ECORD ILP Meeting #1
May 2-3, 2013

Earth and Environmental Sciences Batelle Campus, Carouge
University of Geneva, Geneva, Switzerland

MINUTES Draft

Minutes Sections

1. Roster

MEMBERS	NAME	EMAIL
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EMA	Milena Borissova	borissova@cerege.fr

2. List of Acronyms

ACEX	Arctic Coring Expedition, Expedition 302
ANZIC	Australia-New Zealand IODP Consortium
AP	Advisory Panels
APL	Anciliary Project Letter
APP	Annual Program Plan
BGS	British Geological Survey
BoG	IODP-MI Board of Governors
CIB	Chikyu Implementation Board
CMO	Central Management Office
CPP	Complementary Pre-Proposals
DIS	Drilling Information System
DREAM	Deep-Sea Record Mediterranean Events project
EB	Executive Board
EC	European Commission
ECORD	European Consortium for Ocean Research Drilling
EDP	Engineering Development Panel
E-FB	ECORD Facility Board
EMA	ECORD Managing Agency
EPC	European Petrophysics Consortium
EPSP	Environmental Protection and Safety Panel
ESO	ECORD Science Operator
ESSAC	ECORD Science Support and Advisory Committee
ETP	ECORD Technology Panel
FB	Facility Board
GOLD	Gulf of Lyon Drilling Project
ICDP	International Continental Scientific Drilling Program
ILP	ECORD Industry Liaison Panel
INSU-CNRS	Institut National des Sciences de l'Univers, France
IODP	Integrated Ocean Drilling Program
IODP	International Ocean Discovery Program
IODP-MI	IODP Management International, Inc.
IOs	Implementing Organizations
JAMSTEC	Japan Marine Science & Technology Center
JFAST	Japan Trench Fast Drilling Project
JR	JOIDES Resolution
KCR	Kochi Core Repository
KIGAM	Korea Institute of Geosciences and Mineral Resources
LAs	Lead Agencies
MDP	Multiple-phase Drilling Proposal
MEXT	Ministry of Education, Culture, Sports, Science & Technology
MOST	The People's Republic of China Ministry of Science and Technology
MoU	Memorandum of Understanding
MSC	Messinian Salinity Crisis
MSCL	Multi Sensor Core Logger

MSPs	Mission-specific platform
NanTroSEIZE	Nankai Trough Seismogenic Zone Experiment
NERC	Natural Environment Research Council, UK
NJSS	New Jersey Shallow Shelf
NSF	National Science Foundation, USA
NSF-OCE	NSF Ocean Sciences
NWO	Netherlands Organisation for Scientific Research
ODP	Ocean Drilling Program
OSP	Onshore Science Party
OTF	Operation Task Force
PCT	Project Coordination Team
PEP	Proposal Evaluation Panel
POC	Platform Operation Costs
RMS	Routine Microbiological Samples
SAS	Science Advisory Structure
SCP	Site Characterization Panel
SO	Support Office
SOC	Science Operation Costs
SPC	Science Planning Committee
SSC	Magellan Plus Science Steering Committee
SSDB	Site Survey Data Bank
ToR	Terms of Reference
USAC	U.S. Science Advisory Committee
USIO	U.S. Implementing Organization
USSP	U.S. Science Support Program
US-JR FB/ JR-FB	U.S. JOIDES Resolution Facility Board
VTF	Vision Task Force

3. Summaries of key decisions and conclusions

ACTION ILP Chair (A. Moscariello): to update the ECORD ILP members' list.

ACTION EMA and ILP Chair (G. Camoin & A. Moscariello): to ask for the publication on the ILP website of a list of proposals that could be of industry interest.

ACTION ILP Chair (A. Moscariello): to send to the industry representatives the updated text of the brochure, which will consist of an umbrella text with participation of interest with general statement.

4. Minutes

May 2nd, 2013 **14:30-18:15**

4.1 Welcome & Introduction (A. Moscariello)

A. Moscariello introduced himself, welcomed all participants, and reviewed the meeting's logistics.

4.2 Objectives of the meeting

A. Moscariello said that the ILP represents a discussion group operating in the long-term interest of the ECORD community. ILP has to be a platform where links between the scientific community and industry should be created and developed. The key objectives of the meeting are to present the ECORD activity plans and identify common interests and a beneficial range of activities. The ILP's role is very important for ECORD. A. Moscariello said that one of the other objectives is to agree on the way forward on the ILP way of working (e.g. communications).

4.3 ECORD explained (G. Camoin)

G. Camoin introduced the background of ECORD's ocean drilling. He said that the results of the previous drilling in the oceans form the basis of much of our present understanding of the Earth and Environmental Sciences. **Project Mohole** took place from 1958-1966, the **Deep Sea Drilling Project** had 96 legs, occurred from 1968-1983 and the **Ocean Drilling Program** took place from 1958-2003.

The current **Integrated Ocean Drilling Program (2003-2013)** consists of the riserless platform ***JOIDES* Resolution (*JR*)** for the USA, the Japanese Riser Platform called ***Chikyu***, which uses long-term borehole monitoring an observations, and the **European Mission Specific Platforms (MSP)**. The MSPs are used to implement expeditions in areas that are not possible for the riserless or riser platform to operate. IODP-ECORD has the technology to recover marine records from very shallow to deep water, including very deep targets, open-ocean to ice-covered polar seas, regions of gas hazard, locations of environmental sensitivity and unstable sediments and sands.

The **ECORD Science Operator (ESO)** is the operator of the MSPs. Five IODP expeditions will have been drilled by the end of the current phase: Black Sea #347, New Jersey #313, Tahiti #310, Arctic #302, Great Barrier Reef #325. The expedition covered fields such as paleoclimatology, paleoceanography and paleoenvironment.

Not all activities are done on board for the MSP as are done on the *Chikyu* and *JR*. The MSPs have offshore activities. The operations that involve the BGS in Edinburgh and MARUM University in Bremen, may be divided in an offshore and onshore phase. For most expeditions logging and petrophysics is done in the University of Montpellier and Leicester.

The current **IODP has 26 member countries** that include the USA lead agency; the Associate members of China, Korea, India, Australia-New-Zealand, Brazil; the Japanese lead agency and ECORD's 18 countries that act as one contributing member.

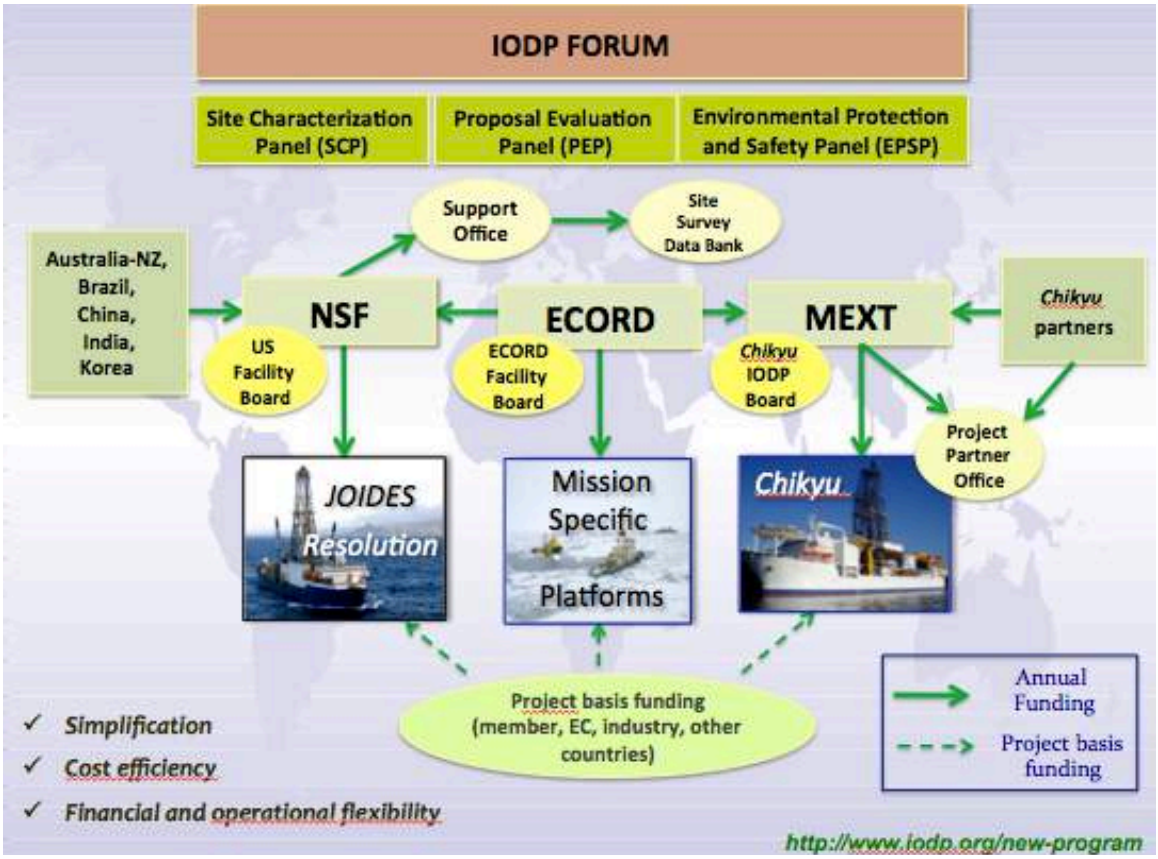
The overall **IODP budget** is approximately $150 M USD per year. The IODP budget consists of only public money. Initially, in order to become a significant partner of IODP, 17 European countries and Canada decided to join IODP as a single consortium called ECORD. The annual budget amounts to approximately $21.5 M USD per year, which amounts to about 15% of the total IODP yearly budget. The contributions range from $30 000 USD per year to $5.6 M USD per year. ECORD was formed in order to facilitate

the coordination among the ECORD scientists and maximize their influence in the program; and to provide access to MSPs, in areas inaccessible to the US and Japanese drillships. On average, ECORD is allotted 8 scientists per expedition in IODP and it is also granted representation on all IODP committees.

The new **IODP Phase Science plan topics** were presented. In its future phase 2013-2023, IODP will address the following science topics:

Climate and Ocean Change: Reading the Past, Informing the Future CO2, Climate variability, Sea-level change, Ocean chemistry, Ocean acidification; **Biosphere Frontiers**: Deep Life, Biodiversity, and Environmental Forcing of Ecosystems Limits of Life, Deep Biosphere, Impact of environmental and chemical changes on ecosystems; **Earth Connections**: Deep Processes and their Impact on Earth's Surface Environment Ocean crust formation, Subduction zones, Arcs, Magmatic processes at ridges; and **Earth in Motion**: Processes and Hazards on Human Time Scales Earthquakes, Landslides, Tsunamis, Fluid Flows, Carbon Storage.

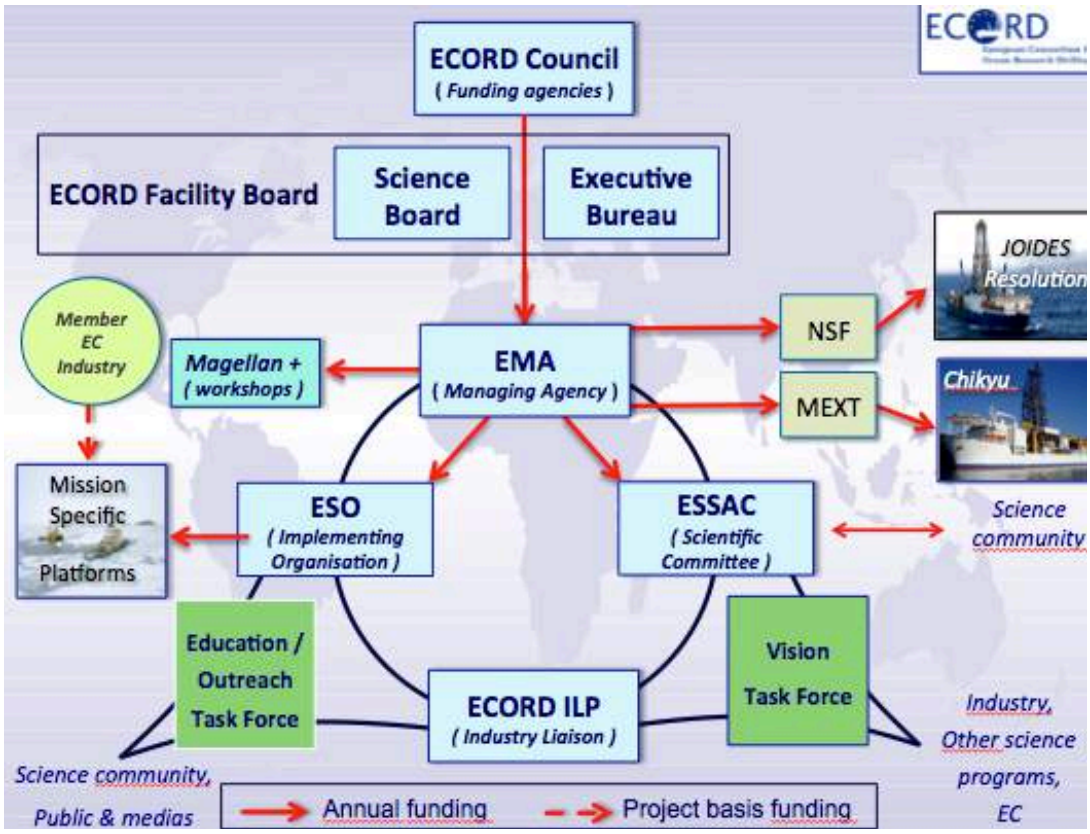
The **IOPD Forum and Panels** organizational structure, diagram shown next, was presented to the ILP.



The three main IODP panels are the **Site Characterization Panel (SCP)**, the **Proposal Evaluation Panel (PEP)** and the **Environmental Protection and Safety Panel (EPSP)**. The **Support Office** will help the organization of the program. The **FBs** give priorities to some expeditions. The new structure is intended to have better organizations, cost-efficiency, and greater financial flexibility.

ECORD's Structure

The ECORD organizational structure was shown, shown below.



The **ECORD Council** is the meeting of the funding agencies. There is a **workshop program** that is dedicated to promote the writing of the proposals of the program, called ***MegallanPlus***. When some proposals are sent to IODP, the Facility Boards (FBs) decide on the expeditions' prioritizations and ESO decides on the MSP's implementation. Any additional funding coming from the EC, IODP members and industry will also be applied. A funding organization of an ECORD-paying country will have access to both the

MSPs and the other platforms. G. Camoin said that ECORD will have to work toward addressing the topics at the next **3P conference**.

The Past ECORD ILP

The past ECORD Industry Liaison Panel decided to focus on the Arctic in order to investigate the possibility to develop joint projects and to promote contacts with industry. A session was organized at the 3P Arctic meeting in Halifax on August 30th-September 2nd, 2011. The ILP was presented at an IODP booth, which was funded by IODP-MI.

The New ECORD ILP

The purpose of the new ILP is to create a link between academia and industry in order to promote scientific and technological collaboration.

The ILP Mandate is to facilitate mutual communication and cooperative scientific activities between ECORD and related industries; maximize economic benefits from sharing resources (e.g. manpower, development of joint drilling and sampling technologies, core and data analysis, improved downhole measurement and observatory capabilities etc.); and participate, through its Chair, in the ECORD Executive Bureau and the ECORD Vision Task Force activities.

ECORD in the New IODP and ECORD Membership

The new-phase **ECORD Memorandum of Understanding** was written in 2012 and is expected to be signed in 2013. All current ECORD country members have expressed interest or confirmed their participation in the new IODP. Israel is expected to join ECORD as a member in October, 2013. Contacts have been developed with Luxembourg, Turkey, Estonia and Lithuania and Russia (which will attend the June ECORD Council meeting).

ECORD in the new IODP-Funding, Innovation and Efficiency

ECORD aims to fund and implement one MSP expedition per year. As a platform provider, ECORD will also encourage and help proponents for MSP expeditions to seek additional funding sources on a project basis (EC, industry, increased contributions from

members, foundations, in kind contributions); to contribute to the annual funding of the *JOIDES Resolution* and the ***Chikyu*** **ECORD – NSF MoU**: access to the *JR* for ECORD scientists and in reciprocity; to provide access to MSPs for US scientists and associate members; and via the **ECORD – MEXT MoU** to provide access to the *Chikyu* for ECORD scientists and in reciprocity access to MSPs for Japanese scientists. **'The Future of ECORD' brochure** presents the spirit of the program, although some of the details have evolved.

ECORD in the New IODP-Towards a European Research Infrastructure

One of the ECORD goals is to evolve into a **European Research Infrastructure program**, through the further development of the Mission Specific Platform concept. Alongside its organization technology of seabed drills and coring systems, such as the MARUM MeBo, the BGS 50m rockdrill, the BRS oriented drill, ECORD aims toward new scientific targets, new scientific issues, a close collaboration with other programs such as IMAGES and ICDP and greater cost efficiency in the future.

Developing and using new tools

ECORD aims to develop new technologies. It currently applies Borehole observatories, In situ pressure sampling, and high temperature tools.

ECORD and the European Commission: The Public Consultations on RI (Research Infrastructure) – Topics of Integration

ECORD answered the public consultation call by submitting a proposal on October 22nd, 2012 and received a high ranking. The goal is to submit a full proposal in 2014. The **DEISM – Distributed European Infrastructure for Subseafloor Sampling and Monitoring** is a proposed infrastructure, which is aimed to focus on scientific research into the subseafloor and is designed to increase and optimize trans-national access to cutting-edge technologies and scientific services to the European science community. *DEISM* will improve European collaboration in development and sharing of new, innovative technologies for coring, specialist sampling, downhole logging and long-term subseafloor observations, and it is likely to stimulate further technological developments in these areas.

IODP and ECORD websites.

The IODP website is **www.iodp.org** and the ECORD website is **www.ecord.org**.

G. Camoin recommended that all participants should provide their business cards at the end of meeting in order to keep future contact with the ILP.

The group asked whether the consortium's annual funding could be carried over to a subsequent year? G. Camoin confirmed that that is possible. When more funds for an expedition are needed, ECORD implements a cheaper expedition for the first year and the left over funds are added to following year's budget. The ECORD Managing Agency (EMA) is located in France and the money is managed by the CNRS.

Several participants asked what would be the advantage of having three organizations instead of one. G. Camoin said that ECORD budget of $21M USD are paying $14M USD to participate in the JR. In the new program ECORD will be paying only $8M, so it will save money and will be able to implement one MSP per year. Other changes in the new phase include the reduction of the Central Management Organization, by streamlining the structure, to have three main panels, of which two panels will meet together. The idea is to simplify the central management. ECORD will be completely in charge of its outreach and education and science activities.

A. Moscariello asked whether the program represents an access to the 3 platforms rather than a geographical split in operations. G. Camoin confirmed that the organization's purpose is focused on the platform access. The MSP's address shallow operations, the JR performs riserless operations, and the Chikyu performs riser operations. In reference to the European participation quotas, the co-chief scientist will not count in the quota in the new phase.

C. Escutia said that the Magellan Plus mechanism is good for proposal writings and it is good for industry's proposal plans as well. MagellanPlus is funded by ECORD and ICDP. G. Camoin said that usually 40-50 people browse ideas and begin proposals.

J. L. Auxiètre asked if an increase of ECORD's membership means a proportional increase in its budget. G. Camoin said that some members will increase their contributions, while others will remain stable and others will decrease. A difference, which should balance out the variable contributions.

R. Gatliff emphasized that ECORD members have the flexibility to use research tools such as rock drills.

D. de la Moretta asked how ECORD would like to work with industry, i.e. via MSP funding or some constant contribution. G. Camoin said that this is to be further discussed. Money and science, such as the site survey data, are just a few aspects that will have to be considered. The decision is also about the industry's expectations from ECORD.
A. Moscariello asked if ECORD is against funding from the private industry. R. Gatliff said that all options are open, such as technology development, and collaboration on location of interest, e.g. the North Pole, in order to combine common science drives.
Regarding the public funding, EC and national programs, it is expected that ECORD will have marginal or big contributions. The funding use depends on the contributed amounts.

4.4 Mission Specific Platform operations: Technology, Procedures and challenges (D. McInroy)

ESO is an Implementing Organization and comprises of the British Geological Survey (BGS) in Edinburgh, the MARUM Center for Marine Environmental Sciences in Bremen, and the European Petrophysics Consortium that consists of the University of Leicester, the University of Montpellier, and Aachen University. ESO's role is to provide the MSPs under the auspices of the IODP, which is funded by ECORD and the ECORD-Facility Board (E-FB).

IODP Platforms

The three IODP platforms are the riseless *JR* (US), the Japanese *Chikyu* riser and the ECORD MSPs.

The role of ESO in IODP

ESO operates following the IODP framework and policies: staffing, environmental protection, sample and publication policies etc. Potential expeditions are assessed by IODP's Science Advisory Structure (SAS). The ECORD Facility Board approves ESO's future work plan. ESO is involved in the early planning of the expeditions, works with proponents and other scientists. In addition, ESO attends the workshops, and convenes scoping meetings, applies research-operational methods (which may lead to engineering

development), explores permitting routes and documents the expedition planning (Scientific Prospectus and associated web content).

MSP Operations

The MSP operations have two phases: an offshore phase for the collection of high quality core and measurements of ephemeral proprieties ,and anything that can be postponed is scheduled for or the offshore phase.

The Role of ESO

ESO contracts suitable platforms and coring services; contract or provide downhole logging systems; provides scientific facilities and expertise, alongside to core curation and data management to IODP standards; and seeks permits to conduct scientific research. All services are hired on an expedition-by-expedition basis. The ESO expeditions are tailored to suit a particular scientific proposal. As ESO works in in territorial waters, it is needed to do an impact assessment in order to acquire a permit to operate in the waters.

D. McInroy showed several images of the mobilization of the *Vidar Viking* vessel for 2004 Expedition #302 to the Central Arctic. The ESO containerized laboratories include containers for petrophysics, curation, geochemistry and other sciences. He showed a diagram scheme of an example core curation, geochemistry lab, and microbiology lab containers along with the corresponding equipment and working steps.

D. McInroy also displayed an image of the *GreatShip Maya* Drill Floor, showing the location of the necessary labs and equipment.

The role of ESO (continued)

ESO implements and manages the offshore operation. The on-board ESO staff includes an Operations Superintendent, a Drilling Coordinators, Expedition Project Manager(s), a Petrophysics Staff Scientist, Database Manager(s), Logging Engineers (if ESO), an Electronics Engineer, Core Curators, Technicians, e.g. petrophysicist/geochemist. The abovementioned staff is in addition to the drilling crew, ship's crew, logging crew, if contracted, and the Science Party. There is always an ESO staff member 'on call' onshore at the BGS. D. McInroy reviewed a diagram of the BGS Marine Wireline Corebarrel System.

Technology review

Some of the technology that ESO uses includes piston core barrels, non-rotating inner barrels, HQ-sized rotary core barrels, PQ-sized rotary core barrels ahead of PHD mining pipe BHA, full face insert bits for drilling without coring, six-cone roller bits and other technologies. Some of the MSP applied coring technologies include drillship-style technology, MeBo, the BGS Rockdrill 2 and long piston corers.

Offshore objectives

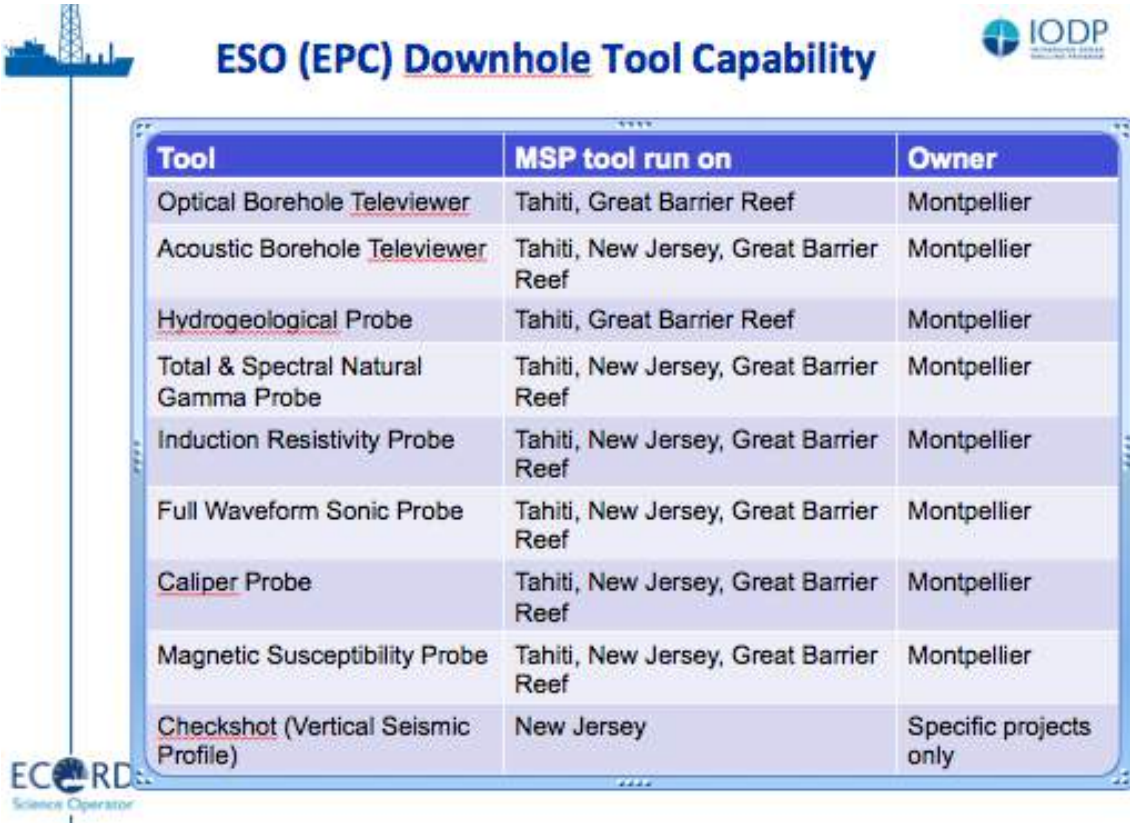
The offshore phase involves core recovery, logging of drilling data, core curation but the cores are not split, initial lithological description via a core catcher, core catcher photos, biostratigraphy involving the analysis of core catcher samples, physical properties involving the full core multi sensor core logging – MSCL, pore water geochemistry, microbiology, stratigraphic correlation in order to aid drilling overlap and zonation, and downhole logging. The cores are not split in the offshore phase.

ESO also **appoints the co-chief scientists and science party**. The Operator receives the nominations from each Program Member Office of IODP. We try to find a balance of expertise and nationality. A typical Science Party has 28-30 members.

Downhole logging for MSP Expeditions

D. McInroy reviewed several expeditions and the corresponding applied technologies, such as the **ACEX #302**, where the staff used a Schlumberger. Downhole logging can be done via a commercial single contractor, a university-based single contractor, or via combined University-based contractors. D. McInroy showed a diagram of several logging tools' diameter comparisons.

The **ESO (EPC) Downhole Tool Capability** is shown in the chart below.



Tool	MSP tool run on	Owner
Optical Borehole Televiewer	Tahiti, Great Barrier Reef	Montpellier
Acoustic Borehole Televiewer	Tahiti, New Jersey, Great Barrier Reef	Montpellier
Hydrogeological Probe	Tahiti, Great Barrier Reef	Montpellier
Total & Spectral Natural Gamma Probe	Tahiti, New Jersey, Great Barrier Reef	Montpellier
Induction Resistivity Probe	Tahiti, New Jersey, Great Barrier Reef	Montpellier
Full Waveform Sonic Probe	Tahiti, New Jersey, Great Barrier Reef	Montpellier
Caliper Probe	Tahiti, New Jersey, Great Barrier Reef	Montpellier
Magnetic Susceptibility Probe	Tahiti, New Jersey, Great Barrier Reef	Montpellier
Checkshot (Vertical Seismic Profile)	New Jersey	Specific projects only

Next, D. McInroy reviewed several slimline downhole logging tools and downhole logging innovations, such as several OBI optical and MSP- ABI acoustic data images of a core. ESO also implements and manages **the Onshore Science Party (OSP)**. The OSP is Held at the Bremen Core Repository and MARUM a couple of months after the offshore operation. There the cores are split and the IODP minimum and standard measurements are completed. D. McInroy mentioned that a great benefit to industry would be that there is a specialized science party that could offer help.

Onshore objectives

The minimum and standard measurements include a non-destructive analysis and sampling and analysis for expedition reports.

The Non-destructive analysis involves whole core gamma rays, selected whole core repeats for density and magnetic susceptibility, thermal conductivity, split core multi sensor core logging (MSCL), color reflectance of split-core surface, high-resolution digital imaging of split-core surface, and visual core description (macro- and microscopic).

The Sampling and analysis for Expedition Reports involve lithostratigraphy via smear slides, biostratigraphic analysis, X-ray diffraction analysis, discrete physical properties, inorganic and organic geochemistry, microbiology - any outstanding, and paleomagnetic measurements with U-channels or discrete samples. The onshore phase involves sampling for post-expedition research and writing up of all sections for the **Expedition Report**.

Bremen Core Repository (BCR)

The **BCR** contains about 152 km of cores from the Atlantic Ocean, Arctic Ocean and the Mediterranean Sea.

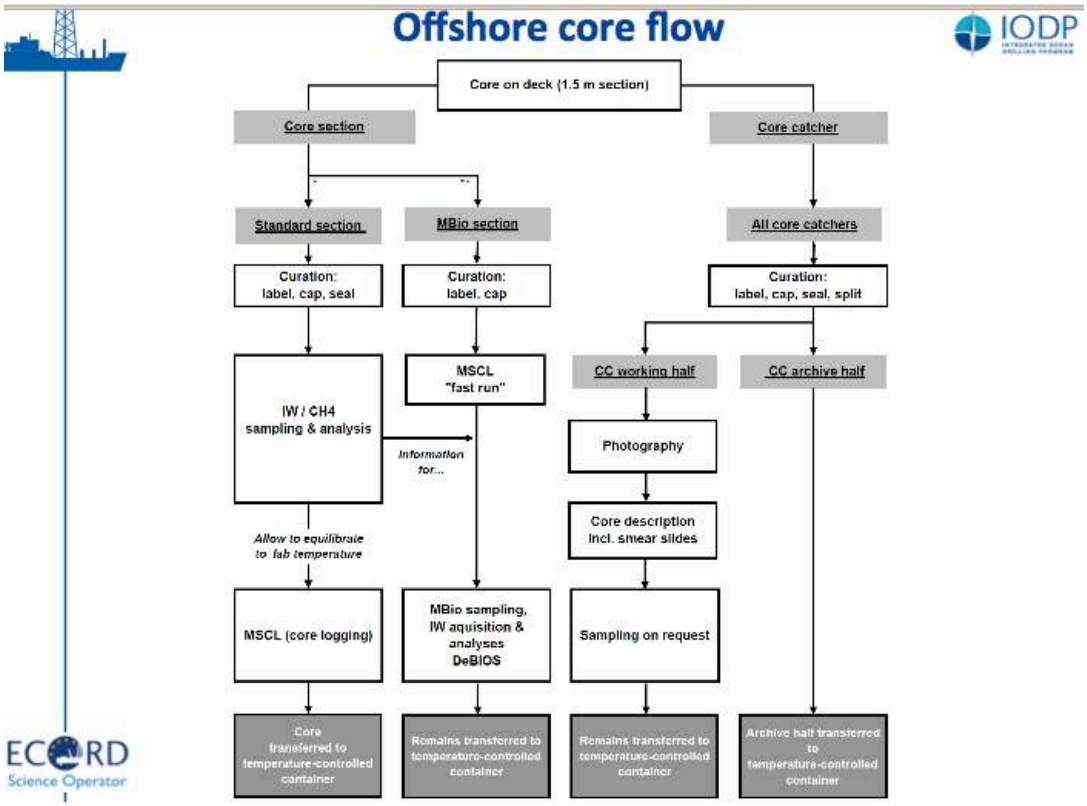
Obligations and Publications of the Science Party

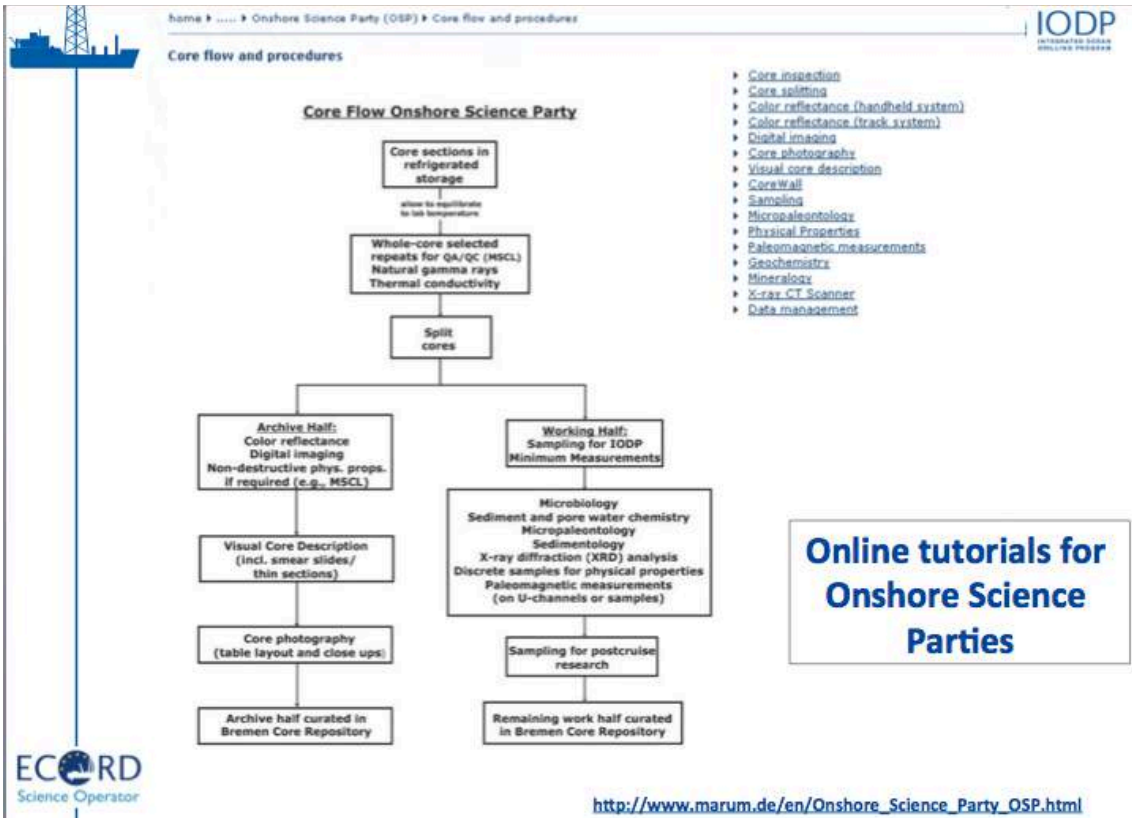
There is a 1-year moratorium on data and samples after the OSP.

The **expedition obligations** are to contribute to the Scientific Prospectus that is published at least 2 months before an Expedition, the Preliminary Report that is written during OSP and submitted 1 week after the OSP and the Expedition Report that is written during OSP and submitted a.s.a.p. after the OSP. The **post-expedition research obligations** are to publish in either a peer-reviewed popular journal in English or as a Data Report in the Proceedings volume is submitted within 20 months postmoratorium, where all Science Party members have this obligation, and to publish an expedition synthesis paper that is to be submitted within 26 months of the postmoratorium period. The **IODP Sample, Data and Obligations policy** is found on the following website: **http://www.iodp.org/program-policies/** .

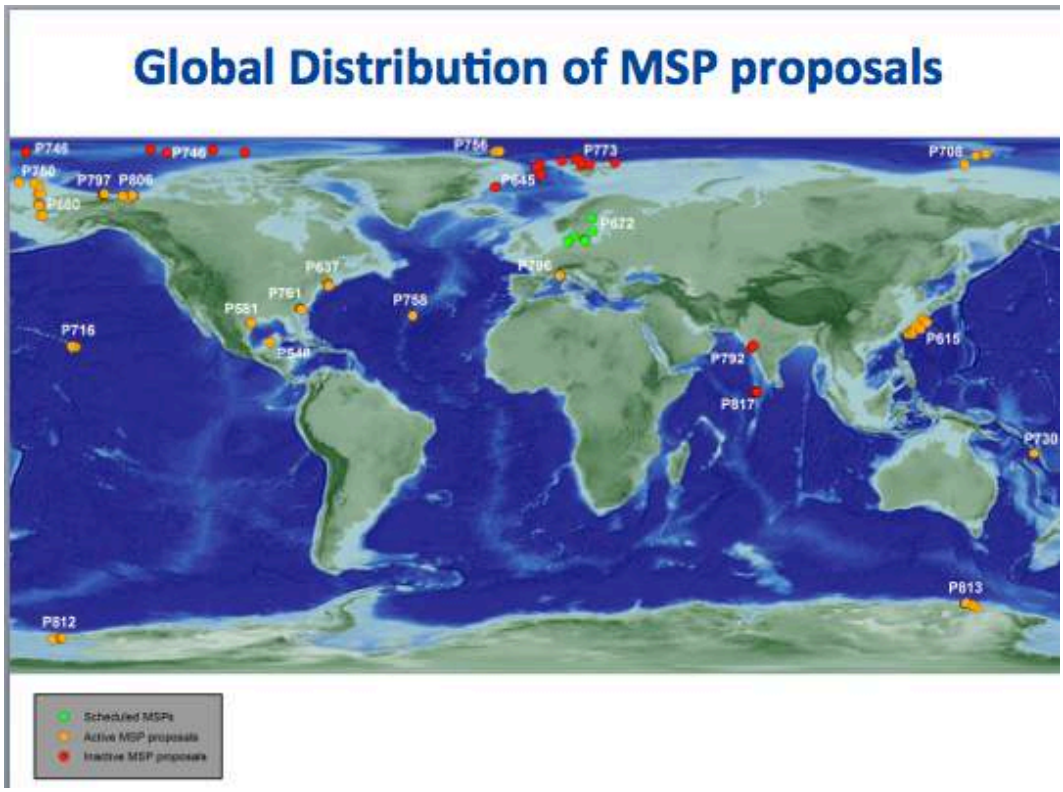
ESO also does education outreach and MSP-outreach.

D. McInroy reviewed the **Offshore and Onshore Core flow** diagrams, shown net.

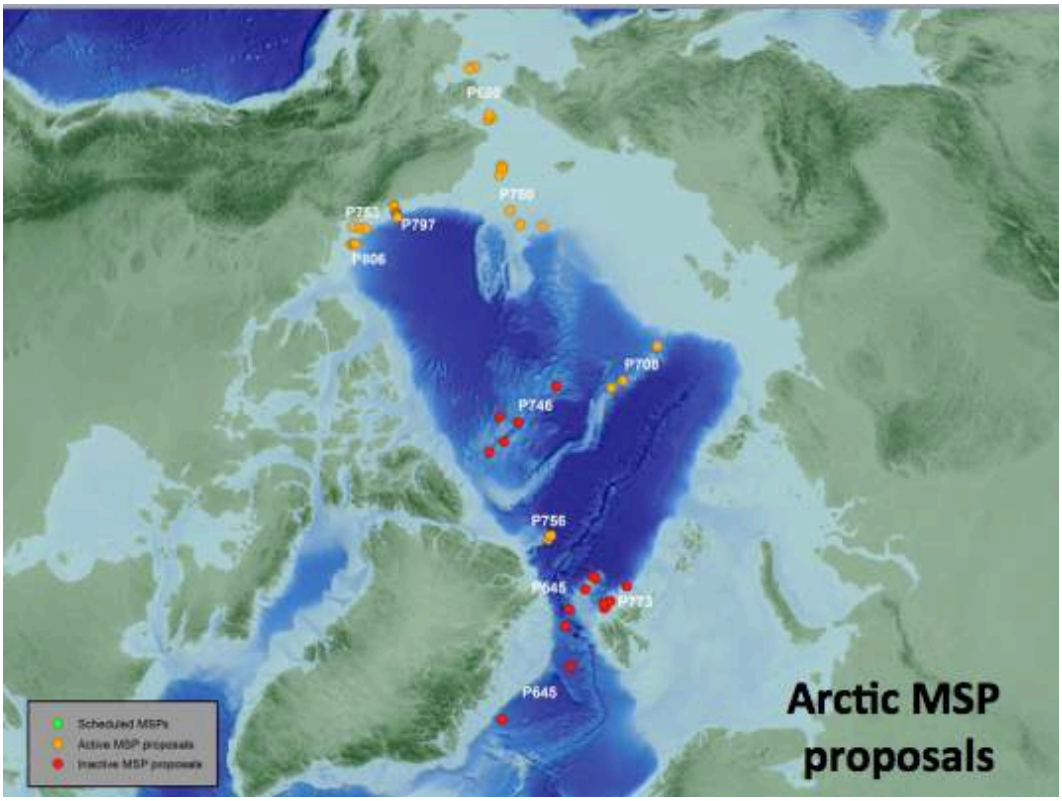

Offshore core flow
IODP
Core on deck (1.5 m section)
Core section
Core catcher
Standard section
MBio section
All core catchers
Curation: label, cap, seal
Curation: label, cap
Curation: label, cap, seal, split
IW / CH4 sampling & analysis
MSCL "fast run"
CC working half
CC archive half
Information for...
Photography
Core description incl. smear slides
Allow to equilibrate to lab temperature
MSCL (core logging)
MBio sampling, IW aquisition & analyses DeBIOS
Sampling on request
Core transferred to temperature-controlled container
Remains transferred to temperature-controlled container
Remains transferred to temperature-controlled container
Archive half transferred to temperature-controlled container
ECORD
Science Operator


home ▸ ..... ▸ Onshore Science Party (OSP) ▸ Core flow and procedures
IODP
Core flow and procedures
Core Flow Onshore Science Party
Core sections in refrigerated storage
Whole-core selected repeats for QA/QC (MSCL) Natural gamma rays Thermal conductivity
Split cores
Archive Half: Color reflectance Digital imaging Non-destructive phys. props. if required (e.g., MSCL)
Working Half: Sampling for IODP Minimum Measurements
Visual Core Description (incl. smear slides/ thin sections)
Microbiology Sediment and pore water chemistry Micropaleontology Sedimentology X-ray diffraction (XRD) analysis Discrete samples for physical properties Paleomagnetic measurements (on U-channels or samples)
Core photography (table layout and close ups)
Sampling for postcruise research
Archive half curated in Bremen Core Repository
Remaining work half curated in Bremen Core Repository
Core inspection
Core splitting
Color reflectance (handheld system)
Color reflectance (track system)
Digital imaging
Core photography
Visual core description
CoreWall
Sampling
Micropaleontology
Physical Properties
Paleomagnetic measurements
Geochemistry
Mineralogy
X-ray CT Scanner
Data management
Online tutorials for Onshore Science Parties
http://www.marum.de/en/Onshore_Science_Party_OSP.html
ECORD
Science Operator

Global Distribution of MSP Proposals Map



Arctic MSP Proposals Map

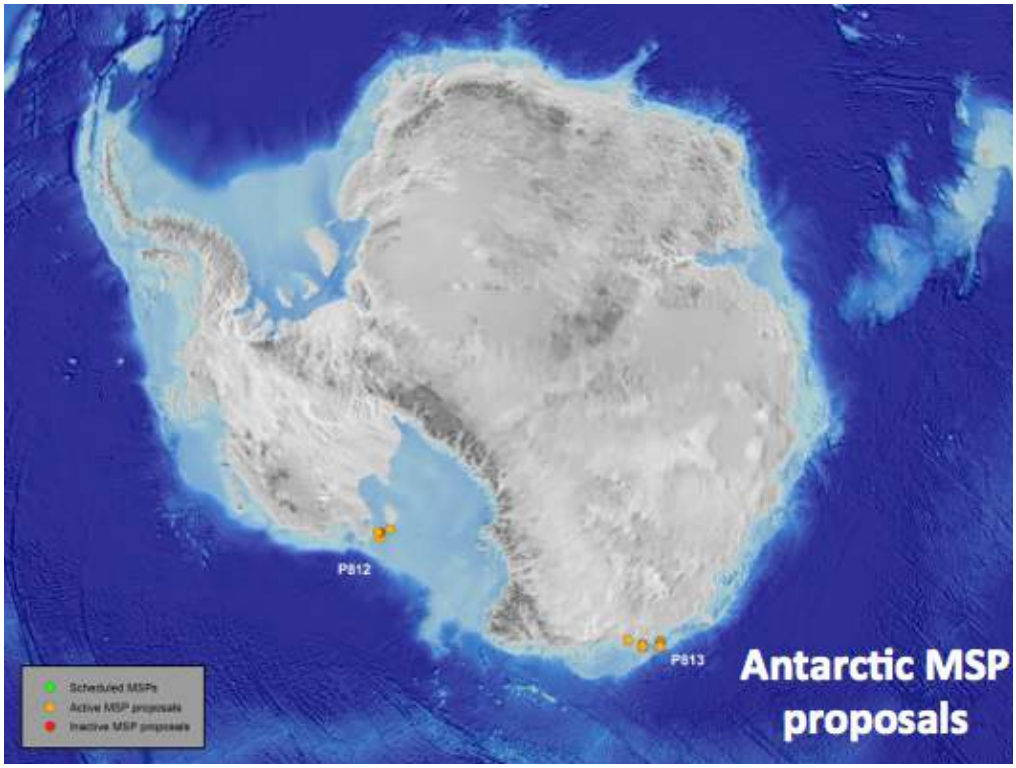


D. McInroy showed a table listing the **Arctic IODP proposals** and the related objectives.

Arctic IODP proposals – brief objectives

Bering Strait	
680	Reconstruct the Cenozoic sea-level history, paleoclimate, and terrestrial paleoecology of the central Bering Strait/Bering Land Bridge.
Chukchi Shelf	
750	To develop a better understanding of sea-level history and the Arctic- Pacific connection via the Bering Strait, as well as paleoceanography of this climatically sensitive region.
Beaufort Sea	
753	To understand Arctic Ocean paleoceanography and its relationship to abrupt climate change by recovering unprecedented high-resolution records from the Arctic Ocean spanning the last two glacial cycles.
797	To constrain how climate change that commenced at the end of the Last Glacial Maximum (warming and sea level rise) has affected climate-sensitive (permafrost and hydrate-bearing sediments) deposits in two Arctic settings
806	To assess geologic processes caused by marine transgression, determine the cause of observed seabed release of methane and to estimate the sensitivity of this environment to climate change in the Arctic.
Lomonosov Ridge	
708	To investigate Arctic Ocean paleoenvironmental history through Cenozoic times and its relationship to the global climate history.
Morris Jesup Rise	
756	To address key tectonic and paleoceanographic questions that are central to our understanding of the Cenozoic evolution of the Arctic Ocean: the opening of the Fram Strait and the Neogene evolution of circulation and sea ice characteristics within the Eurasian and Amerasian basins.

Antarctic MSP Proposals Map



A. Moscariello asked about if just ECORD or all of IODP can use the Bremen repository. D. McInroy said that as IODP will continue to exist, there is more autonomy for the IODP operators. At the same time, all IODP components will work to reach a level of consistency, so that the geographic distribution of the cores will remain the same. Bremen provides IODP core archives that come from the Pacific. G. Camoin said that it is the same for the FBs, which will prioritize the expeditions. The Chair of each FB will attend the other FBs as well, so there is coordination between the 3 platform providers. There will be the same standard measurements maintained and FB communication. R. Gatliff said that before IODP-MI coordinated the Panels and now the structure has been reduced to three main panels. PEP is the most important, as it ranks all of the IODP proposals, and is the only truly international panel. All proposals that are suitable for the MSPs come to Europe and ECORD decides if it can implement the platforms. All of IODP use a safety panel and a site characterization data. G. Camoin said that there are many industry representatives on the ***Environmental Protection and Safety Panels (EPSP)***.

A. Moscariello asked how ECORD builds the budget for such an operation. Is the operation based on the budget constraint or does the operator try to answer the scientific objectives. D. McInroy said that the goal is to primarily meet the science objectives, but there are overarching budget constrained.

A. Moscariello asked who usually gives the green light for the operations budget? G. Camoin said that the FB decides on the allotted budget balance and science objectives. Following this, the Council Funding Agencies approve the recommendations. R. Gatliff said that there are chances to go back and say if there is enough budget for an expedition, such as in the Lomonosov bridge mission, where ESO asked for extra funds and the ECORD countries' funding agencies approved the request.

Where does the staff come from? None of the BGS staff is a full time ECORD staff.

What is done with the cores? D. McInroy said that the cores are cut in half. There is always a working half and an archive core remains untouched for 5 years, after which samples may be taken if the working half has been fully destroyed.

Does everyone who asks for access to the cores have to have a scientific goal? D. McInroy said that if someone has to come to look at the samples then there is an obligation to produce a scientific publication. If industry acts as an ECORD member, then industry can apply for access. The sample request must show that the measurements have not been done before.

Does everyone have to be part of the member state or just the chief scientists of a group? The country has to be an ECORD member. R. Stein said that after 5 years, everyone can have access to the samples.
What is a possible frequency for the Arctic expeditions in the future per year?
R. Gatliff said that it depends on the expedition's cost. Currently the ECORD is reviewing two such expeditions per 10-year period, but more opportunities would be available if the other programs' and industry's involvement are considered.
Can the rock drill be disconnected from the ship? R. Gatliff answered that that is not possible, the drill has to be pulled up, as it was done in a previous Arctic expedition to avoid ice-berg damage.
R. Stein said that he was at a Chikyu workshop last week and one such proposal did not go through due to environmental concerns, but it is one of the top proposals for paleo-science. It was discussed to use the Chikyu but then it was decided that it is too expensive. An MSP could be used 500-meter water depth. Would an MSP riser drilling be less expensive for the Santa Barbara Basin? R. Gatliff said that ESO has not considered this option and it will need to look further in the costs of such an operation. The group of industry members recommended that ECORD should have a budget with some contingency options. R. Gatliff reminded that the day rate for ships vary quite a bit and for this reason so would the budget estimates.

4.5 The ILP vision (A. Moscariello)

A. Moscariello said that the **ILP meeting objectives** are to raise awareness of the new ECORD organisation and 'hot' ongoing scientific projects, to build a new ILP team, to understand the role of ILP within the new ECORD organization, to receive input/feedback from Industry and Service Companies, and to agree a ILP's modus operandi such as the communication, meetings, and membership.
He said that the ILP vision is to create a link between academia and industry by forging and fostering a mutually-beneficial relationship. The panel mainly comprises representatives from interested Industries and Service Companies and the IODP Engineering Development Panel representative to provide the ECORD ILP with a link to international Industry and IODP-related technology development.

ILP-Terms of Reference 1

The ILP is to provide support and offering guidance to the academic community on the appropriateness of the programme for meeting industrial and related scientific objectives.

The ILP must identify within the emerging programme, the topics of interest to the industrial community and to suggest others that might be initiated by industrial members, but developed jointly with academics.

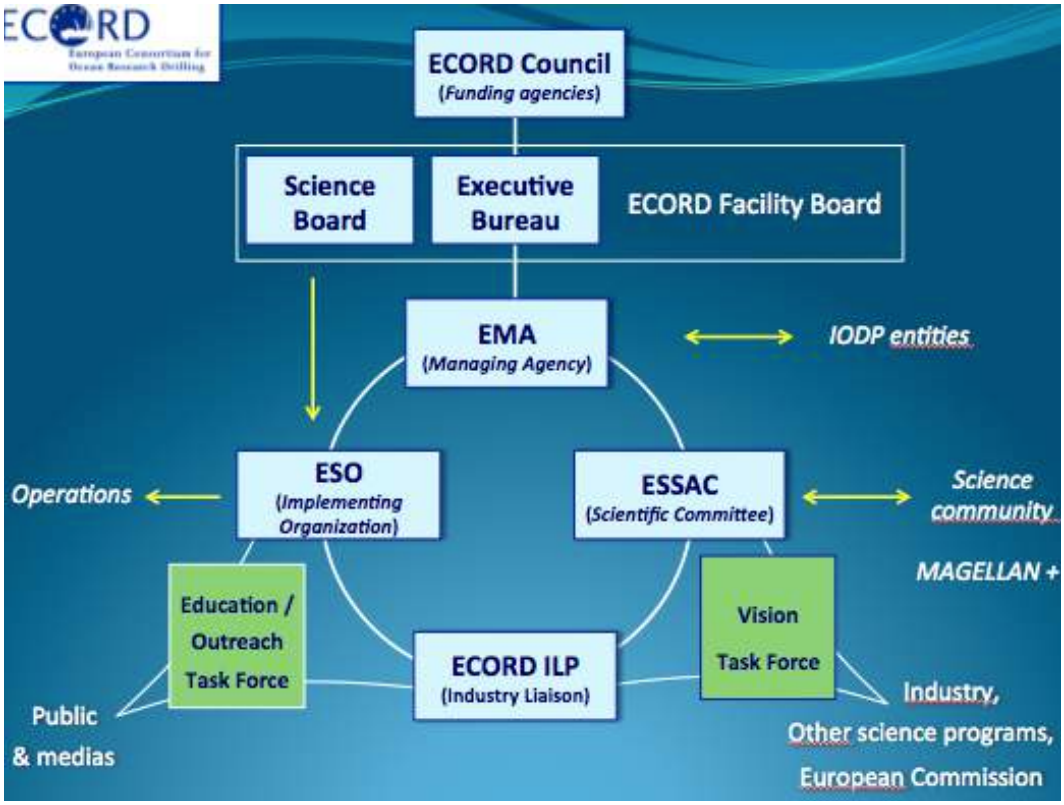
Also, the ILP is responsible for the facilitation of mutual communication and cooperative scientific activities between IODP and related industries such as petroleum, mining, technology-development and innovation, engineering etc., with the aim of benefiting deep-sea drilling science and technology.

ILP-Terms of Reference 2

The ECORD ILP seeks to maximize economic benefits from sharing resources, such as manpower, the drilling of sites, the development of joint drilling and sampling technologies, core and data analysis, and improved downhole measurement and observatory capabilities.

Finally, the aim is to facilitate the development of joint academic and industry drilling proposals from the ECORD countries.

A. Moscariello showed a diagram of the ECORD structure. The ILP shares a communication link with the VTF and the ECORD O& E Task Force.



S. Luthi asked if ECORD is looking at project-based support from industry for a continuous annual period, which in his opinion would involve a big decision from industry. He said that an Arctic mission will draw a lot of industry interest. G. Camoin said that whatever option is possible, it will be considered by ECORD. R. Gatliff said that such a funding matter depends on future science-industry involvement interests.

R. Stein said that seismic data could become available for the 100 top meters of a project, discussed at a previous workshop, which meets the main paleo-objectives. Such funding may be also done on a project basis.

S. Matthews asked if IODP has a map of the ice behavior and what is the logical place to go to. D. McInroy said that for the Arctic, ESO has used different methods to predict the ice movement 40 hours in advance, including the use of two ice-breakers plus a drillship, which was also an icebreaker. Such an Atlas of ice movements could be produced but does not exist. He said that industry may assist and be interested in the process of obtaining scientific data about the logical place to study. R. Stein said that the ice has displayed unpredictable levels over the years. D. McInroy reminded that there is available IODP information online about the ice properties.

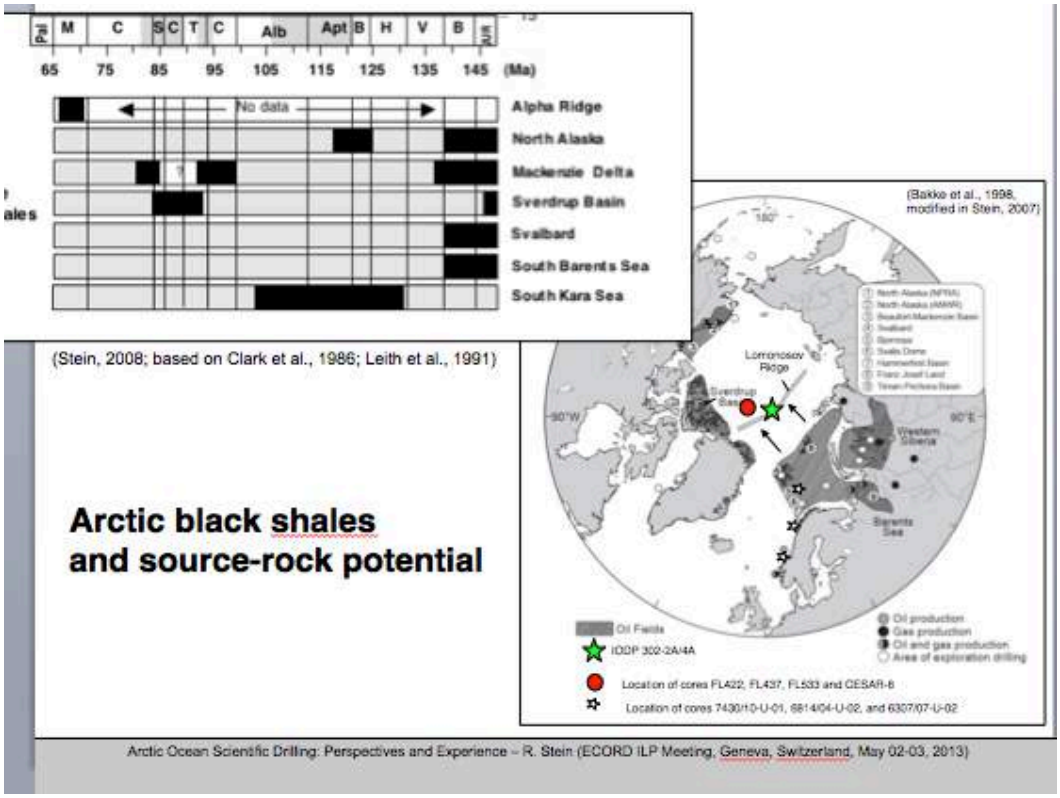
A. Moscariello asked the participants to review the distributed ECORD information document and to bring any comments and questions for the Day 2 meeting.

4.6 Arctic Ocean Scientific Drilling: Perspectives ad Experience (R. Stein)

The Arctic Sea ice map of ice presence was reviewed. R. Stein also presented a diagram of the Arctic solar radiation. There is a strong trend of sea-ice melting, and the question remains if it will continue. For the first time in 2008, scientists were able to use the Northwest passage. R. Stein showed several diagrams related to the Arctic Sea Ice and Climate Change.

Arctic Ocean climate history and sedimentary records.

Early Central Arctic Ocean, the black shales are recovered, in a 5m long core. R. Stein showed a diagram of biomarker data from Core FL533. The black shales are known to industry. There are different types of black shales in the North Atlantic. He showed a diagram of the Arctic black shales and source-rock potential, displayed on the next page.



IODP Initial Science Plan

According to the **IODP Initial Science Plan 2003-2013**, the MSPs will permit unprecedented examination of the history and the exploration of chemically sensitive, ice-covered regions not yet sampled by drilling, such as the Arctic Ocean basin.

The science plan 2013-2023 will offer a new link between the histories of climate change, ice sheet and sea level. The new phase IODP Science plan addresses fur overall research themes including biosphere frontiers, earth in motion, climate and ocean change, and earth connections. The proposed drilling strategy from pole to pole is to use IODP drilling platforms to collect records linking climate, ice sheet and sea level histories on geologic time scales. This also includes the topics of geohazards, permafrost and gas hydrates.

IODP Expedition # 302 (2004)

The **Arctic Coring Expedition ACEX** undertook a study in a poorly known Arctic Ocean, which is the source of emerging fields and new research areas.

IODP-ACEX

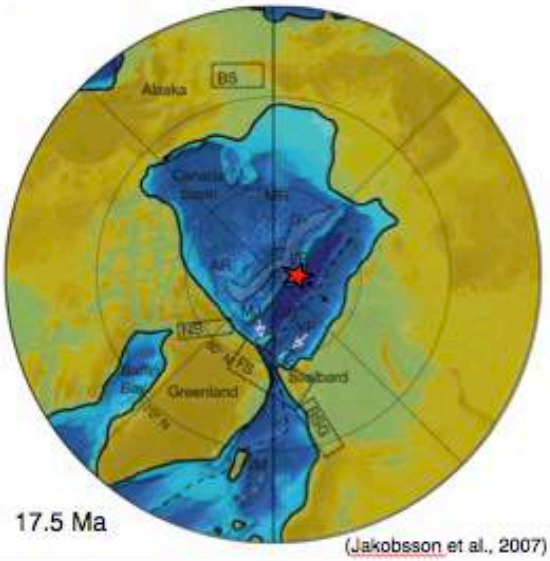
The **ACEX expedition** was a break-through on the Arctic Ocean Research, as it was the 1st scientific drilling. The primary objective was to do continuous coring, recovery and logging of the 430-520 m thick sediment sequence draping the Lomonosov Ridge crest between 87°N and 88°N. The **key scientific goals** are to study the Cenozoic paleo-environments in the central Arctic, the history of sea ice, the Fram Strait opening and exchange between the Arctic and the Atlantic, and the history of rifting, age and origin of sedimentary bedrock.

Middle Eocene Central Arctic Ocean: Euxinic "Black-Sea-Type" Conditions

R. Stein said that a higher magnitude of organic carbon was detected because the Arctic ocean used to be a closed basin. Less oxygen was available and there was a lot of organic matter. A question remains as to when the Arctic conditions transitioned from poorly oxygenated waters to fully oxygenated waters. In addition, anoxic type sediments found, diagrams shown. An Early Eocene graph showed the first evidence for the establishment of an offshore winter sea-ice regime in the Arctic Ocean.

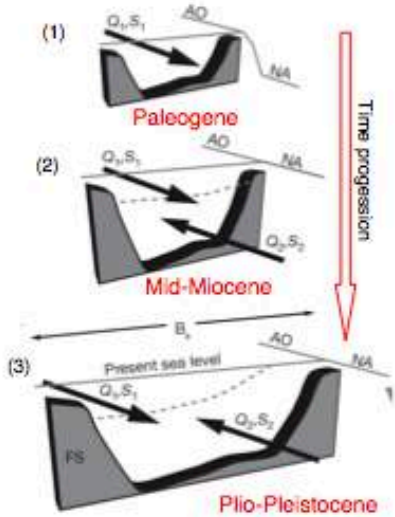
When did the transition from poorly oxygenated to fully oxygenated conditions occur ???

Paleogeography and Paleobathymetry (Late early Miocene)



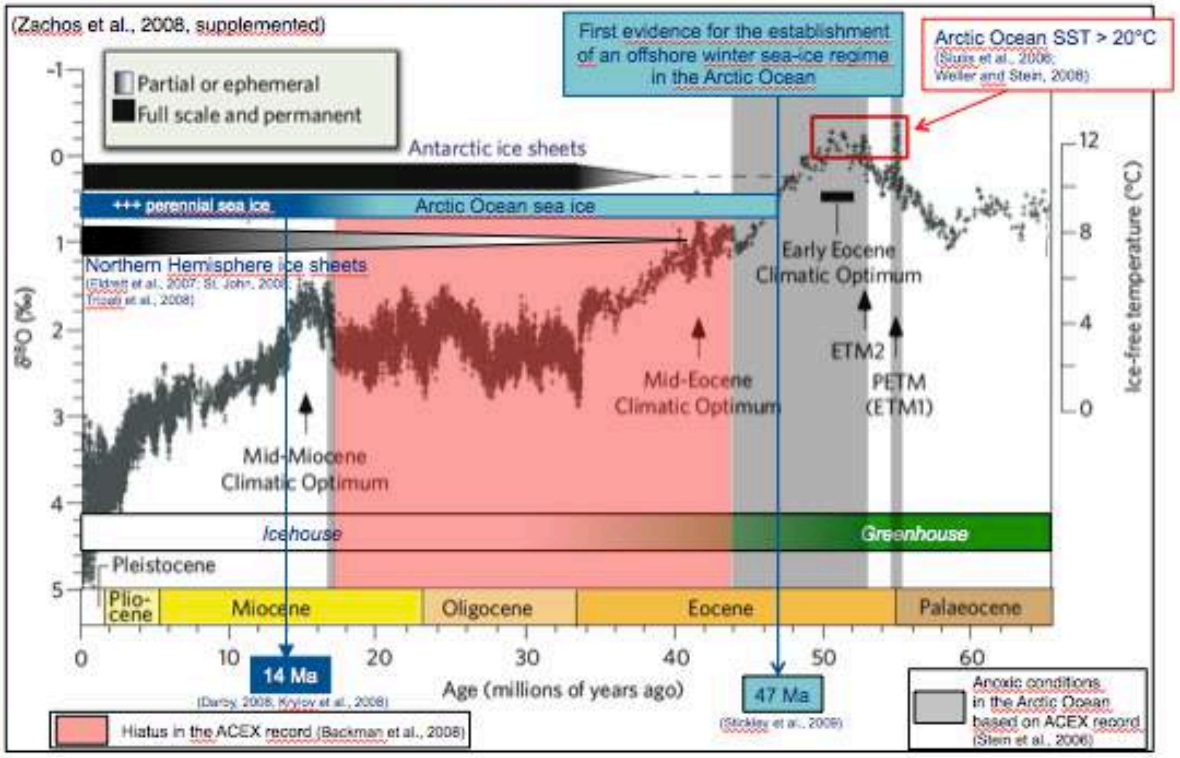
(Jakobsson et al., 2007)

Schematic scheme of opening of Fram Strait and water-mass exchange between North Atlantic and Arctic Ocean



Zebra Unit

Long-term climate change: From Greenhouse to Icehouse

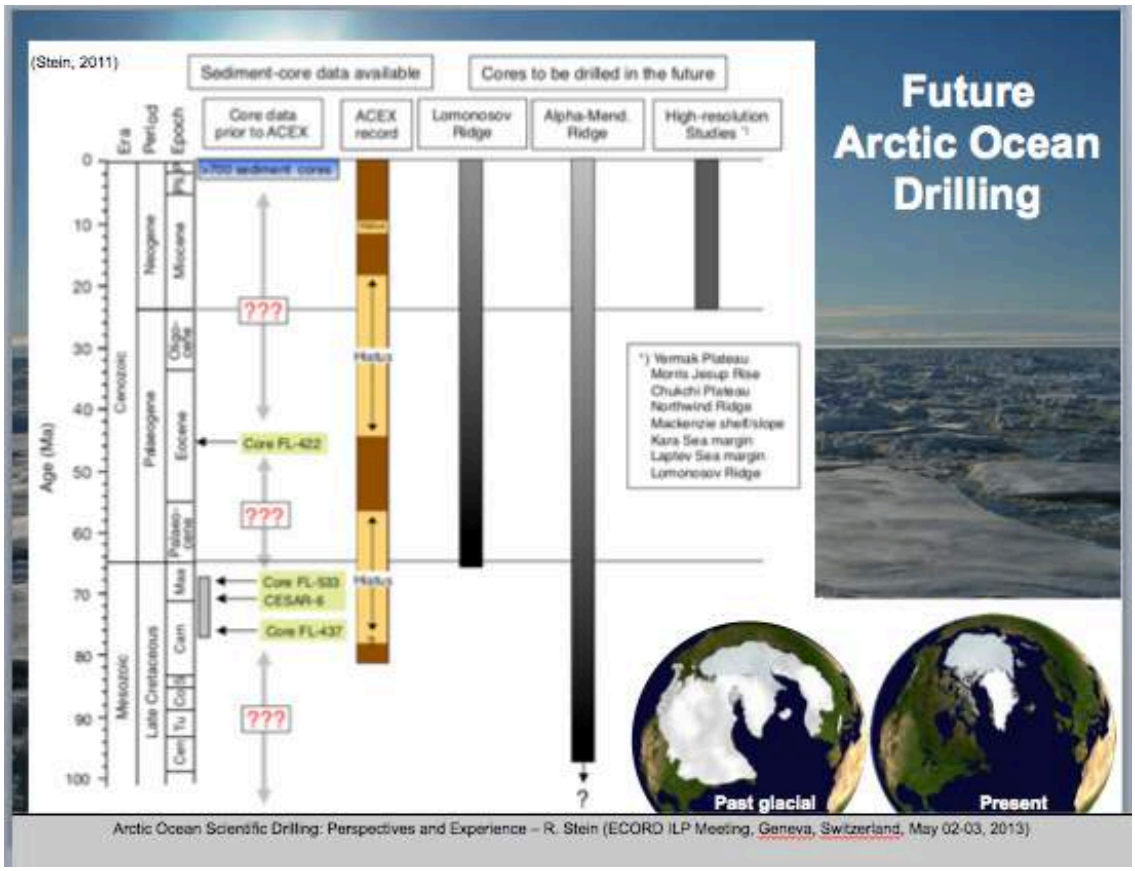


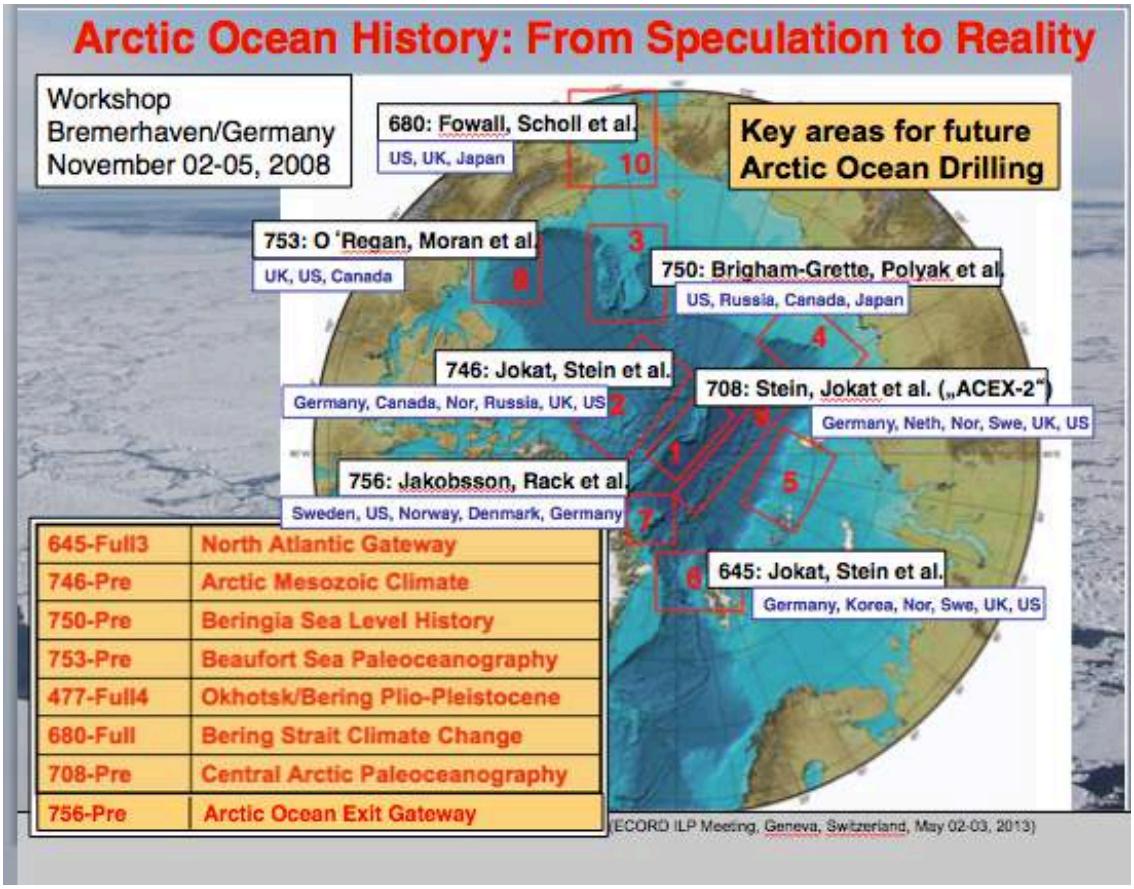
Planning of the Arctic Ocean Drilling: A long way to go

R. Stein showed a list of a series of events and planning groups that took place before and after the ACEX expedition. Following a series of publication from the 1990's to present day, the Arctic shows to be a key area of interest that science should research next.

Future Arctic Ocean Drilling

R. Stein showed a diagram of available sediment core data and the future cores to be drilled.





Proposals "Arctic Ocean Drilling"

R. Stein reviewed a list the Artic proposals that have been deactivated or taken place, shown next.

Decision SPC Meeting Edinburgh, March 2011

645-Full3 North Atlantic Gateway Deactivated *(but: new pre-proposal will be submitted)*

680-Full Bering Strait Climate Change Forwarded to PEP (PEP Dec 2011: submit revised Full)

708-Pre2 Central Arctic Paleoceanography Forwarded to PEP (PEP Dec 2011: submit Full)

746-Pre Arctic Mesozoic Climate Deactivated *(but: pre-proposal will be submitted)*

750-Pre Bering Sea Sea Level Forwarded to PEP (PEP Dec 2011: submit Full)

753-Pre2 Beaufort Sea Paleoceanography Forwarded to PEP (PEP Dec 2011: submit Full)

756-Pre **Arctic Ocean Exit Gateway** Forwarded to PEP (PEP Dec 2011: submit Full)

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Decision PEP Meeting Edinburgh, May 2012

794-Pre Arctic Slope Stability Deactivated

797-Pre **Alaska Beaufort Margin** Develop a full proposal (possibly a MDP with or without 806-Pre)

803-pre Greenland Ice Sheet Deactivated

806-Pre **Beaufort Gas Hydrate** Develop a full proposal (possibly a MDP with or without 797-Pre)

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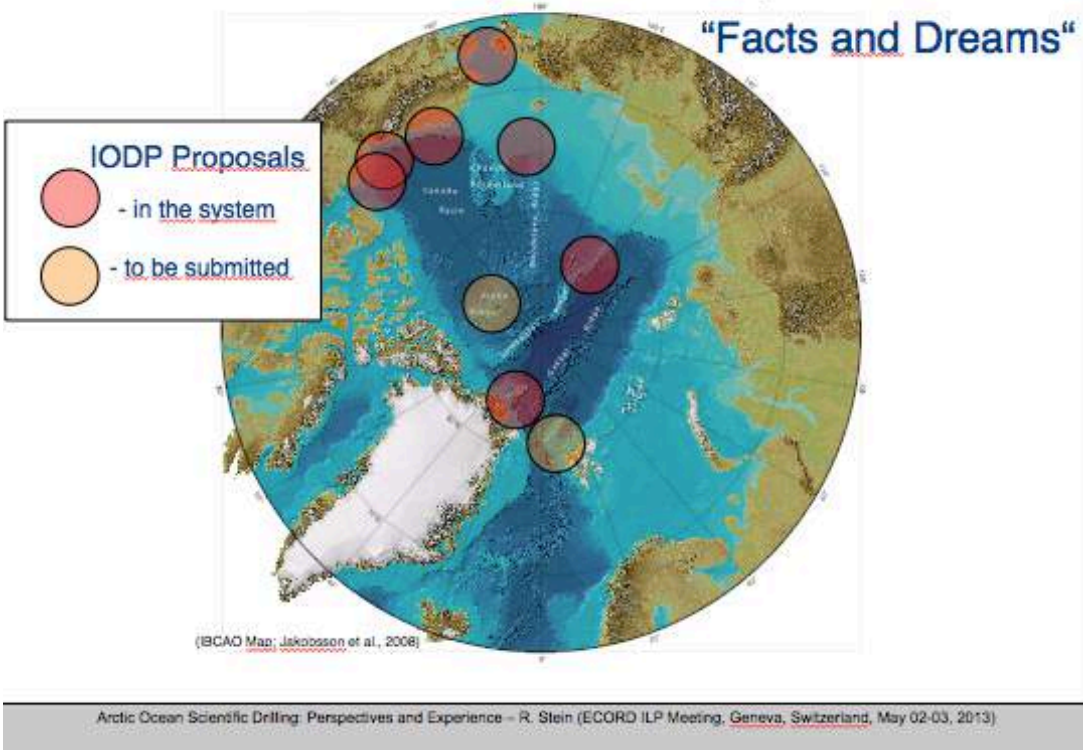
Decision PEP Meeting Washington, January 2013

814-Pre **Greenland Ice Sheet History** Develop MDP

IODP Arctic Ocean Proposals and Expeditions:

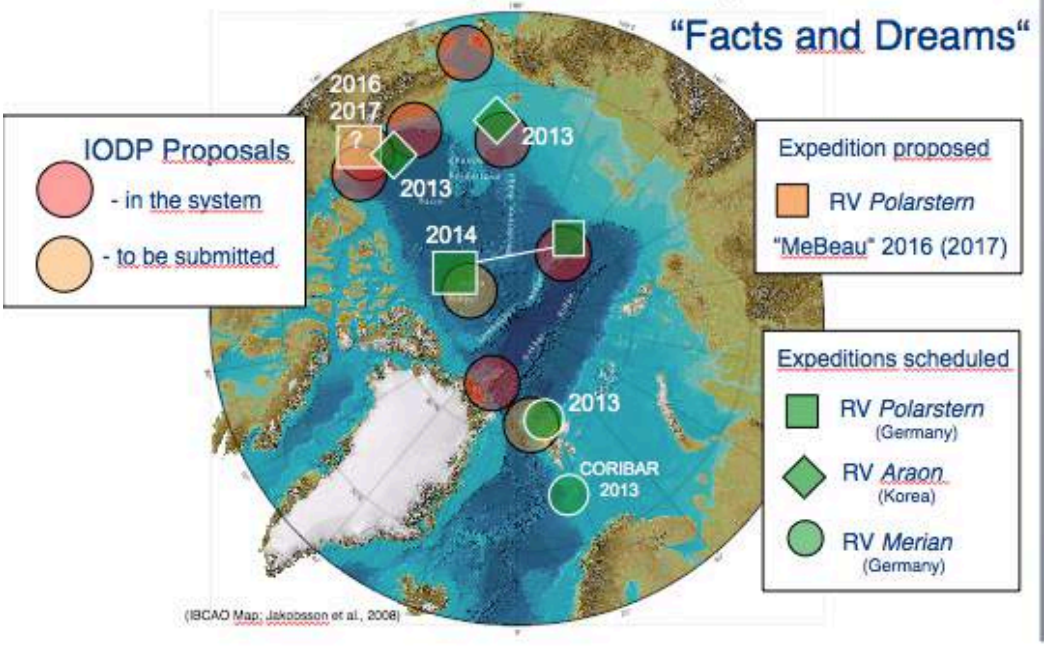
"Facts and Dreams"



Arctic Ocean Scientific Drilling: Perspectives and Experience – R. Stein (ECORD ILP Meeting, Geneva, Switzerland, May 02-03, 2013)

IODP Arctic Ocean Proposals and Expeditions:

"Facts and Dreams"



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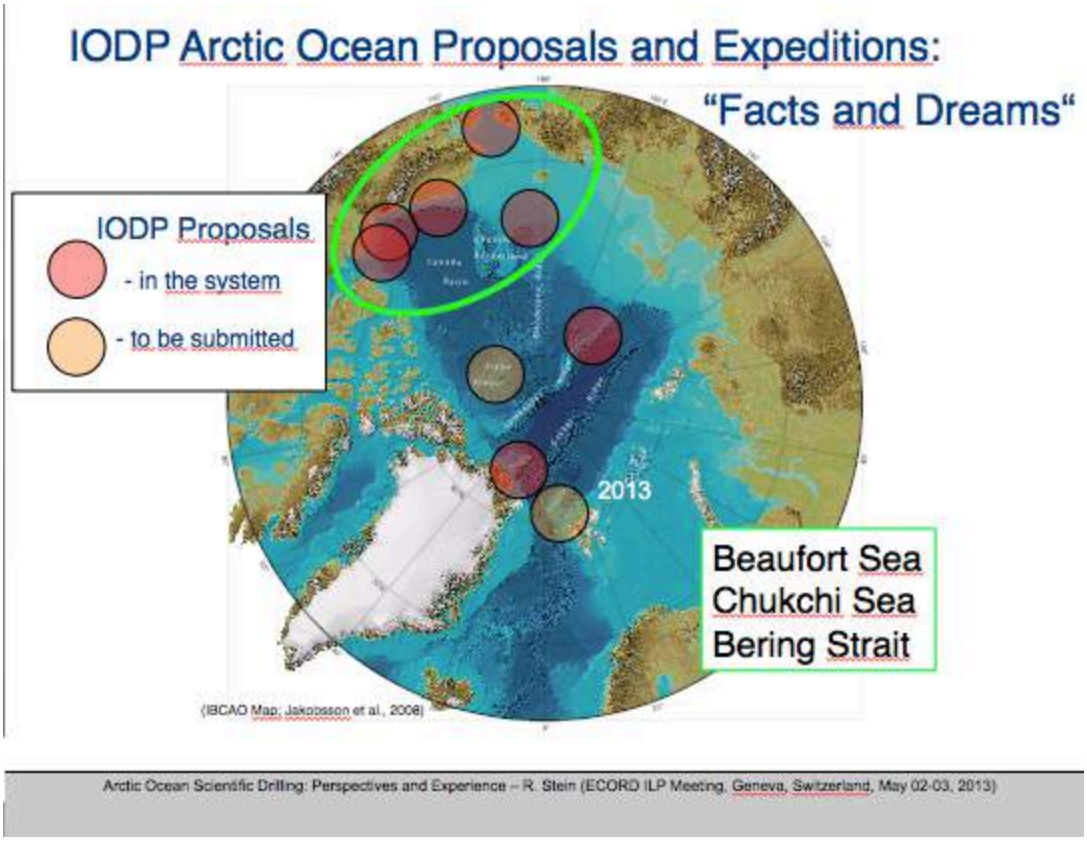


The three current main areas of focus are the Beaufort Sea, the Chuckhi Sea and the Alaskan margin.

Proposal 797-Pre aims to investigate the Alaskan Beaufort Margin investigating the impact of warming since the last glacial maximum on climate-sensitive sediments in the Arctic. The 797 Full proposal will be submitted for the October 2013 deadline. The **Proposal 806-Pre** is an IODP-ICDP proposal that aims to use scientific drilling to investigate methane release and geologic processes associated with warming permafrost and gas hydrate deposits beneath the Beaufort Sea Shelf.

A similar proposal was submitted and upon review the proposal was re-discussed at a workshop in Ohio. The group will submit the proposal for October 2013 and would like to only use the *JR*.

IODP Proposal 753-Pre2 will look to decipher the later Quarternary glacial dynamics of the Northwestern Laurentide Ice Sheet, constrain the timing and flux of freshwater discharge from the Mackenzie River and test the hypothesis that a freshwater outburst from the Mackenzie River instigated the Yonger Dryas. In addition, the study aims to construct a high-resolution multi-proxy paleocenographic and paleoclimatic time-series in order to understand how the sea ice's variability is linked with oceanographic,

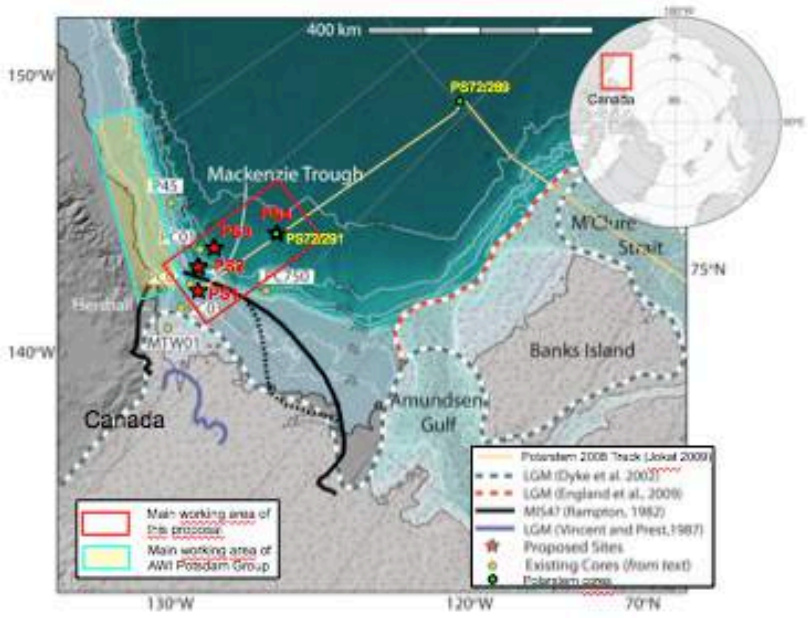
atmospheric and terrestrial changes throughout the late Quarternary glacial cycles. However, there is no real site survey available for this proposal. It was decided at the workshop that the team should go to the area to do an extended site survey with the MeBo, before the IODP proposal submission. The goal is to go at a greater depth.

He showed a diagram of a sediment core of 30k years, which would need a further section sampling in the future.

The **Polarstern Expedition "MeBeau 2016" or 2017**, has specified the need to use MeBo. The MeBo specifications include a drilling depth of 7°m, coring of soft sediments and hard rocks, a core diameter of 55-84mm, deployment depth of 0-2000m. MeBo weighs about 10 tons. The total system's weight is about 75 tons. Transport is planned to take place within six 204 containers.

The drill sites' map is shown on the following page.

Polarstern Expedition "**MeBeau 2016**" (or 2017) (Stein et al.)



Arctic Ocean Scientific Drilling: Perspectives and Experience – R. Stein (ECORD ILP Meeting, Geneva, Switzerland, May 02-03, 2013)

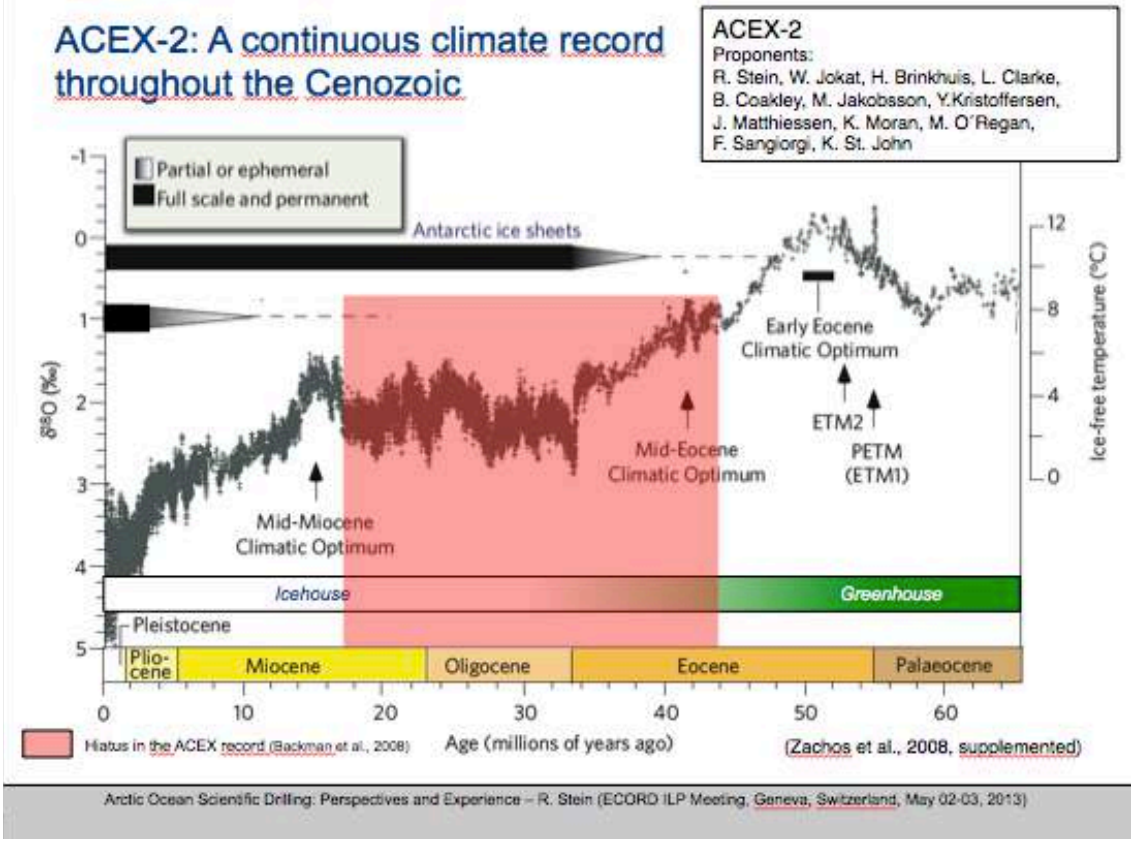
In addition, there is a supplementary **Polarstern proposal to "MeBeau 2016"**, which aims to explore the coastal paleoenvironment and permafrost history in the Southern Beaufort Sea in Northwest Canada.

The **680-Full and 750-Pre proposals** were discussed at the Chukchi Sea Workshop in March 2013. The coordinated full proposals will be submitted for the April 2014 deadline. Proposal 680-Full's research goal is the Bering Strait, Global Climate Change and Land Bridge Paleoecology. Proposal 750-Pre addresses the Chukchi shelf slope transect and the linking of the Beringian and Arctic Ocean history.

The Bering Strain proposals, in total 2 proposals in the system, address the paleoclimate history for the last 2.5M years. It was discussed at the workshop that the proposals groups are working together and plan to submit a coordinated proposal to meet the October 2013 deadline. R. Stein said that in summer time some of the Arctic areas might be drilling with the *JR*.

Central Arctic Ocean

ACEX-2 Cenozoic Paleooceanography submitted as a **708 Pre2-proposal**. R. Stein showed a diagram of the ACEX-2 study of the continuous climate record throughout the Cenozoic.



The Old proposal **746-Pre addresses the Mesozoic-Cenozoic climate and tectonic history** in the Arctic, by looking into the transition from a greenhouse to an icehouse Earth.

IODP Proposals 708 "ACEX-2" Cenozoic is ready to be submitted as a full proposal by October 2013. The old 746 Mesozoic proposal will need further site survey. An expedition is planned in 2014. A new pre-proposal will be submitted in April 2015.

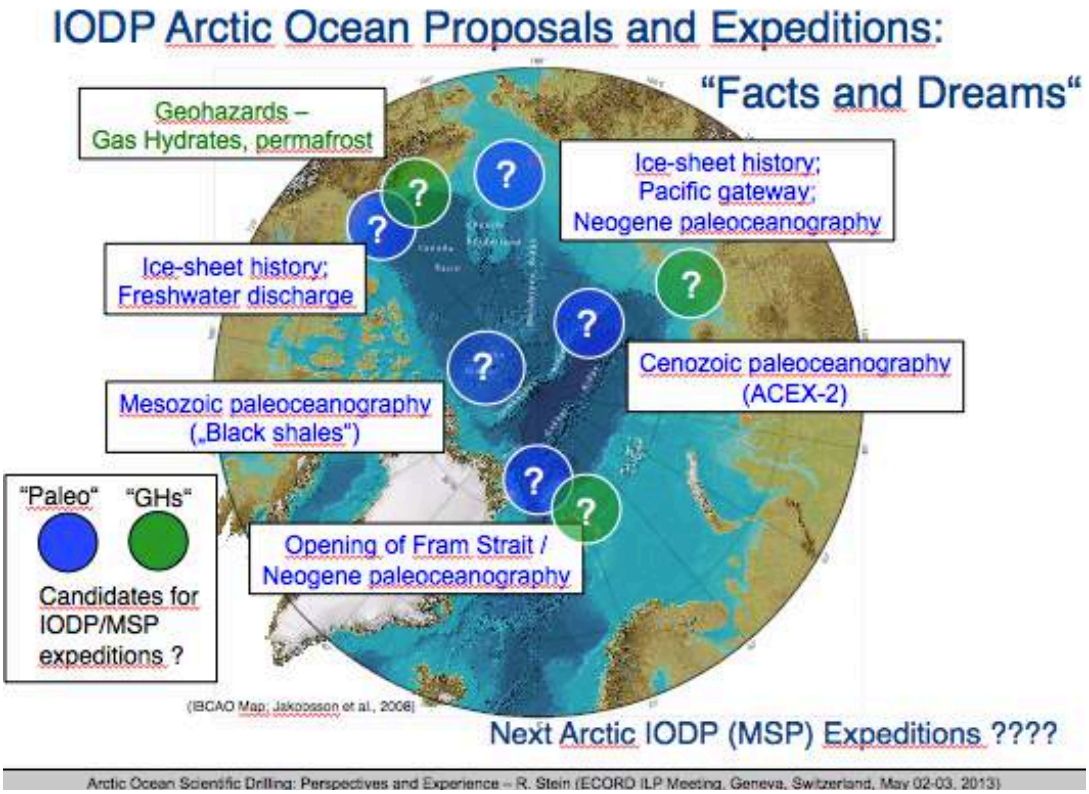
Central Arctic Ocean: Paleoceanography and tectonic evolution.

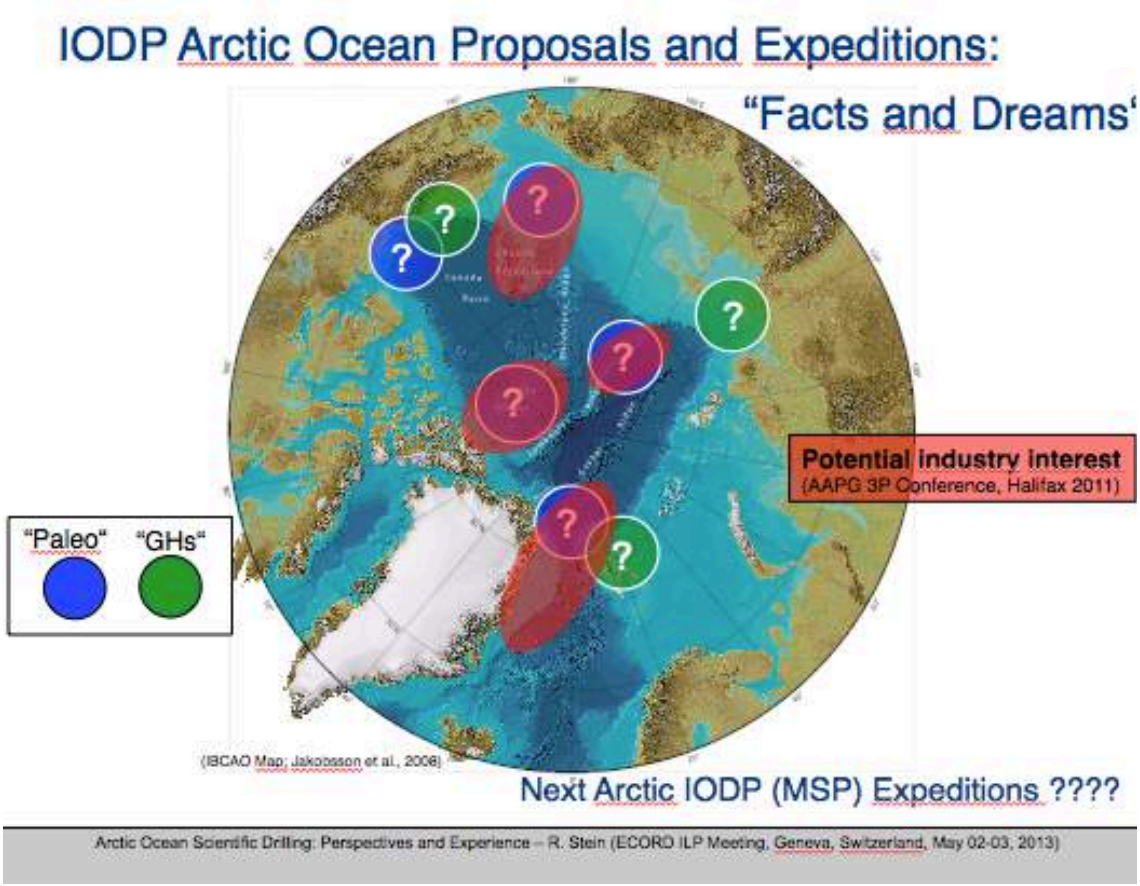
In 1998 scientists tried to reach the area with a Russia ice-breaker, but it was impossible to reach it. It remains a question as to whether there will be an IODP MSP RV Polarstern "AIMeBo" in 2019, looking at the Mesozoic paleoceanography Black Shales an Cenozoic paleoceanography ACEX-2 in 2016. Scientists will submit a proposal for either a MeBo expedition or a real drilling expedition.

The Artic Gateways

Currently there is one proposal in the system and a second proposal will be re-submitted soon. The **Morris Jesup Rise drilling** the Arctic Ocean exit gateway second proposal was deactivated but it will be re-submitted as a 645-Full Arctic Ocean proposal. **IODP Proposal 756-Pre** proposal goals are to study the evolution of the Fram Strait though tectonic and rifting history of the Morris Jesup Rise and the paleocenograohic evolution of the Arctic Ocean Exit Gateway. A workshop was proposed for further discussion and re-submission updates of the proposals.

Some possible IODP MSP expeditions might involve studies of geohazards, such as gas hydrates and permafrost; ice sheet history; Pacific gateway and neogene paleoceanography; freshwater discharge; black shales Mesozoic oceanography; Cenozoic paleoceanography (ACEX-2) and the opening of the FRAM Strait.





During the **Arctic 3P conference** in Halifax in 2011, some industry interests were expressed on collaboration in the Arctic.

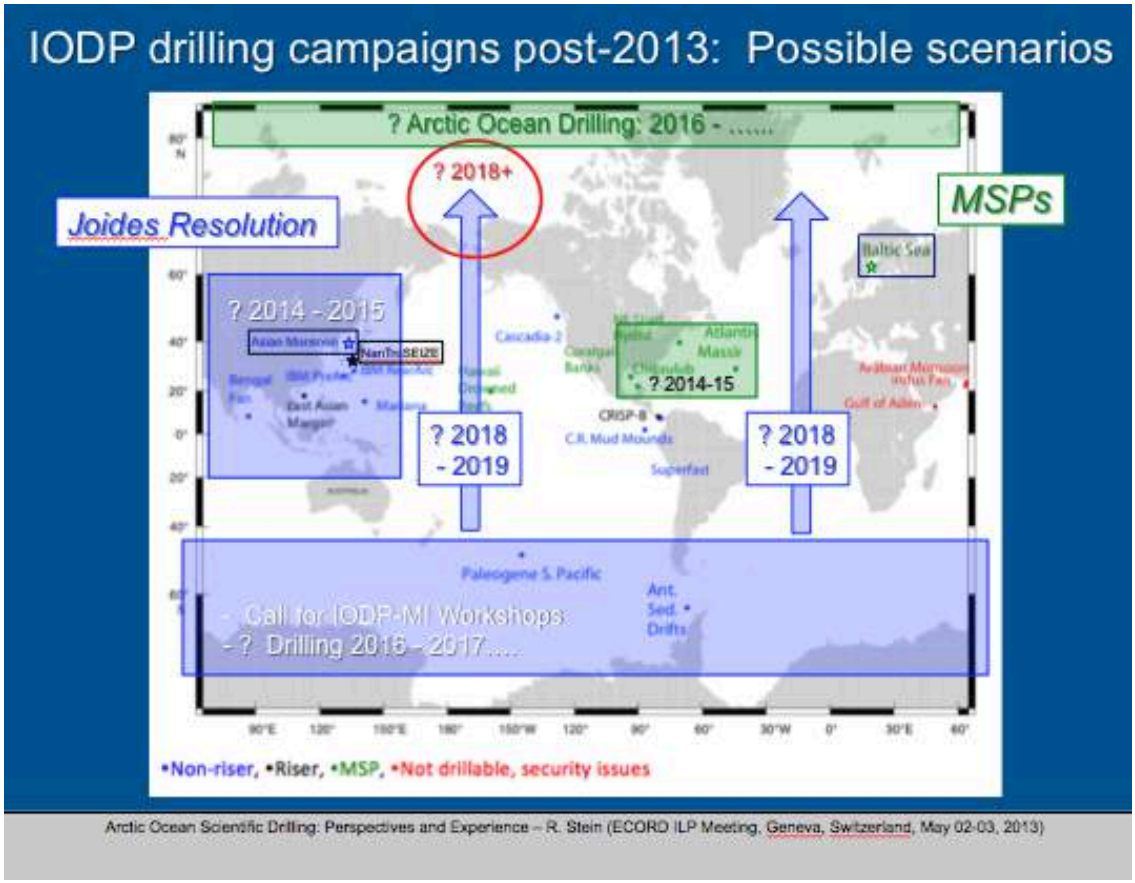
Next Arctic MSP Expeditions?

A Giant Piston corer and MeBo may be applied in the future. R. Stein mentioned that the Stena Drillmax ice drillship will work for Shell in the next 5 years.

Polarstern II: an option for future Arctic Ocean drilling?

The **Polastern II** is a roadmap that has been fixed by the German government. Detailed planning is currently in progress. The Polastern II capabilities include a Moonpool, Giant Piston Corer deployment for 40-60 meters, MeBo and ROV deployment capability, and potential platform for occasional shaledrill-type deployment, for which external funding will be needed.

Regarding the **IODP drilling campaigns post-2013**, there exist possible scenarios for the *JR* to go to Southern Oceana and North Atlantic. For the MSPs, such a possibility may be in 2016 and forward.



R. Gatliff mentioned that there is a joint session on what the IODP scientists may do. A person from Shell and a person from Statoil shared what they thought could be common working. Both had very different interests and approaches. R. Stein reviewed where scientists would go next on the Lomonosov Bridge. There are some very good seismic sections, but there may be data that covers a 150M years period. R. Gatliff said that it is also possible to have some sections with lower stratigraphy, for which they do not have to do a lot of drilling. R. Stein said that there are some test holes for spot drilling, for which they could find the ages for several sections.

G. Thomas said that before the drill, Shell usually does a site survey collecting high-resolution data, but differently from ECORD also collects sea-floor sediments. The boat that does this is like FUGRO, which would probably fit the ECORD-type science. Such drills will be company specific: BP, Shell and Imperial all have acreage studies in the Arctic.

R. Stein said that it has been discussed at a workshop that the scientists who are interested in gas hydrates and climate should contact BP for some IODP-type drilling. It is not know if they are in contact yet with industry.

G. Thomas said that it may be problematic to undertake such projects, because the season is short.

S. Matthews asked where calibration can be acquired along with the data. Also, discussion with the Russians overlap broadly with the research areas of interest. He said that the areas of interest are poorly calibrated.

A. Moscariello asked about the level of confidentially of the proposal at this stage, whether industry will have access to the proposal before it is approved. R. Stein said that the abstract is available online for the pre-proposal. At the very beginning there should be closer cooperation between science and industry. C. Escutia said that the PEP Chair and Magellan Plus participants could provide the full picture. A. Moscariallo will also be involved in the VTF and will have an access to the ECORD vision discussion.

R. Gatliff said that there is a need to get the next step in bringing together the proponents and industry to meet and discuss together. If they do not approach each other, then the ILP could propose that they meet. A. Moscariello agreed that this could lead to important dynamics between science and industry. R. Gatliff reminded that it is important to have PEP decide which proposal is very good.

D. de la Moretta asked about the 708-proposal site survey. R. Stein said that the 708-proposal has its own program so it is not really a site survey. G. Camoin said that the site survey requirements depend on the technology that is being used. The final scientific characterization documents are in the process of being written.

R. Stein asked whether for 2-3 seismics a 150m penetration would be enough. G. Camoin said that yes and that they could further discuss this question.

A. Moscariello asked how comfortable the industry group would feel to share with IODP some of their ideas and challenges. Do they see it possible to discuss these challenges?

G. Thomas said from a commercial point of view, industry is not interested in the climate issues, but on the cretaceous age. There are fundamental topics such as structure of a ridge, behavior of gas hydrates with warming and drilling from a safety view-point, that are all fundamental points of interest. There is a reluctance of sharing information from the industry side, but there probably exist areas of mutual interest: how to construct pipe lines, at what depth should a site be drilled, where is a cased hole to be located, etc. This is the geo-mechanical piece of information that is of interest to industry's drillers. So the drill side of industry should be engaged in this information as well rather than only industry's geo-science side.

T. Wagner mentioned that a MagellanPlus drilling workshop would be soon held in London, for which S. Robinson et. al. are expected to produce a summer report. Such a report could provide valuable information. There will be no discussions about the Arctic, because it was decided that not enough people were present in the group to cover that topic.

S. Matthews said that sharing should be possible at a sensible level. The conversation could expand on the Arctic technological groups presentations that focus on anything but geology. A. Moscariello said that that all companies have difficulties to acquire by themselves access to information and none of the IODP Arctic drilling was seen as a threat to the environment. R. Stein clarified that there was newspaper titles claiming that the IODP efforts are oil-industry driven.

D. de la Moretta said that IODP has to keep its reputation 100 % in order to collaborate with industry. A. Stevenson said that that is a problem, because IODP has been able to go anywhere before by saying that it is a purely scientific research program. For example, the ability to drill might have been different in the Barrier Reef expedition if ECORD had declared a relationship with oil industry. It is important to arrive at an expedition site with an honesty that the scientific integrity is still there. Industry will work in the Arctic regardless, because interest of hydrocarbons. A message to think about is that science could come forward along with industry to answer scientific questions.

- **Meeting dismissed at 18:00 hrs.**

May 3rd **9:00-13:00**

4.7 Start/Reconnection to the Day 1 Discussion

A. Moscariello reviewed the Day 1 discussion topics.

4.8 Deep Drilling in the Mediterranean

A. Moscariello mentioned that the **Deep-Sea Record Mediterranean Events (DREAM) project** will be discussed at a workshop in Brisighella, Italy. The workshop participants will include A. Camerlenghi from National Institute of Oceanography and Experimental Geophysics, Trieste Italy, the *DREAM project partners* as well as M. Rabineau from the University of Brest, France and the *GOLD project partners*.

The Mediterranean Today

A. Moscariello said that the Mediterranean today consists of a vast tectonic and Sedimentary Province, several Sedimentary Basins, a long and complex geological history between 2 major moving tectonic plates. About 30 million years ago, there was rapid Change at a geological scale along with strong geodynamic activity.

A. Moscariello showed several maps of the Mediterranean, displaying several areas of subduction and structural complexity, the Mesozoic ocean crust 200 Ma, the Cenozoic ocean crust 35 Ma, the Neogene shortening, and the Neogene post-orogenic extension.

The Mediterranean project addresses the Messinian, which is a key area. The Messinian is an outstanding event, reproducible, which, because of the amplitude and speed of sea-level variations, forced huge geographic upheavals all around the Mediterranean and its appendices. A. Moscariello showed a map of the Messinain Event 5.96/5.33, which was an extreme, brief, complex and unique 1500-meter sea-level fall in 600,000 years.

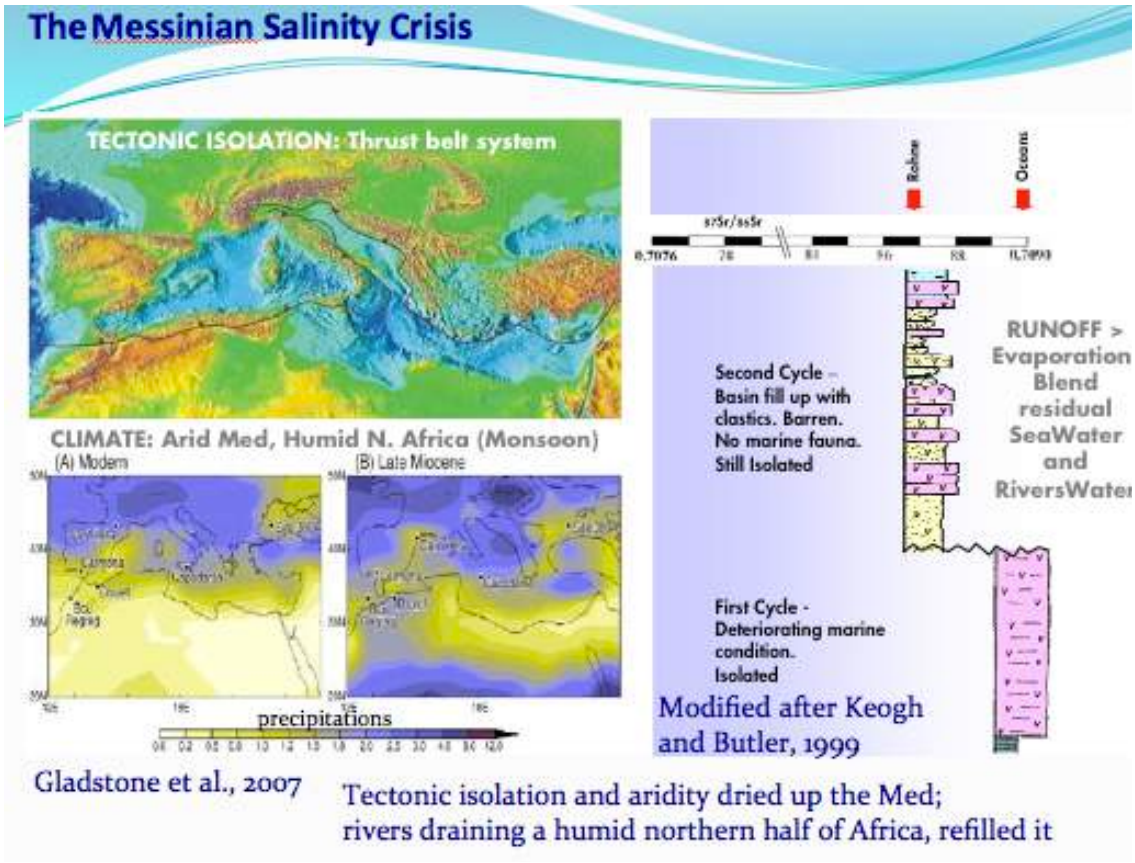
DREAM

The DREAM projects explores the Messinian because about 6 million years ago the Mediterranean Sea was transformed into a giant saline basin, one of the largest in the Earth's history and demonstrably the youngest.

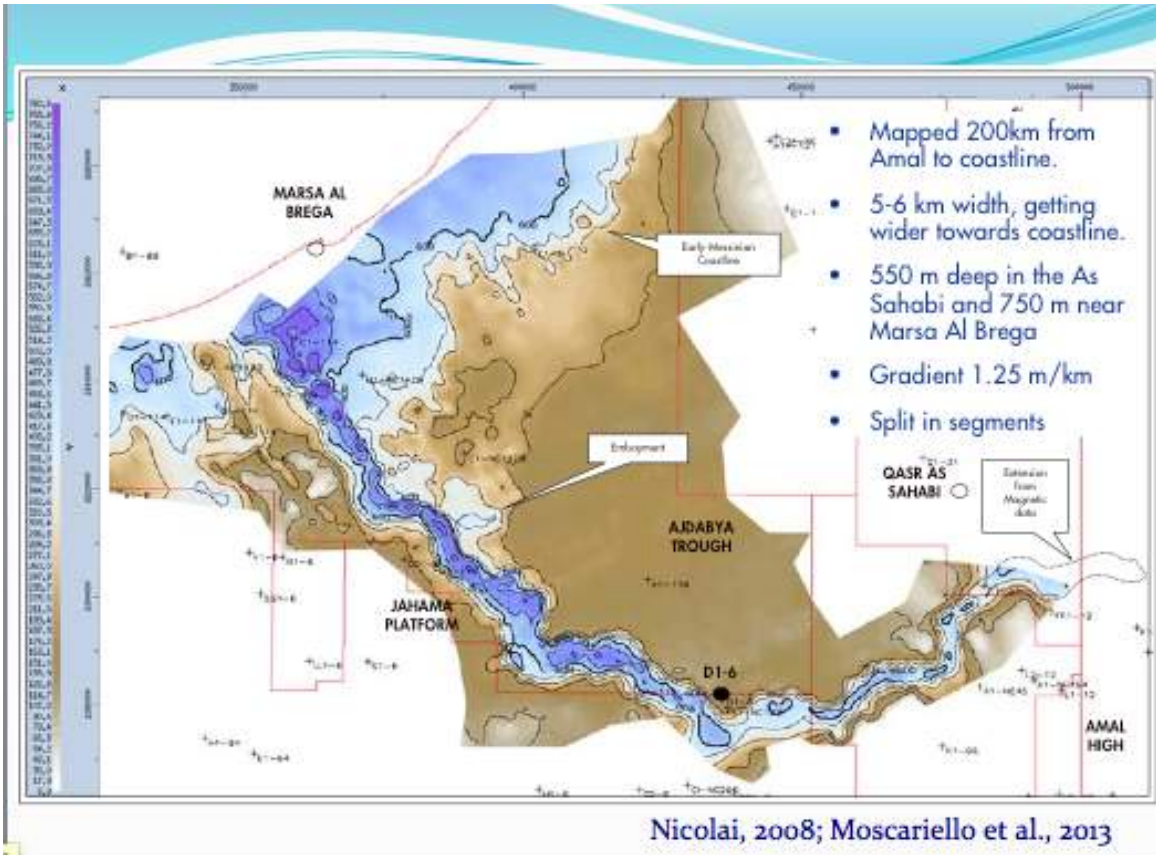
This event, commonly referred to as the **Messinian Salinity Crisis (MSC)**, changed the chemistry of the global ocean and had a permanent impact on both the terrestrial and marine ecosystems of peri-Mediterranean regions. There are more than 1800 scientific publications concerning the MSC that have been produced, about 900 in the last 10 years alone, demonstrating the enduring scientific interest and importance of this event.

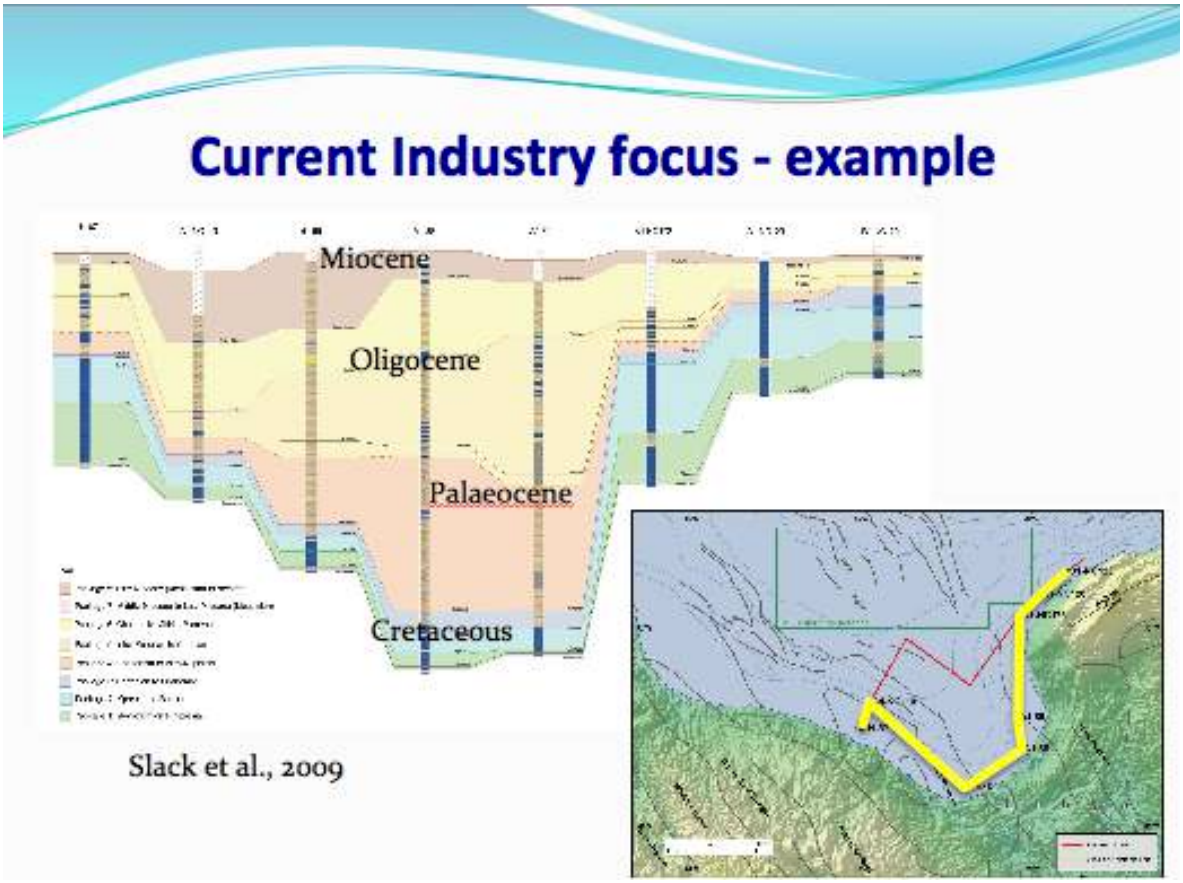
The Messinian Salinity map shows an important trust belt system, showing the

separation of the basins. Precipitation was more important in Africa during the Late Miocene.



One of the consequences of the incisions was sediment transfer from the continent to the basins. Recently Shell has done interesting work in Libya on the interpretation of the Sahabi incision showing a more detailed image of a valley infll system with up to 700 m thickness. Researchers were able to connect the internal system with the basin. BP also published some additional data. The research target is the Paleocene and Oligocene, and possibly the Cretaceous.


MARSA AL BREGA
Early Messinian Coastline
Embayment
QASR AS SAHABI
AJDABYA TROUGH
JAHAMA PLATFORM
D1-6
AMAL HIGH
• Mapped 200km from Amal to coastline.
• 5-6 km width, getting wider towards coastline.
• 550 m deep in the As Sahabi and 750 m near Marsa Al Brega
• Gradient 1.25 m/km
• Split in segments
Nicolai, 2008; Moscariello et al., 2013



The Post-Messinian Mega Flooding

The Post-Messinian mega flooding was probably associated with the climate, as the system was filled with water. There is a publication on the evidence of desiccation of the Miocene. Since then, many studies have taken place but there ahs been no sampling of what happened under the Messinian. The onshore pre-Mesisnian processes are unknown.

Open Scientific Questions

There are two schools of thought on the Messinian Chronology. One states that the water was high in salinity but not very shallow and another states that the Messinian was a major crisis for both geology and geologists. The Lago Mare (sp?) are units that are very important for the understanding of source locks in the petroleum industry.

Some of the posed open scientific questions are:

What is the MSC chronology and shallow/deep-water correlations?

What is the location, timing and geometry of the gateways?

What are the modalities of halite deposition and evaporite facies?

What are the effects of halite deposition and margin erosion on basin evolution and formation fluids?
What is the potential of preservation of ancient microbial life and its role in evaporite deposition?
And the MSC modeling (climate, tectonic, hydrological)?
Since 1970 there were drilled 50 sites, 120 holes fort he MSC, with 13 km of cores, 44-84% of core recovery. The lack of a riser was a technological limitation for the study. The Messinian models were not based on hard data, as there was no sampling of the deep basins.

Why a new drilling project?

Sub-salt drilling implies the involvement of new technology and safety measures. The deep basins are the only place that could provide a full record of the MSC. The full understanding of the Messinian event will come from the drilling of different depositional settings, with specific emphasis on the Western versus Eastern basins. The challenge will be balancing the science, technology limitations and costs. The sites have the potential to solve the open questions and to obtain good seismic coverage. The water depth, **t**arget depth and thickness of the sedimentary cover**,** along with the sub-salt drilling have to be considered.
The **TerMex, Terra Mediterranean Earth Sciences Experiment** addresses geodynamics and risks, and resources and paleoenvironment. T**he Gulf of Lyon Drilling Project (GOLD) project** was shown on a map. G. Thomas asked if it takes places on the French or Spanish side of the border. A. Moscariello said that it is on the French side. GOLD, however, is far away from the major tectonic disturbance sites.

Why the Western Mediterranean Sea?

From 30 Ma ago to the present, there have been are strong reflectors that disappear when the thickness becomes higher. From geodynamic point of view, it is important to understand the relationship between the oceanic and continental trust, and the nature and density of the continental crust in the transition zone. A. Moscariello showed a diagram of the thick evaporite deposits (halite) and Lowstands in the deep central basin. The question remains as to whether it was really dessicated. The offshore domain remains unexplored. There are four major reasons to drill in the Gulf of Lyon. First, there

is the climate, which is in a transition phase between the tropic and temperate, so scientists can study the transition between the two climatic zones. There is a confined microfossil activity, which can help track the evolution. The marine currents can minimize the effects on micropaleontologic archives. The sediment supply is large, transported by the Rhone River, so it is a good indicator of the processes. The relief will give a large spectrum of pollen and vegetation belts.

3 GOLD objectives

Theme 1 - Margin Formation and Geodynamic

- 1.1. Geodynamical significances of crust in the Gulf of Lion
- 1.2. Post rift sedimentation: a record of vertical movement (subsidence and isostasy)

Theme 2 - Palaeoenvironments, Palaeoclimate and Extreme Events

- 2.1. Messinian Salinity Crisis in the deep-sea basin –was it completely desiccated, when? –
- 2.2. Variation of seawater chemistry, water exchange, and its impact on ecosystem, global ocean circulation and climate.

Theme 3 - Deep Biosphere

- 3.1 - Life at the extreme of the extremes (T, P, salt)
- 3.2 - Evolution of life before, during and after the MSC and local adaptations of the microbial communities

Seismic Data Base

The seismic database has high resolution with higher penetration. There is conventional 3D and 2D multi-channel seismic data from TOTAL, high-resolution seismic from Academia, refraction seismic from Ifremer and + HC exploration wells.

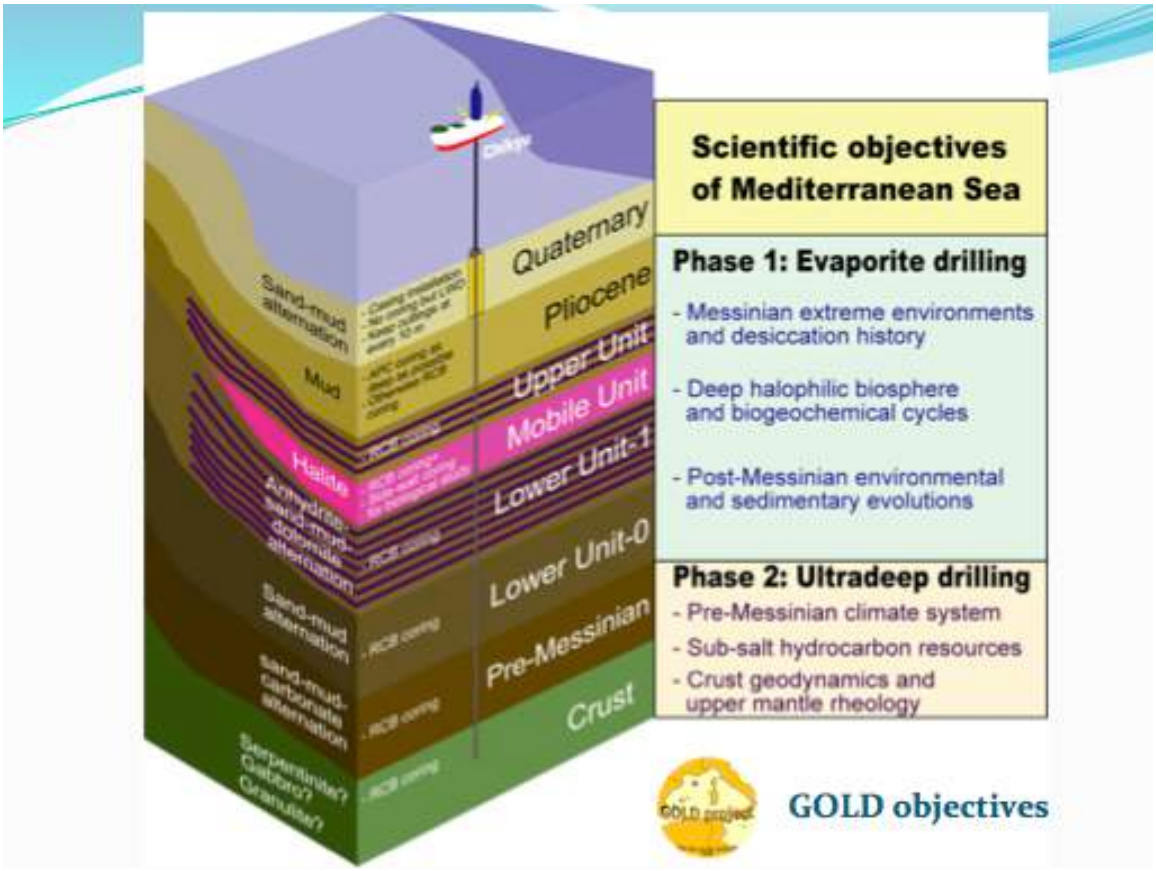
The Miocene desiccation history

A. Moscariello showed a map location, which he identified as the essence of the site survey. The target is a 9km depth. The Miocene desiccation history of the

Mediterranean, involving geodynamic, environmental and deep biospheric consequences, is a proposal for a Riser Multi-phase Drilling in the Gulf of Lyon.

GOLD Objectives Diagram

The GOLD project will need to use the *Chikyu*. The diagram is shown next.



A. Moscariello concluded that due to the abovementioned challenges, ECORD may seriously need industry's support.

D. de la Moretta asked if an oceanic crust access is expected. A. Moscariello confirmed that that is the case.

G. Thomas asked about overpressure prediction, as such a project in industry would involve an about $500M USD cost. G. Thomas said have to start a 40 inch conduction pipe. A. Moscariello said that it is a very challenging project. G. Thomas said that for industry to drill at such a depth, it cost more to drill the upper part. The group discussed that a 6km deep -penetration is a lot. G. Camoin said that at the moment the scientists can achieve a 4000 m penetration. A. Moscariello said that at 4k m the Miocene objective will be met. G.

Camoin said that JAMSTEC was willing to bring the Chikyu to Europe if there are other industrial projects nearby, so in this way the Chikyu can be mobilized for a few years. G. Thomas said that it would be better to take a rig for this industry project, but it would depend on the costs. C. Escutia said that the proposal was stopped because the science panel was not convinced that this was the place to research. R. Stein said that the Chikyu workshop the proponents had to fill out a one-page GOLD-DREAM form. These groups would like to work together and would like to submit a new proposal. In 3 years the Chikyu might be open to the ocean, if the funds are available.

D. de la Moretta asked about the GOLD Miocene desiccation imaging. The group decided that it shows salts mobilizing all of the way to the top. There is an imaging problem with the image, which makes it difficult to see that it is salts.

G. Thomas asked where the group would core with a well like the one in the project. G. Thomas said that that is very expensive. RCB, rotary coring is continuous coring. D. McInroy said that they could use multiple platforms for the study. C. Escutia said that if a proposal shows good science, PEP will keep this in mind along with the possible technical problems. The workshop is necessary as it is the place where the scientists will examine the science, technology and costs.

G. Thomas said that the proponents should evaluate the level of confidence that they will find hydrocarbons. There is a strong interest in the Oligocene, which consists of strong pressure. A. Moscariello said that he was impressed with a Chikyu project drilling through trust fronts, so the issue of pressure must be addressed. G. Camoin said that JAMSTEC's engineers also work with industry, so are aware of the pressure problems and will indicate if the drill is feasible.

G. Thomas asked what the proponents are looking for in the crust. A. Moscariello said that there is magnetic data. D. de la Moretta said that it is important to see the midflow etc. The group discussed the issue that it must be considered how such science-industry cooperation will be interpreted by public opinion.

R. Stein asked about the DREAM team members, as there is a US group that has a proposal about using the Chikyu to drill through the salt, and the shallower 4km. The salt is at about 3 km. They would like to go in three main areas. G. Thomas said that if prime motive is to get core material, salt is mobile, so such a drill will be expensive. This is the ECORD best chance to 'piggy-back' on an industry project to see if industry will drill for a few additional days for ECORD aside from its industry project.

4.9 The new ECORD /ILP Challenges (A. Moscariello)

The ILP challenges are the more difficult environments and gaining accessibility, to environmentally, socially and politically sensitive sites. Other challenges are posed by the deeper wells, deployment of expensive technology, and the public's perception in terms of long-term versus a short-term view. For example, the use of a oil and gas platform costs between $250k and $400k USD per day, which is relatively cheaper compared to the *Chikyu*.

In addition, despite ECORD's large amount of funding available, there are limits to its possibilities. How can we ensure the progress of science through expensive drilling exploratory projects while striking a balance between scientific and industry needs? Some solutions include common vision, common objectives, co-funding structure, etc.

ILP Team Communication

How do we want to keep in touch and become involved? Some possibilities include the web page, an annual/ biannual meeting, project specific (DREAM) communication, at International conferences such as the 3P Arctic, and etc.

The ECORD ILP members contact list, shown next, will be soon updated.

ECORD ILP Website

A. Moscariello showed the EORD ILP website: **www.ecord.org/ecord-ilp.htlm.**

Working with Industry

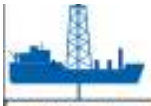
Working with Industry may involve active participation to workshops, such as the MagellanPlus workshops, solving confidentiality issues that may involve split stratigraphic interests, funding versus permission to publish, and issues in working with small companies versus large companies, such as Caern, Noble, etc. A. Moscariello concluded that there is a need to establish a common vision.

4.10 Industry cooperation, funding model, environmental and ethical issues (R. Gatliff)

R. Gatliff introduced a list of the **Risks, Reputational & Ethical issues Associated with IODP/ECORD**, which includes the following issues: Technical & Staff capability: BGS, Bremen, EPC, CNRS; Contractual: ESO-CNRS, within ESO, with contractors, with funding agencies, other co-funders; Financial: Project planning; contingency; Environmental:

sensitive areas; spills; ship damage; **Site Characterisation Panel (SCP), Environmental Protection & Safety Panel (EPSP)**; Engineering Panel; Health & Safety: key area: daily meetings: good record; Political – where we work – sensitive areas – pirates ; and Work with industry.

R. Gatliff reviewed three tables listing the staff's capability in reference to the ECORD partners, the financial aspect of project planning, and the environmental aspects of an operation.



Staff capability: ECORD Partners

Staff Capability	Comments	Additional mitigation
Project Management Team (PMT)	Management Team: Bob Gatliff (Chair ESO) Dave McInroy (Project Manager) Dave Smith (Operations) Alan Stevenson (Outreach) Ursula Röhl (Bremen) Sarah Davies (Leicester) Gilbert Camoin (EMA)	Regular meetings and telephone conference calls; Quarterly operations reports; Annual project plans Alister Skinner (former Head of Operations) and Da Evans (former project manager) to provide advice Annual project meetings for entire team ESO partners with long history of participation in IO ODP and DSDP
Operational Management	Dave Smith, Head BGS Operations	Support from PMT plus Skinner/Evans
Science Management	Dave McInroy; Carol Cotterill; Sophie Green; Dayton Dove	Strong team of staff scientists.
Logistics	Dave Smith; Dave Wallis; Eileen Gillespie	Extensive experience managing marine operations; New recruits developing skills
Drilling expertise	Dave Smith; Graham Tulloch; Lee Baines; Dave Long	Building links with ICDP (Potsdam) for new program to enhance back-up expertise
Engineering support	Team of 3 mechanical and 3 electrical engineers	Extensive offshore experience
Logging	Leicester, Aachen & Montpellier. Two full time post-docs	Leading well logging academic group in Europe
Lab analysis	University of Bremen	Best facility in Europe with long track record of managing data and running onshore analysis.

Project Planning

R. Gatliff said that ESO is not getting enough responses from companies that do ECORD-type coring. He asked the industry group for future suggestions about this issue.

Financial: Project planning

Financial Project Planning	Comments	Additional mitigation
Evaluating science proposal	Assessed by ESO project team. At least 3 formal meetings (Project Management Team)	Discussed with science team. Discussed with wider IODP community at Engineering Panel and Operations Task Force. Consultations wit industry on options
Call for expressions of interest	Written by ESO	Checked by retired experts Skinner/Evans Assessed by NERC/SSC contracts Submitted to EU Journal Outreach to encourage new interest
Review of Expressions of interest	Assessed by ESO – contractor capability & financial assessment (NERC/ SSC)	Checked by ESO Assessed by ESO and NERC/SSC Invited to submit full tender if applicable
Tender evaluation	Undertaken by ESO with NERC/SSC and external expert	ESO team model alternatives; negotiate with preferred contractor; assess options; select o reject bid on detailed evaluation criteria
Contingency	Evaluate project risks associated with contract	(e.g. Weather, transit time, fuel costs etc) Evaluate with local experts

Environmental: sensitive areas; spills; ship damage; site survey/safety panel; engineering panel

Environmental Planning	Comments	Additional mitigation
Projects in international waters	No project undertaken without full analysis by IODP Environmental Protection & Safety, and Engineering panels	IODP has specialist panels for assessing site survey data and environmental issues. No mission is allowed to proceed without full approval of these panels, which contain international experts from industry and the scientific operations community. Developed ice management plan
Projects in National waters	Full assessment and application of local regulations in addition to high IODP standards	Work closely with National authorities and scientists
Working in environmentally sensitive areas	Detailed plan to limit impact to zero	Detailed plans prepared with platform owner and local environmental authorities. Undertaken on a mission specific basis

Engineering and Technology Panel (ETP) #1

The **ETP** met on November 8th at BGS Edinburgh. The ECORD ETPs will be project-driven and will address what technology is needed to implement highly–ranked proposals so they can be scheduled. The participants will largely vary from meeting to meeting.

The first meeting addressed the **topic of fluid and microbiology sampling from sea-bed drills**.

Participants:

Tim Freudenthal, MARUM (University of Bremen)

John Thorogood, Drilling Global Consultant

Christopher MacLeod, University of Cardiff

Marvin Lilley, University of Washington

Gretchen Früh-Green, ETH Zurich

Masanori Kyo, CDEX (JAMSTEC)

Greg Myers, Consortium for Ocean Leadership

Dave Smith, ESO (British Geological Survey, Marine Operations and Engineering)

Mike Wilson, ESO (British Geological Survey, Marine Operations and Engineering)

Lee Baines, ESO (British Geological Survey, Marine Operations and Engineering)

Dave McInroy, ESO (British Geological Survey)

Carol Cotterill, ESO (British Geological Survey)

Louise Anderson, ESO (University of Leicester, European Petrophysics Consortium)

Sarah Davies, ESO (University of Leicester, European Petrophysics Consortium)

R. Gatliff reviewed the **ETP#1 meeting outcomes chart**, shown next.

ETP#1 Meeting Outcomes

Essential (for Proposal 758)	Desirable (for Proposal 758)	Other / legacy / ambitious

• High % core recovery ✓
• Minimise contamination (incl. time on seafloor)
• Ability to assess contamination ✓
• Downhole logging:
  • Optical imaging ✓
  • Acoustic imaging ✓
  • Spectral gamma ray ✓
• Measure bottom water (CTD) ✓
• Seal borehole with the facility to extract fluid samples in the future (e.g. by ROV)
	• Semi real-time review of borehole images
	• Downhole logging:
	  • Formation Resistivity ✓
	  • Deep UV spectroscopy (DEBI-t)
	• CORK instruments:
	  • Reduction potential (Eh)
	  • pH
	  • Fluid temperature
	  • H2 probe
	  • In-situ fluid pressure ✓
	• Downhole microbial incubation experiments (possibly FLOCS-type system)
		• Downhole fluid and microbiological sampling using a GeoMicrobe Sled connected to the wellhead
		• Fluid resistivity
		• Other IODP minimum measurements (downhole)
		  • Density
		  • Porosity
		  • Sonic
		  • Formation temperature
		• Microresistivity/FMS

Notes:
✓ Ticked items are already available, developed, or are in development for sea bed drills
Underlined items are IODP minimum measurements

Political and Reputational Risks Table

Political & Reputational Risks

	Comments	Mitigation
Political Risks	Working in a specific country or area (e.g. reefs, Arctic, East Africa)	Reviewed at Facility Board Reviewed by ECORD Council Reviewed by Science Advisory Panels
Co-funding	Overlapping interests with other projects – e.g. European Union, minerals industry; oil industry	Developing a range of options for workin with industry ECORD and IODP outreach programme. Science programme that is meeting international science objectives
Reputational Risks	This is a tremendously high profile international science programme, which has provided excellent science and reputational enhancement to ESO and ECORD members	Project planning Contractor capability Clear science plan Outreach programme

Examples of working with Industry

R. Gatliff said that the Canadian ICDP Malik project was co-funded by JAPEX company. ICDP has worked with industry. The Chikyu works regularly with industry as well, by drilling holes and making gas discoveries, e.g. the Cairn Energy company in Sri Lanka. The *JR* has worked occasionally with the oil industry by doing separate projects, rather than co-funded projects, in order to gain surplus support for the IODP Programme. The *JR* has operated in West Greenland, Antarctica and the Arctic.

In summary, both IODP and ICDP have successfully worked in sensitive areas, worked with industry, and gained additional funding through for platforms through other work.

What makes an excellent proposal?

An excellent proposal consists of several main elements: big science – the usual major questions and hypotheses required for grant funding; global application; traditionally a work programme of around 60 days, but the MSPs vary 20-90 days, and the *Chiky*u may take about 90 days; the level of investment and skills that cannot be provided by an individual worker or one research group; iterative and open communication between proponents, PEP and the Operators to nurture proposals; proposal structure, review and planning processes are comprehensive and designed to turn exciting science into successful expeditions. A successful proposal also involves the technical planning, implementation and financial responsibilities that are managed within the programme.

Complementary Project Proposals (CPP)

R. Gatliff said that with a significant level of funding, ECORD may do an extra proposal and mission. There are many available documents on the IODP website that give further information about **the CPPs**.

The CPPs are scientific proposals with 70% funding for the Platform Operating Costs. The science costs and remaining Platform Operating costs are covered by IODP. A CPP must meet the normal Site Characterisation and Environmental Protection and Safety Panel requirements. In addition, a CPP must follow the normal IODP rules for co-chiefs and science party, IODP samples, data and obligations policy that defines the moratorium period, and the data access and publication responsibilities. The CPP process involves a fast-track approval system. ECORD can now vary these terms.

How to Apply

Further details are available on the ***www.iodp.org*** . The applicants must prepare a full proposal or a preliminary proposal. The proposal goes to the **Project Evaluation Panel (PEP)**. A successful project should address the interest of the global scientific community and must create a link to the Science Plan. Following its review, PEP may reject the proposal, send back to the proponents with comments or pass it to external review. The proposal standard is high. There is no mention of funding on the application, but sensible to have dialogue with Operators to see what is possible. There is an option for CPP, given that significant co-funding is made available.

Working with Industry

R. Gatliff reviewed several **models for industry-science type cooperations**.

Model 1: Complementary Project Proposals

Model 2: Seek co-funding for individual science existing missions (e.g. Industry to look at seafloor massive sulphides, hydrates, special logging techniques for geomechanics, cap rock testing, stratigraphic deepening

Model 3: Seek follow-on projects using the same platform to undertake separate industry-sponsored projects (e.g. Lomonosov Ridge basement drilling

Model 4: Stand-alone management of drilling projects for industry to generate funding for MSP expeditions

Model 5: Technology development support (special logging techniques for geomechanics, seafloor coring techniques etc.) i.e.: Increasing contacts with drilling community within industry

Model 6: Sharing data for developing new project proposals – exploration and site characterization. Sometimes scientists do not talk to industry and do not maximize existing data as they should to get a better drilling proposal.

Model 7: Sponsorship of ECORD (project member)
The possibility was discussed that companies could become members of IODP.

4.11 3P Arctic Conference (A. Stevenson)

A. Stevenson said that the **3P Arctic Polar Petroleum Potential Conference and Exhibition** will take place on October 15-18, 2013 in Stavanger, Norway. ECORD-IODP will have a booth at the conference. He showed an example map poster that is used to identify areas of interest in the Arctic.
In 2011, the **3P Arctic event** was attended by representatives from Norway, Canada, Russia, Sweden, the UK, USA and the United Arab Emirates. The conference took place in order to give the delegates the opportunity to interact with each other.

Benefits of academic and Industry Collaboration
A. Stevenson listed several ways in which academia and industry could benefit from a collaboration, such as sharing ice-management techniques, making significant discoveries in a poorly understood region, having a quicker delivery of scientific results, identifying common objectives in the Arctic, minimizing operational risks/maximizing scientific success, learning from past Arctic drilling operations, developing acceptable data sharing agreements, and identifying the societal relevance from such a collaboration.

Sessions
There were 15-20 sessions that covered all aspects of the geology, petroleum geology and geophysics of the Arctic and Circum-Arctic sedimentary basins.
The presentations were grouped into the following regions: Barents Sea; North-west Siberia; Western Norway/East Greenland; Canadian McKenzie Delta/Alaskan Eastern Beaufort Margin; Canadian Arctic Islands; Alaskan Arctic; Siberian Arctic; and Baffin Bay. In total, there were 150-160 presentations and 50 posters.

The 3P Arctic 2013

A. Stevenson asked the participants for advice on the future approach and presentation of ECORD at the 3P Arctic event. For instance, it should be considered whether ECORD should revise the **'Scientific Drilling in the Arctic Ocean' brochure** or whether a broader document should be created to explain the industry/ECORD collaboration? Are thee new messages that should be conveyed from ECORD and the ILP in the booth?

A. Stevenson reminded that **perception** is very difficult to deal with. There were difficulties in the past with expeditions such as the Great Barrier Reef, because the media said that since the *JR* is involved with industry, then ECORD is a cover for the oil industry.

J. L. Auxiètre said that there is chance to demonstrate that there is common working ground. There is a scientific interest and a common agenda where industry plays an important role in acquiring knowledge. If the ILP expresses that idea factually without any emotion, then it could attack directly the issue of perception. The Arctic is one opportunity.

G. Thomas said that this question does not have an easy answer. It seems that the most likely avenue to succeed is if there is a joint-sharing cost-effective way, through which there is no real overlap in risk or liability. For example, company X does sampling of the seafloor and company Y wants the same, so both decide to collaborate on the equipment sharing. This would be cost efficient. D. McInroy suggested that there should be a crew rotation during the different projects with no interaction on the different projects. Another way is that there could be some type of agreement allowing the scientists to work on the company's core, etc.

G. Thomas said that 'piggy-backing' is not a tender issue. D. McInroy said that the keep contact a single tender representative before the contract department. A Moscariello said that the approach could be on the boundary conditions: bad and good guys or in the evolving situation. Why would an oil company not spend energy to explain before the public any wrong perceptions? The point is that the final decision is up to the government that allows the oil company to drill.

C. Escutia said that such collaboration will be have to be project by project effort. For example, ICDP had a problem with the Napoli project, which was viewed as a security issue that the drill in the volcano could blow up the volcano. Hence, it is up to the ICDP community to educate the rest of the public and to communicate about what the scientists are doing.

The group agreed that in this case the public made a judgement based on a poorly explained science. There must be an enormous effort to counteract such statements.

A. Moscariello said an advertisement may have a major impact on the public's perception.

J. L. Auxiètre said they have to eliminate the dichotomy between good and bad. There is a mutual interest to share information.

D. de la Moretta said that based on the situation in his company, industry is interested in such a collaboration. The communication problem is within ECORD, as industry takes only advantages in collaborations. There is a problem on ECORD's side to explain to the public why industry has come to work with the organization. Making a contract may be difficult because there is a mix of problems that may arise, which are not due to the scientific objectives. He said that he believes that there is an opportunity for fruitful permanent collaboration. The other option of a project-by-project collaboration is not permanent.

G. Camoin said if a company collaborates for a project such as the Arctic drill of the Lomonosov Bridge, and the company contributes for example, $10M USD, some kind of agreement should be made regarding the ability of industry to sample the cores. G Camoin asked if such a core accessibility aspect could be treated with confidentiality. D McInroy said that it could be treated as a consortium of companies, which could all share the data, but this question will have to be examined in more detail. C. Escutia said that the Greenland JR expedition was funded by industry, it was a fully staffed ship and the scientists worked on the science. The company did not want to reveal some information for the scientists to use in their publications. G. Thomas said that in cases where the company has anchorage, then the governmental rules have to be considered. He recommended that ECORD emphasizes its willingness to collaborate with industry at the next 3P conference. M. Forwick recommended that the 3P conference should be used as a venue for the next ILP meeting. The group agreed with this idea.

A. Moscariello asked if the companies are interested in the MSPs. G. Thomas said that IODP should go to industry and get their attention. T. Wilkinson asked how many companies were approached to collaborate with ECORD. A Moscariello listed several of the ILP invitees who could not attend for several reasons.

T. Wagner asked about the workshops and at what level industry could get involved. A Moscariello said in the past the ILP did not have a role in redirecting industry to key workshops, but that now it may be possible.

4.12 Conclusions and Future

A. Moscariello asked if the present industry members envision a future to work with science and how they envision the ILP role. C. Escutia reminded that on average MagellanPlus funds 3-4 workshops per year. The groups that write the pre-proposals are either encouraged to write a full proposal or deactivated with some recommendations. R. Gatliff said that not all ideas have to come from the academic activity.
G. Camoin said that it could be arranged to have a couple of panels with private access for industry. A. Moscariello proposed to have a summary of the proposals and access to the procedures and rules on how IODP works offshore. There will be a link with a list of the upcoming workshops. G. Camion said that there is already an existing page about the upcoming MagellanPlus events. The ECORD ILP list will be updated and posted online. The group asked for clarification for on what point the proposal go out to the public domain. C. Escutia said that there is an online link to the proposals, presenting information about the site location and on the abstracts. If there is further interest in the proposals, industry could contact the proponents.
G. Camoin said that some of the proposals that could be of possible industry interest may be also published on the ILP website.

ACTION ILP Chair (A. Moscariello): to update the ECORD ILP members' list.

ACTION EMA and ILP Chair (G. Camoin & A. Moscariello): to ask for the publication on the ILP website of a list of proposals that could be of industry interest.

In terms of group communication, A. Moscariello recommended that the ILP should hold meetings. The group discussed on how to publish ILP-relevant information. Some possibilities are via emails and magazine announcements. C. Escutia offered to work with A. Moscariello on the possible ECORD Outreach important aspects and on the different scenarios on how to better advertise the ILP activities.
D. McInroy asked when scientists submit a full proposal if could be published online. C. Escutia said that the proposal cannot be published online, because they may not be drilled for years. However, upon the expression of interest to view the proposals, the relevant documents can be provided. A. Moscariello presented the IODP website link and gave a

tutorial of the IODP website for the group to find the current active proposals. C. Escutia reminded that a person of contact is always included on the proposal.
G. Thomas asked about the average time it would take to the drill a proposal. G. Camoin said in the current program the average is 6-7 years. For the future phase, it would be 3 years. G. Camoin reminded that the CPP's are quicker for implementation because there is a fast track, raging between 1year-18 months. R. Gatliff said that if the JR is used, the expedition will be focused on the Pacific, Indian, etc. regions, it is necessary to build a plan of transit. Whereas for ECORD, if a CPP is proposed, the MSP can go anywhere. The same process would take more time and more funds with the Chikyu. G. Camoin said that the CPP scheme works well for the JR and it could also work for the MSPs, because it will be done on a more flexible way than the JR.

A. Moscariello said that they would like to update the Arctic-industry brochure with a bigger emphasis on the Messinian, black shales workshop. The brochure's subtitle will be considered as the main title, whereas the Arctic will be listed as one of the topics. Also, as better advertisement to the program, the brochure may display a list of industry company signatures, which shows interest in ECORD.

ACTION ILP Chair (A. Moscariello): to send to the industry representatives the updated text of the brochure, which will consist of an umbrella text with participation of interest with general statement.

G. Thomas said that the names on the brochure should be well-recognized names in industry. J. L. Auxiètre said that while the text does not have to be "legalized" by all participants, the brochure logo should be decided along with industry's cooperation. The brochure format should not be limiting, because it may be less efficient to place efforts on the goal to reach such an agreement on the format.
A. Moscariello said that it is good if there is a clear statement from industry on the brochure that science important. G. Thomas said that it will be easy to create a statement on the value of science to the community. He recommended that there should be no industry logos on the brochure, as such images may have a negative impact on the perception of the program's cooperation.

In reference to the 7th proposed model for an industry-academia type cooperation, the group discussed whether industry's membership in ECORD should be further considered. G. Thomas said that this option may be more difficult, as in the instance of working with an US company, the company may be more interested to contribute to the JR, although there may be some positive outlooks for ECORD via this model. The group discussed that the MSP project-by-project funding may be more likely to succeed. D. de la Moretta said it also depends on the definition of membership, and whether it involves some kind of commitment. If 'membership' is treated as a consortium to which the members pay a contribution, then this would not be a problem. However, if some additional legal commitment is expected, then it might be more difficult. R. Gatliff reminded that the countries usually contribute between $30k USD- $5.6M, where $30k USD allows for one scientist to sail on an expedition per 10 years, while $6M USD allows for 8 scientists per year on an expedition.

G. Thomas asked if it is in ECORD's interest if, for example, some rich company pays $30M USD and acquires strong influence in ECORD. G. Camoin said that he does not wish for such a perception of ECORD and would recommend a project-based collaboration. G. Camoin reminded that there is enough room for collaboration between industry and science on a project basis.

4.13 Close Out

A. Moscariello thanked all of the participants who gathered to discuss the above-mentioned topics.

G. Camoin mentioned that all ILP minutes will be available online to the ILP participant and invitees along with the PPTs. A. Moscariello said that he will further discuss with M. Borissova the details for accessing the information online.

- **Meeting dismissed at 13:00 hrs.**

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