Geophysical Research Abstracts
Vol. 12, EGU2010-9079, 2010
EGU General Assembly 2010

MODOO: A modular and mobile deep ocean observatory and its application to the Porcupine Abyssal Plain

Johannes Karstensen (1), Jens Greinert (2), Richard Lampitt (3), Fiona Grant (4), Monty Priede (5), and Maureen Pagnani (3)

(1) Leibniz Institute for Marine Sciences IFM-GEOMAR, Kiel, Germany (jkarstensen@ifm-geomar.de), (2) Royal Netherlands Institute for Sea Research NIOZ, Texel, Netherlands (greinert@nioz.nl), (3) National Oceanographic Centre NERC-NOCS, Southampton, UK (rsl@noc.soton.ac.uk), (4) Irish Marine Institute MI, Galway, Ireland (fiona.grant@marine.ie), (5) University of Aberdeen, OCEANLAB, Aberdeen, Scotland (i.g.priede@abdn.ac.uk)

Many of todays scientific questions require to observe the various processes in the ocean in parallel and from the air/sea interface to the sea-floor interior. Moreover, socioeconomic as well as scientific requirements may even demand to excess data in real time – for example for marine safety or to adapt the instrumentation to episodic environmental conditions. Here we describe a muti-disciplinary deep ocean observatory that has been designed within the European FP6 ESONET Network of Excellence to meet todays scientific and socioeconomic requirements for ocean observatories. MODOO, the Modular and mObile Deep Ocean Observatory, combines underwater acoustic modules with a surface telecommunication module to access and combine a variety of instrumentation from the sea surface to below the sea floor.

MODOO's first application will be at the Porcupine Abyssal Plain: here a BOBO deep sea lander will be connected to a full water depth (4800m) deep sea mooring with meteorological package that belongs to the European FP7 EuroSITES network. The main scientific mission of this MODOO configuration is to investigate physical and biogeochemical processes that control the propagation and impact of near surface events (e.g. chlorophyll bloom) to the deep sea. For this mission we make use of physical (T/S recorder, current meters/profilers) and biogeochemical sensors (nitrate, fluorescence, oxygen, turbidity, particle flux/composition) combined with deep sea photography. Scientific guest missions will be seismic records and passive acoustics to detect deep sea marine life. The first MODOO installation is planned to be installed by the end of May 2010 for a three month test.

The MODOO instrumentation is not simply mounted together but part of the MODOO concept is to add a common time stamp to the individual instrumentations data set. All instrumentation that is directly connected to the acoustic modems - for the PAP application this will be T/S/turbidity, ADCP, seismometer, oxygen, sediment trap, photography - will receive a common time stamp generated by the modems electronics. This synchronization approach is expected to facilitate the joint interpretation of the diverse data sets. Further details of the MODOO data concept and possible future applications will be presented.