

# UNDERSTANDING THE OCEAN BELOW THE SEAFLOOR

Scientific ocean drilling: a global infrastructure linking the past and future of Planet Earth

## Introducing the International Ocean Drilling Programme (IODP<sup>3</sup>)

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Scientific Ocean Drilling:  
the largest and longest-lasting  
international initiative in the fields  
of Earth and Ocean sciences



**IODP**  
INTERNATIONAL OCEAN  
DISCOVERY PROGRAM  
  
International Ocean  
Discovery Program  
(IODP)  
2013 - 2024

**IODP**  
INTEGRATED OCEAN  
DRILLING PROGRAM  
  
Integrated Ocean  
Drilling Program  
(IODP)  
2003- 2013

**Ocean Drilling  
Program  
(ODP)  
1985-2003**

**Deep Sea  
Drilling Project  
(DSDP)  
1968-1983**

**MOHOLE  
1958-1966**



# The legacy of international ocean drilling programs



The Duty of Memory

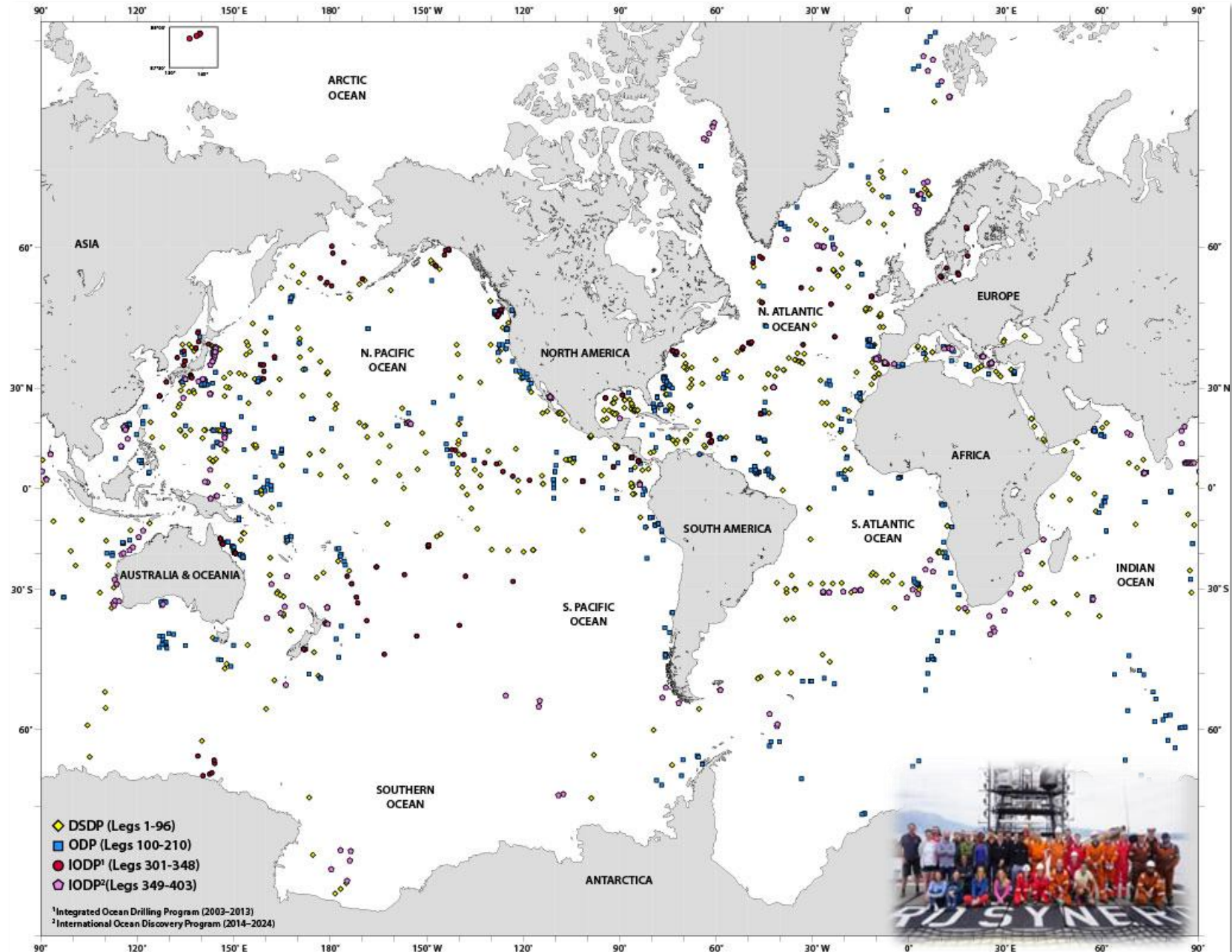


- ✓ *Single international Science Plan or Framework*
- ✓ *International staffing of expeditions and advisory panels*
- ✓ *Bottom-up proposal submission and peer review*
- ✓ *Collaborative, international, transparent and open*
- ✓ *Program-wide standard policies and guidelines*
- ✓ *Sustainable management of knowledge-based resources*
- ✓ *Regular assessments of goals and priorities*

# The legacy of international ocean drilling programs



The Duty of Memory

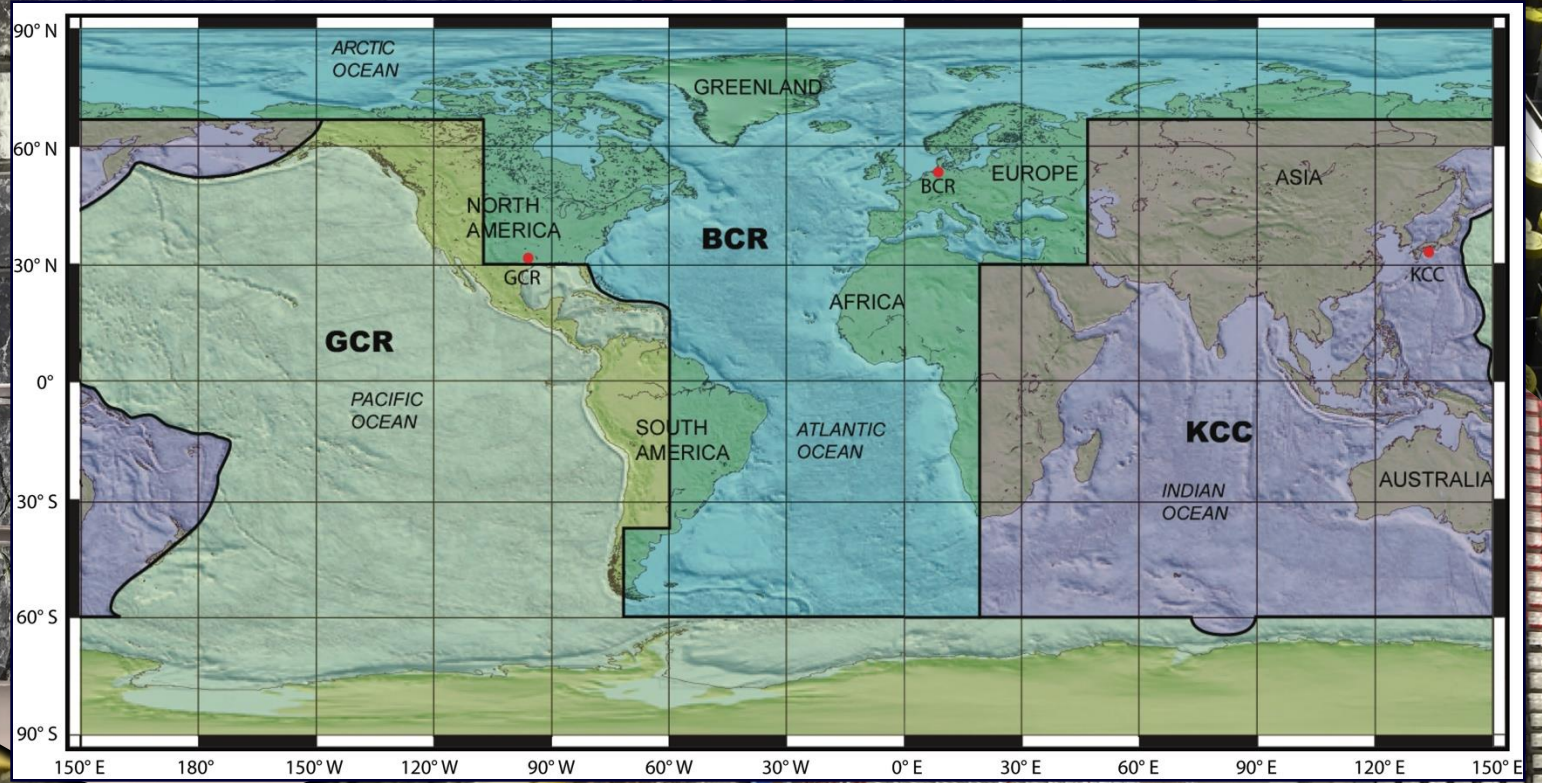


> 290 expeditions and more than 2,000 boreholes

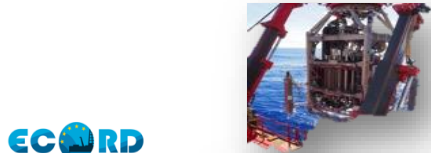
# The legacy of international ocean drilling programs



The Duty of Memory



- >  $\pm 500$  km of sediment/rock cores stored in 3 repositories
- > Open access to all cores and data
- > Standardized measurements



Platform Providers operating on an MSP mode

US Ocean Drilling Program

International Ocean Drilling Programme

China's Ocean Drilling Program

Non-platform providers

International Continental Scientific Drilling Program



# Two types of expeditions in IODP<sup>3</sup>



land to sea  
(L2S) drilling  
transects

- ✓ *Offshore expeditions  
(possibly combined  
with land drilling)*

**BOTH**

- ✓ *Evaluated by SEP*
- ✓ *Scheduled by MSP-FB*
- ✓ *Flexible size of science teams*
- ✓ *Fully / Partially funded*

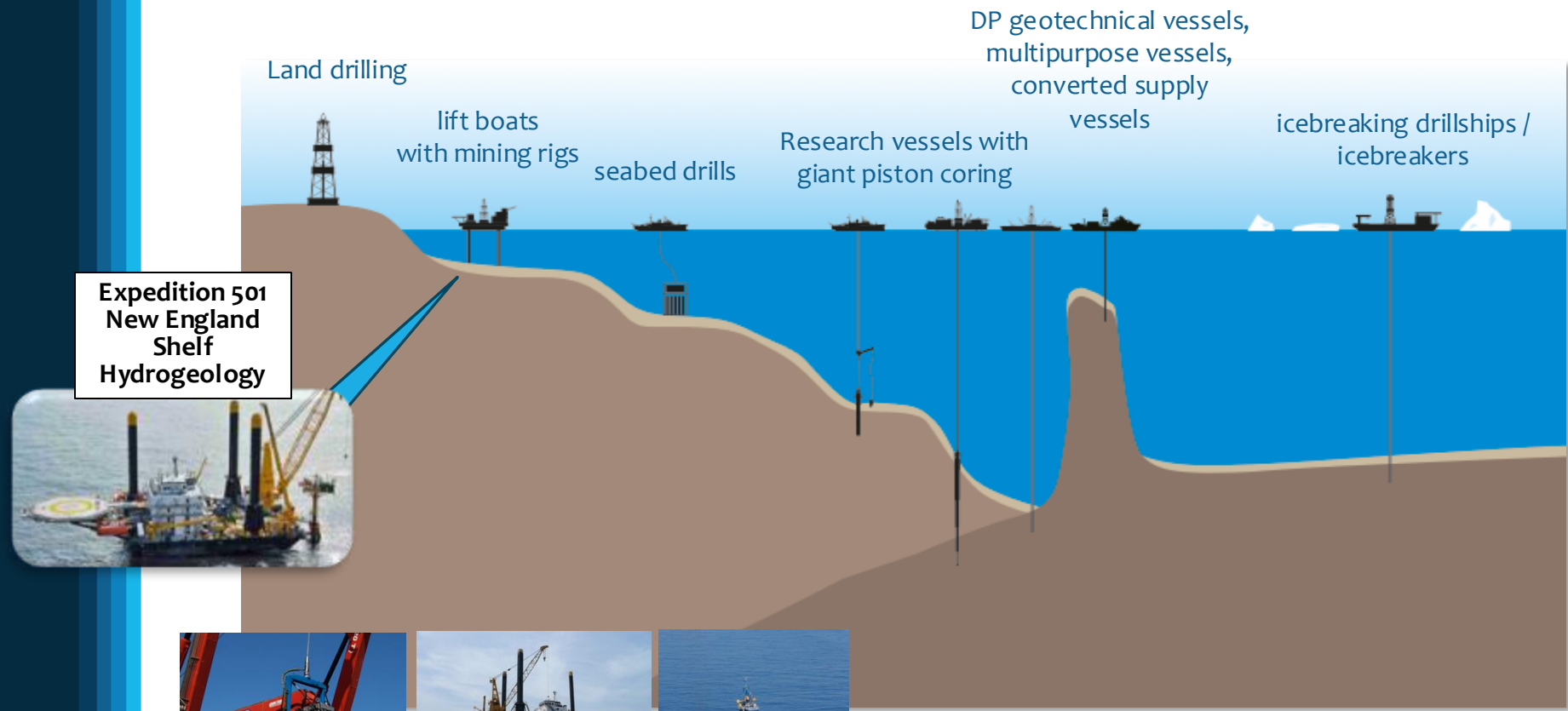


- ✓ *Scientific Projects  
using Ocean Drilling  
ARChives (SPARCs)  
based on ocean  
drilling archives*

# Offshore expeditions



The  
Mission-Specific  
Platform (MSP)  
concept



*Scientific drilling access to a full range of geographic areas and drilling depths, drilling environments and science targets through a wide array of drilling and coring systems*

# The Mission-Specific Platform (MSP) concept

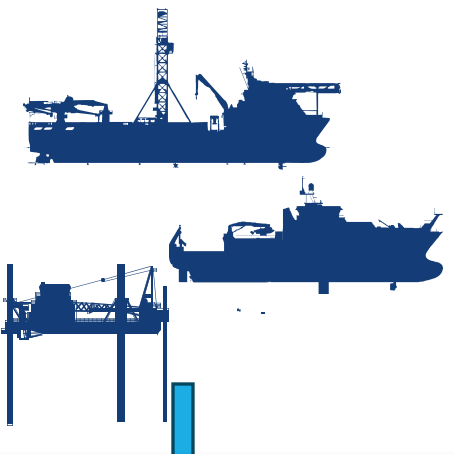


- ✓ Select the **adequate technology** to achieve scientific objectives
- ✓ **Tailor expeditions** to better adapt to the scientific needs
- ✓ New opportunities provided by **technological development**
- ✓ Regional and/or technological **clustering**

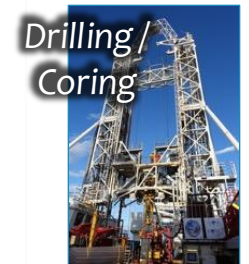
## Scientific requirements



- ✓ **Flexible size of the Expedition Team**
- ✓ **Flexible duration of expeditions**



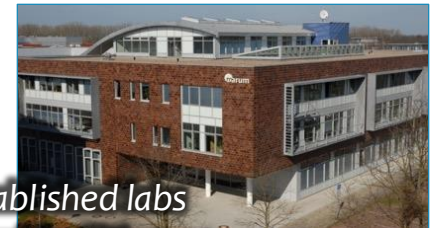
## Offshore Operations



Time (2-3 months)



## Onshore Operations



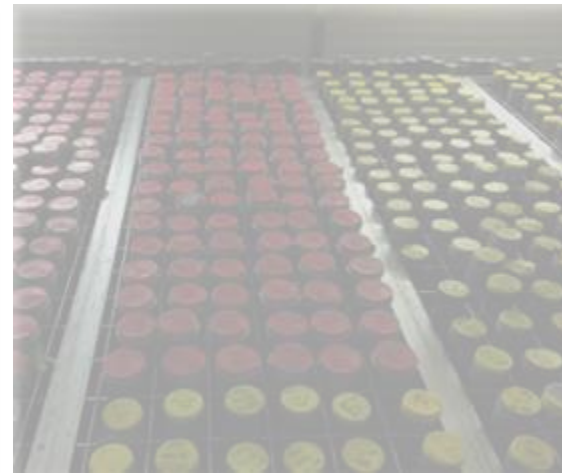
# Scientific Projects using Ocean Drilling ARChives (SPARCs)



A new type of  
expedition



- ✓ SPARCs are large-scale innovative, creative, and multidisciplinary research projects
- ✓ SPARCs will maximise the return on the legacy assets without new drilling or other operations at sea
- ✓ Evaluation and Organization of SPARCs similar to offshore expeditions
- ✓ SPARCs are partly funded



# Scientific Projects using Ocean Drilling **AR**Chives (**SPARC**s)



A new type of  
expedition



- ✓ **SPARC**s will increase the value of scientific ocean drilling legacy data
- ✓ **SPARC**s will generate data that can provide crucial information for the development of future drilling proposals
- ✓ **SPARC**s will produce large new datasets from samples and integrate data across multiple expeditions – coordination with other programmes: *GEOSS (Global Earth Observation System of Systems)* and *WDS (World Data System)* from the *ICSU (International Council for Science)*, *DDE (Deep-time Digital Earth)* of the *IUGS (International Union of Geological Sciences)*