

ECORD Science Operator

Mission-Specific Platform Operations

The ECORD Science Operator (ESO) is responsible for implementing mission-specific platform (MSP) expeditions on behalf of the International Ocean Discovery Program (IODP). Since 2003, the ambitious expansion of scientific exploration beneath the oceans has been made possible by the increased drilling capability provided by multi-platform operations. To date, ESO has carried out five expeditions in areas where the US and Japanese drillships *JOIDES Resolution* and *Chikyu* are unable to work; in the ice-covered waters of the Arctic, the shallow waters around Tahiti, off the coasts of the USA and Australia, and in the Baltic Sea.

The main difference between MSP operations and other IODP expeditions is that, whereas the *JOIDES Resolution* and *Chikyu* are dedicated drilling vessels fitted out with permanent drilling, laboratory and offshore core repository facilities, MSPs are platforms especially chosen to fulfil particular scientific objectives. In most cases this requires modifications to the most appropriate platform (which may be a ship, drilling rig, etc.).

The time needed to identify, contract and modify the most suitable platform, requires that scientists selected for MSP expeditions have a flexible approach to their participation. Whereas the other IODP drillships have expedition schedules agreed sometimes years in advance, the date that any MSP expedition starts can vary. The schedule may change at relatively short notice because of unforeseen delays in the platform's commitments prior to coming on contract, or to technical challenges connected with fitting out the platform. The timing of the end of an expedition may also depend on several factors, for example, if the cost of fuel rises during the contracting and planning phase, relatively less funding and therefore, time, will be available for drilling operations.



Assembling the derrick onboard the DP Hunter
- Exp. 310 Tahiti Sea Level.

The Offshore Expedition

Scientists arriving to take part in an MSP operation will notice a difference in conditions onboard the platform. Unlike the 143-metre

JOIDES Resolution or the 210-metre *Chikyu*, MSPs are smaller platforms, such as the *Greatship Manisha* used during Expedition 347 Baltic Sea Paleoenvironment, which is 94 metres long. The space restrictions on-board the vessel require flexible planning, both by scientists and drilling technicians. A limited number of mobile containers are provided and equipped for core curation and some laboratory facilities.



Mobile containers aboard the Greaship Manisha - Exp. 347 Baltic Sea Paleoenvironment.

The **ESO consortium** provides the equipment necessary to conduct IODP minimum measurements. Comprehensive scientific analyses on the sediment cores are carried out during the onshore phase of the MSP, which takes place several months after the offshore operations have been completed. Consequently, only a few researchers and technicians, under the guidance of the Co-chief Scientists, are needed during the offshore phase. The offshore team may have to help out on a range of scientific tasks to ensure that the essential work of capturing ephemeral measurements (*i.e.* measurements that have to be taken shortly after the core is collected) are completed.

The Onshore Science Party

Taking the factors described above into account, there is a clear difference between MSPs and other IODP expeditions in that not all of the core measurements can be made offshore. Each MSP expedition therefore includes an Onshore Science Party (OSP) following the offshore drilling phase. The OSP is the real science party, not merely a sampling party, and takes place a few months after the offshore phase once the cores have been transferred to the Bremen Core Repository (BCR) at the University of Bremen in Germany, one of three IODP core repositories worldwide.

The Consortium

The **British Geological Survey (BGS)**, part of the UK Natural Environment Research Council (NERC), acts as the ESO co-ordinator with responsibility for overall management by the ESO Chair and Science Manager, who act as the main contacts with the ECORD Managing Agency (EMA) and ECORD Council. BGS also provides the Operations Manager, Data Manager and Outreach Manager for the consortium, as well as the Expedition Project Managers and Administrative Support for each MSP expedition.

Bremen University provides the ESO Curation and Laboratory Manager, who is responsible for analytical facilities during offshore MSP operations and the Onshore Science Party. The Bremen Core Repository

(BCR), based at the MARUM - Center for Marine Environmental Sciences, is the ESO facility for core curation and management. The University is also involved in data management tasks provided by WDC-MARE/PANGAEA (IODP-MSP data portal), and provides the Media Relations Manager for ESO. GFZ Potsdam additionally supports ESO by contributing the Drilling Information System (DIS) for offshore data acquisition.

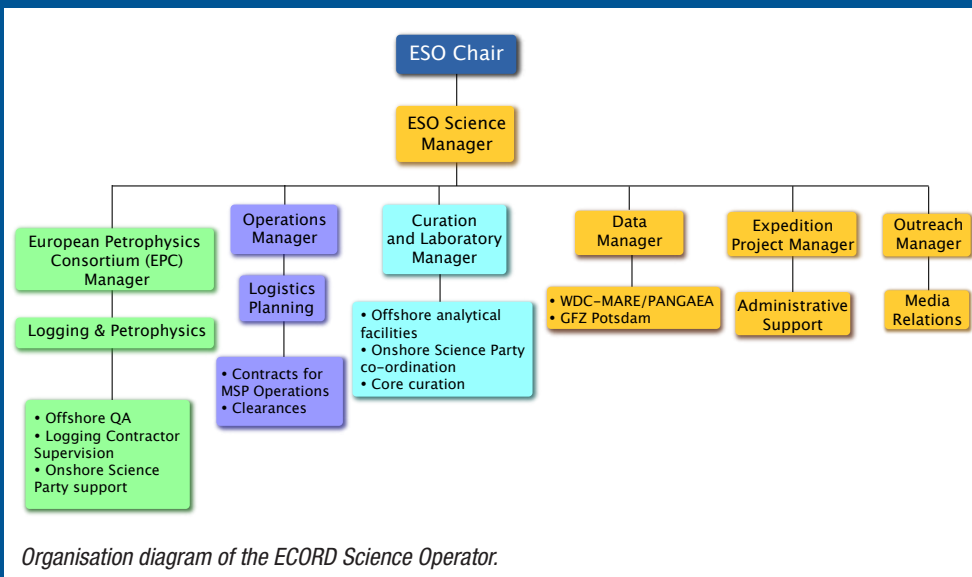
The **European Petrophysics Consortium** carries out all logging and petrophysical activities for ESO. This consortium is co-ordinated by the University of Leicester (UK) and includes the University of Montpellier (France) and RWTH Aachen (Germany).



The ESO Team at the start of Exp. 347 Baltic Sea Paleoenvironment



Vidar Viking drilling the seafloor of the Arctic Ocean during Exp. 302 Arctic Coring (ACEX).



Drilling operations onboard the Liftboat Kayd, Exp. 313 New Jersey Shallow Shelf.

ESO contacts:

Robert Gatliff, ESO Chair - rwga@bgs.ac.uk - **David McInroy**, Science Manager - dbm@bgs.ac.uk
Dave Smith, Operations Manager - djsm@bgs.ac.uk - **Ursula Röhl**, Curation and Laboratory Manager - uroehl@marum.de
Sarah Davies, EPC Manager - sjd27@le.ac.uk - **Hans-Joachim Wallrabe-Adams**, Data Manager - hwallrabe@pangaea.de
Alan Stevenson, Outreach Manager - agst@bgs.ac.uk - **Albert Gerdes**, Media Relations - agerdes@marum.de

ESO website: www.ecord.eso.org



Find us on ESO outreach