



# OFEG

OCEAN FACILITIES EXCHANGE  
GROUP

## The Ocean Facilities Exchange Group & The Ocean Facilities Exchange Technology Group

*A bottom up approach to research fleet coordination and harmonisation*

Colin Day  
Programme Manager,  
National Marine Facilities,  
National Oceanography Centre UK



# What is the Ocean Facilities Exchange Group?

## History of OFEG

- In 1996 NERC (UK), IFREMER (France) and BMBF (Germany) developed collaboration to 'barter' ship time and equipment without the need to charter or exchange money.
- Between 2002 and 2006, the NIOZ (Netherlands), CSIC (Spain) and IMR (Norway) became members.
- With these expansions, the group became the Ocean Facilities Exchange Group (OFEG).



# Benefits of OFEG

## Wider access for science activities

- Access to ships and large scale equipment than would not be possible for individual countries.
- Includes **20** research ships, together with large scale equipment such as coring systems, remotely operated vehicles, towed arrays and shipboard surveying systems.

## Costs, time and opportunity

- The geographical location of OFEG ships, enables ship exchange to increase efficiency of national fleet movements, reducing passage times, and therefore costs, allowing scientists access to a wider range of geographical areas.



# Ships and equipment!

## OFEG & OFEG-TECH - what is it and why is it important?

- Effective integration of portable equipment onto our research ships is critical for effective science delivery.....
- As the OFEG matured and expanded, opportunities to exchange major equipment increased.....
- To develop equipment barter within OFEG the right people at the right level in each organization needed to be engaged.
- **OFEG-TECH** was set up to develop communication and networking supporting equipment exchange and improving cooperation between OFEG partners;
  - Improve understanding of each others organizations
  - develop opportunities to exchange of knowledge and experience
  - Promote ‘bilateral training’ and technician exchange



**RV Kronprins Haakon**  
(artist impression)



**BIO Hesperides**



**RV Sarmiento de Gamboa**



**NERC polar ship**  
(artist impression)



# Ship Capability

**RV Maria S Merian**



**RRS Discovery**



**RV Pourquoi pas?**



**RV G.O Sars**



**RV Sonne**



**RRS James Cook**



# Ships included in the OFEG exchange agreement

**RV Johan Hjort**



**RV Alkor**



**RV Pelagia**



**RV Poseidon**



**RV Garci del Cid**



**RV Thalassa**



**RV Kristine Bonnevie**



**RV Heincke**



**RV L'Atalante**



**RRS James Clark Ross**



**RV Meteor**



# Equipment capability in the OFEG exchange agreement

**Clean CTD sampling**



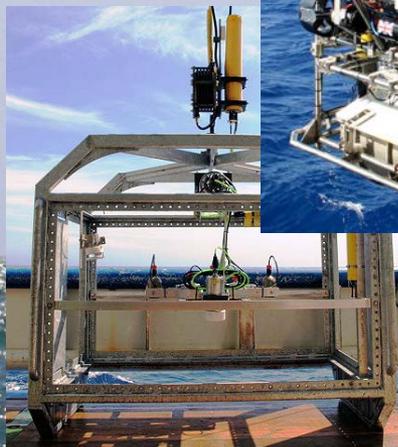
**Autonomous vehicles**



**Sea bed sediment coring**



**Camera systems**



# Research Equipment included in exchange agreement



**ROV  
systems**



**Mobile  
seismic  
systems**



Barter cruises  
2009 -2016

# OFEG Ship & Equipment operations

Transnational North Atlantic mooring programme (OSNAP)

Piston coring training / trials / technology exchange

RRS James Cook & RV Sonne 2 ship geophysics cruise

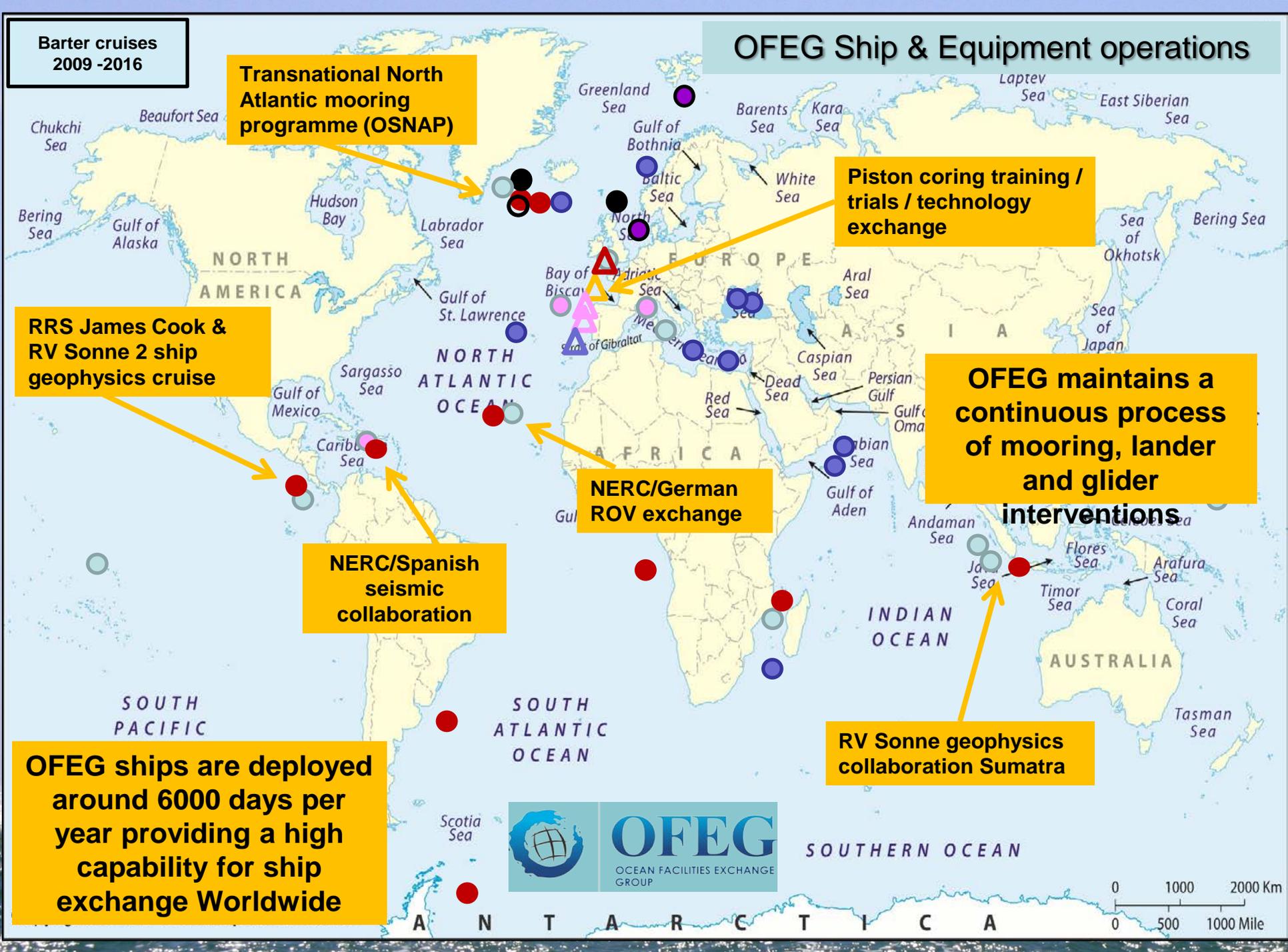
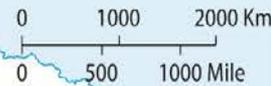
OFEG maintains a continuous process of mooring, lander and glider interventions

NERC/German ROV exchange

NERC/Spanish seismic collaboration

RV Sonne geophysics collaboration Sumatra

OFEG ships are deployed around 6000 days per year providing a high capability for ship exchange Worldwide



# OFEG-TECH area of interest: Synthetic rope operations

- NERC/NIOZ/Ifremer/IMR have been operating with synthetic ropes for deep sea sampling and sensing equipment for more than a decade. Synthetic ropes are increasingly becoming normal practice, and indeed essential for our science requirements.
- Synthetic ropes are a common area for discussion and knowledge exchange within OFEG-TECH particularly in the areas of deep coring operations and clean water sampling
- Within OFEG-TECH we feel we now have a real core of expertise across the various partners we can draw on as we develop into this new area of technology



# OFEG-TECH area of interest: OFEG-TECH Piston coring collaboration

- Developing and exchanging experience and knowledge in the use of the synthetic coring ropes on the RRS James Cook, RV Pelagia, RV Pour quoi pas?
  - (Dyneema /Vectran / Aramid)
- Investigating why both organisations seemed to be consistently recovering lower than expected sediment sample length during piston core operations.
- Exchanging experience operating synthetic coring rope:
  - Winch installation technique (spooling on to ships winch)
  - Operational rope characteristics during core operations on each others ships



# OFEG-TECH area of interest: Piston coring – joint OFEG-TECH activities

- Three trials cruise were run over a two year period on the RRS James Cook, RV Pelagia and the N/V Pour quoi pas? supported by joint technical teams, with each partner providing ship time to support the trials
- IFREMER provided their corer mounted sensors & CINEMA software for the RRS James Cook trials to model the dynamic operation of the corer and deployment rope during piston core operations
- All three groups had different ideas why core sample lengths were less than expected, and what measures could be taken to improve sample length and quality
- All three groups had different experience, views and inputs on the operational characteristics of synthetic coring ropes and their impact on piston coring operation
- The output provided a greater benefit than if we had pursued the trials process individually, through pooled knowledge, joint technical teams, and access to each others research ships, corers and deployment systems



# OFEG-TECH area of interest: NERC/CSIC seismic collaboration

- NERC was forced to retire its seismic Multi Channel Streamer (MCS) through obsolescence prior to availability of funds for a replacement
- CSIC won significant capital to procure a 6km digital MCS system plus airgun source and handling system, but were concerned as to the amount of use the system may attract i.e. too little take up for the financial outlay!
- Through increased understanding of each others operations a proposal to develop a joint transnational collaboration for supporting seismic science activities has been realised.



# OFEG-TECH area of interest: ROV collaboration and exchange

- Collaboration on large ROV systems, these are complex high value systems, the ability to operate our ROVs on each others ships is a high value goal to all partners.
- There is increased potential for ROV exchanges between partners in the OFEG group as knowledge is exchanged at the right levels within our organisations and the key barriers are better understood.
- GEOMAR set up the first of a planned series of ROV workshops in Kiel in 2011 to bring together ROV technicians and planners to network and exchange ideas...
  - This an area we could develop!



# OFEG-TECH overview

- The 'parent' OFEG group can advise operational users of interest for OFEG to consider and develop
- Properly configured and driven OFEG-TECH is not a talking shop.
- OFEG-TECH aims to bring together the right people at the right level to identify common technical and operational issues.....and work together to solve them.
- OFEG-TECH provides a forum that provides real benefits on the ground at the operational and technical level.
- A previously delivered example of potential; NERC cruise on the RV Sonne, jointly supported through OFEG/OFEG-TECH;
  - German ship / airguns / technicians
  - Spanish MCS / technicians
  - UK seismic compressors / Gravity and Magnetics / technicians

