ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

READING THE PAST TO INFORM the future

• GEOHAZARDS • DEEP BIOSPHERE • EARTH CONNECTIONS • CLIMATE CHANGE

Unravelling the secrets of the ocean floor

> 430
km core acquired

> 80
expeditions worldwide

> 50
years of ocean research

> 1600
sites drilled

Sediments and rocks below the seafloor in the world's oceans store

Information on millions of years of Earth's history

Scientific drilling is the only means to access this record and retrieve information on past conditions on Earth from the seafloor archive. Sampling and monitoring the sub-seafloor allows scientists to explore this rich record in order to understand how our planet works as a system.

The European Consortium for Ocean Research Drilling – ECORD – is a major contributor to the world's largest Earth science research organization, the International Ocean Discovery Program (IODP). This global collaboration explores Earth's history and dynamics using ocean-going research platforms. Within IODP, ECORD connects facilities engaged in multidisciplinary geoscience research in nations across Europe that share a long-standing culture of scientific, technological and educational cooperation. By providing mission-specific platforms – specialized ocean-going drilling vessels and platforms – ECORD addresses crucial questions in Earth, Ocean, Environmental and Life sciences using drill cores, borehole imagery, observatory data and geophysical profiles obtained from beneath the ocean floor.

A unique **research infrastructure** that produces **world-class science**

OUR STORY

ECORD is a management structure for scientific ocean drilling that combines the resources of 15 nations to produce world-class science. It was created in 2003 to allow these nations to join the Integrated Ocean Drilling Program (2003-2013) as a single member. ECORD is now part of the successor International Ocean Discovery Program (2013-2023). It is funded by public money from its member countries.

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IODP
INTERNATIONAL OCEAN DISCOVERY PROGRAM

OUR AIMS

By contributing to a better understanding of the Earth system, scientific ocean drilling aims to provide solutions to major societal problems, such as climate change, the increasing demand for resources and the causes of natural disasters. ECORD's scientific objectives are guided by the four major themes of the IODP Science Plan 2013-2023 "Illuminating Earth's Past, Present and Future":

OUR APPROACH

Mission-specific platform (MSP) expeditions have been ECORD's landmark contribution to scientific ocean drilling since 2004. ECORD aims to implement one MSP expedition per year on average for IODP. These are designed on a case-by-case basis by ECORD and their scientists and are unique in using a wide range of vessels and associated drilling technologies. This operational flexibility allows ECORD to organise expeditions in challenging environments around the world, such as ice-covered regions and coral reefs.

CLIMATE AND OCEAN CHANGE

Reading the past to inform the future:

by targeting the most pressing questions about global warming, ocean acidification and ice-sheet responses to our changing climate, IODP and ECORD are tackling global challenges that we must face together

Research themes to address **fundamental questions** for a *global perspective* on our **environment**

BIOSPHERE FRONTIERS

Deep life and environmental forcing of evolution:

ocean drilling enables scientists to investigate ecosystem responses to climate shifts, the limits of life, environmental change and the evolution of ancient life on Earth.

EARTH CONNECTIONS

Deep processes and their impact on Earth's surface environment:

Drilling is an essential tool for unraveling and understanding the geologic, tectonic, geochemical, magmatic and hydrological processes that drive the shaping of our planet, past, present and future.

Lava in Hawaii volcano. Photo credits CNRS/Benoit Ildefonse.

EARTH IN MOTION

Processes and hazards on human time scales:

Scientific ocean drilling and real-time data from long-term borehole observatories allow us to investigate the frequency, magnitude and impacts of earthquakes, tsunamis and landslides.

Tsunami. Photo credits REUTERS/Kyodo.

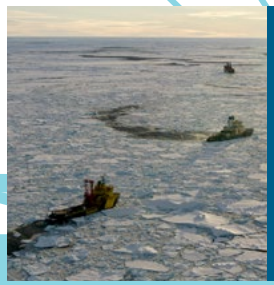
ECORD's scientific excellence

The outstanding intellectual contribution of ECORD scientists to IODP is reflected in their involvement in drilling proposals, their participation in all IODP expeditions and by the cutting-edge science they conduct.

More than 100 million years of Earth's history from the tropics to the polar ice caps

innovative technology for frontier science

MAJOR TECHNOLOGICAL CHALLENGES AND SCIENTIFIC ACHIEVEMENTS



2004

Arctic Coring Expedition – ACEX (IODP Expedition 302): First drilling in the Central Arctic inside moving ice fields and the first long record of Cenozoic sediments from the central Arctic Ocean

2005

Tahiti Sea Level Expedition (IODP Expedition 310): First IODP drilling in very shallow water and the most comprehensive geologic research ever undertaken on coral reef systems

2009

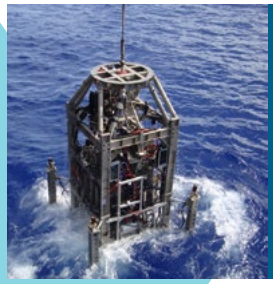
New Jersey Shallow Shelf (IODP Expedition 313): Successful reconstruction of global sea-level changes during the period 14-24 million years ago.

2010

Great Barrier Reef Environmental Changes (IODP Expedition 325): Successful drilling in an environmentally sensitive area in order to investigate abrupt climate and environmental changes during the last deglaciation

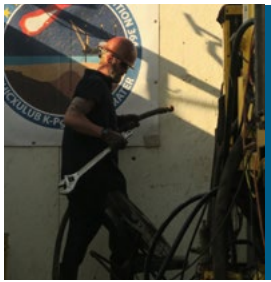
2013

Baltic Sea Paleoenvironment (IODP Expedition 347): First microbiology-intensive MSP expedition



2015

Atlantis Massif Seafloor Processes (IODP Expedition 357): First use in IODP history of seafloor wireline rock drills to recover igneous samples from the oceanic crust



2016

Chicxulub Impact Crater (IODP Expedition 364): Drilling in the shallowest water in IODP history to sample the only impact crater on Earth with an intact peak ring, resulting in the deepest sub-seafloor penetration of any MSP

2017

Corinth Active Rift Development (IODP Expedition 381): Drilling in a tectonic rift zone in one of the most seismically active countries on Earth, to provide high-resolution records of the evolution of earthquake fault networks

A legacy **archive** of Earth History

Informing the future by analysing the past

Ocean drill cores are available to scientists from all over the world, and are stored and curated in three core repositories located in the USA, Germany and Japan, while expedition generated data and reports are feely available via the web.

The MagellanPlus Workshop Series, co-funded by ECORD and ICDP, supports scientists in developing new and innovative drilling proposals to meet future challenges in Earth sciences.

>150 km core stored at Bremen IODP Core repository

Samples provided to **>4,500** researchers worldwide

50% of science party members on MSP expeditions are early career

>1.6 million samples taken by Bremen IODP Core Repository to date

3-5 MagellanPlus workshops funded per year

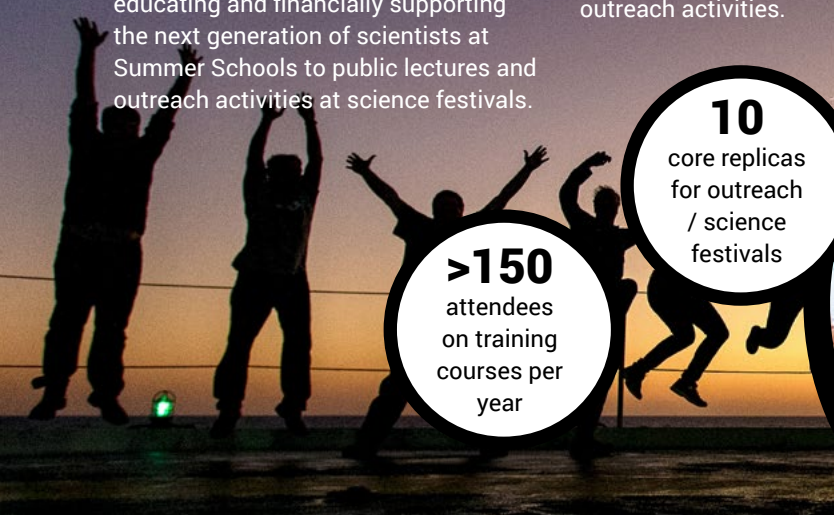
"Education is the foundation upon which we build our future."

Christine Gregoire

ECORD has designed a portfolio of science and educational activities to convey scientifc discoveries and the societal relevance of of IODP to a wide range of audiences. These range from educating and financially supporting the next generation of scientists at Summer Schools to public lectures and outreach activities at science festivals.

ECORD is looking for collaborators and donators who would be willing to help us expand our remit. Your donation can go toward specific scientific ocean drilling expeditions, educational or outreach activities.

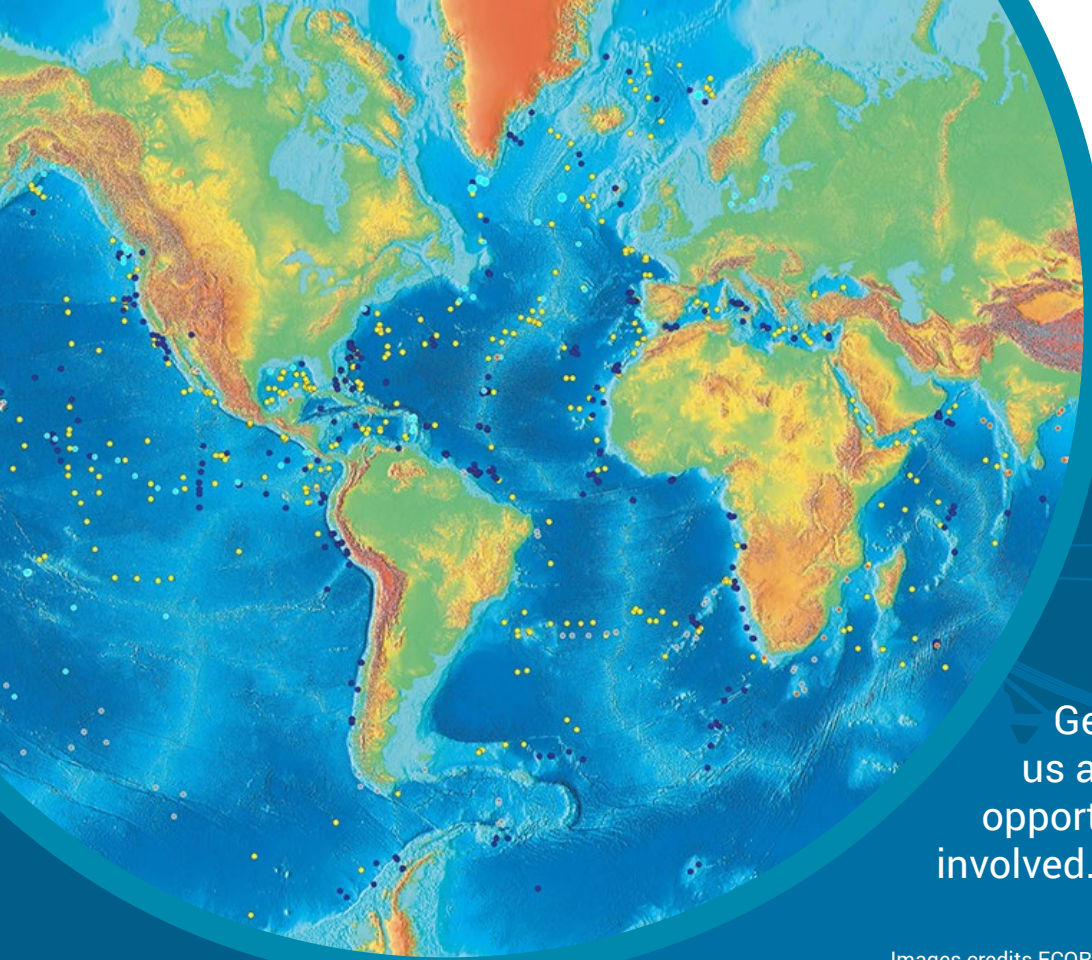
3-5
Summer Schools and Training Courses per year



>150
attendees on training courses per year

10
core replicas for outreach / science festivals

4
touring Distinguished Lecturers a year



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Join ECORD's efforts and help continue to build global scientific excellence and outreach capability.

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

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