Unraveling Earth’s history beneath the ocean floor

Scientific ocean drilling
International Ocean Discovery Program (IODP) addresses fundamental science through ocean drilling

**CLIMATE AND OCEAN CHANGE**
Reading the past to inform the future
- Temperature and precipitation changes
- Ocean chemistry and CO₂ increase
- Ice-sheet history and sea-level change

**BIOSPHERE FRONTIERS**
Deep life and environmental forcing of ecosystems
-Limits of life
- Biodiversity and environmental change
- Ecosystem evolution

**EARTH CONNECTIONS**
Deep processes impacting Earth’s surface
- Structure of ocean crust and upper mantle
- Subduction zones: shifting continent and creating volcanoes

**EARTH IN MOTION**
Processes and hazards on human time scales
- Earthquakes
- Tsunamis
- Landslides

**ECORD’s MISSION-SPECIFIC PLATFORMS:**
the European special forces of IODP

To go where no scientific drilling project has gone before

ECORD is one of the three IODP platform providers, and the only one that is able to conduct expeditions in extreme environmental conditions

**MSP statistics**
- 9 expeditions
- 96 sites
- 195 holes
- 3,605 cores
- 659 expedition days
- 120,972 research samples
- 10,241 m drilled
- 9,357 m cored
- 8,023 m shallowest water depth
- 7,503 mdeepest water depth

84% recovery

19.8 m shallowest water depth
8,023 m deepest water depth

**To reach new science frontiers**
To drill in all environments

MSP expeditions: Making impossible possible
ECORD tailors diverse ships and remote systems as determined by scientific priorities and operational efficiency

**Processes and hazards on human time scales**
- Earthquakes
- Tsunamis
- Landslides

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Ocean drilling expeditions driven by science

About 70% of our planet is still poorly unknown

ECORD scientists investigate rocks and sediments below the sea floor to unravel Earth’s history

ECORD is unique within IODP as it implements expeditions by using diverse mission-specific platforms (MSPs)

ECORD expeditions address a wide range of fundamental scientific issues concerning our Planet

Science and technology

ECORD scientists collect and analyze data from the subseafloor to better understand how the Earth system works and how we can use our knowledge of the past to predict future

Interdisciplinary approach in an international scientific community

Ocean drilling expeditions

Sampling of:
- sediments and rocks
- microbial life
- biodiversity
- geological data
- subseafloor fluids

Data collection

Ocean drill cores and data are freely available to scientists from all over the world

Socio-economic impact

Earth continues to change.

ECORD helps to better understand major challenges facing humanity.

Addressing fundamental issues affecting society

- Sea-level change in a warming climate
- Ecosystem crisis and biodiversity loss
- New energy sources and mineral resources
- Earthquakes, landslides and tsunamis
- Advances in biotechnology

Education and outreach

Reaching global audience

Sailing on expeditions

Grants and scholarships

Training the next generation of scientists

ECORD budget

Maximum return from investment

95% direct operational costs

ECORD running cost 5%
ECORD MISSION SPECIFIC EXPEDITIONS

Exp 302
Arctic Coring Expedition - ACEX
- Moving ice
- Three operating vessels, including two ice-breakers
- First long record of sediments from the central Arctic Ocean

Exp 310
Tahiti Sea Level
- Shallow-water, environmentally sensitive area
- Most extensive geological research on coral reefs

Exp 313
New Jersey Shallow Shelf
- Shallow water
- First use of lift boat in IODP
- Ten-million years record of climate and sea-level change

Exp 325
Great Barrier Reef Environmental Changes
- Shallow-water, environmentally sensitive area
- Sea-level and climate change since the last ice age (20,000 years ago)

Exp 347
Baltic Sea Paleoenvironment
- Gravity coring
- First microbiology-focused MSP expedition
- 140,000-years history of the Baltic Sea

Exp 357
Atlantis Massif Seafloor Processes
- Sea-floor drilling systems and borehole observatories
- Chemistry and life at hydrothermal fields in the Atlantic Ocean

Exp 364
Chicxulub Impact Crater
- Shallowest water drilling in IODP
- Shore-based mining technology on a lift boat
- Deepest MSP penetration
- Mass extinction 65 million years ago and life recovery after an asteroid impact

Exp 381
Corinth Active Rift Development
- Geohazards in an active rift system
- Tectonic processes initiating ocean basins
- Recent climate history of the Eastern Mediterranean Sea

Exp 386
Japan Trench Paleoseismology
- First giant piston coring expedition in IODP
- Long history of giant earthquakes off Japan

Exp 377
Arctic Ocean Paleoceanography ArcOP
- Moving ice
- Three operating vessels, including two ice-breakers
- First complete record of sediments from the central Arctic Ocean

Proposal 637
New England Shelf Hydrogeology

To be scheduled
Join ECORD’s efforts and help continue to build global scientific excellence

Help us understanding our Planet by supporting:

SCIENTIFIC EXPEDITIONS
EDUCATIONAL RESOURCES
OUTREACH ACTIVITIES

Get in contact with us and explore the opportunities to get involved

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