-channel seismic data acquired during oil exploration and analyzed using more established seismic oceanography techniques. The complete set of remotely sensed internal wave observations will be compared with measurements from legacy oceanographic experiments. The overarching goal is to interpret mechanisms for formation and dissipation of internal waves, and to estimate oceanic mixing rates.

Methods & Training The project will make use of our large database of seismic water layer images that includes conventional seismic reflection sections as well as fish-finder echograms. More echogram data will be acquired during the project, and the student will have the opportunity to participate in research cruises. The multi-channel seismic data will be processed and interpreted in our geophysical imaging lab. The methodology for processing the echogram data to give internal wave measurements has been pioneered by Stephen Jones at Birmingham University. The Geosystems research group in Birmingham has internationally recognized expertise in seismic oceanography and seismic data processing and interpretation. In addition to excellent links with the oil industry, the main suppliers of seismic data for seismic oceanography, we also collaborate extensively with UK, Irish and German Marine Institutes.

References

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Applicants with BSc, MSci or MSc in Earth Science, Oceanography or Physics are invited to contact Stephen Jones (s.jones.4@bham.ac.uk) to discuss the project

Applicants should apply via

<http://www.birmingham.ac.uk/students/courses/postgraduate/research/gees/earth-sciences.aspx> where they should click on 'Apply now' and choose the option 'PhD in Department of Earth Sciences' and give the PhD title in the 'Funding details' section of the online application.