Core replicas help discover the Earth under the sea

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ECORD EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

IODP INTERNATIONAL OCEAN DISCOVERY PROGRAM

What is a core replica?

Geological cores collected during ODP legs and IODP expeditions are curated in repositories at +4°C, and cannot not be displayed for days or weeks in public exhibitions. A core replica is an exact copy of a real geological core.

ECORD, has a collection of **six core replicas** that can be loaned for educational and outreach activities in European countries.

What do ODP/IODP core replicas tell us about the geology?

The replicas were chosen to illustrate key periods of the Earth history, which are all considered as ODP and IODP scientific highlights:

- **Environmental and climatic changes of the Cenozoic and the Holocene,**
- **Geohazards and catastrophic events such as the K-Pg boundary and the Tohoku-oki earthquake fault zone,**
- **Geodynamics and structure of the oceanic crust**

Fossil corals of Tahiti at 115,6 mbsf: sea-level rise after the Last Glacial Maximum (16 Ky)

Paleocene Eocene Thermal Maximum (56 My): climate warming + ocean acidification

Mid-Eocene Arctic sediments: freshwater episode

K-Pg boundary: meteorite impact at 65 Ma and resulting mass extinction

Plate-boundary fault zone: track of the Tohoku earthquake and resulting tsunami

Upper/lower oceanic crust: first recovery of an intact section of the oceanic crust with basalts and gabbros

At public exhibitions

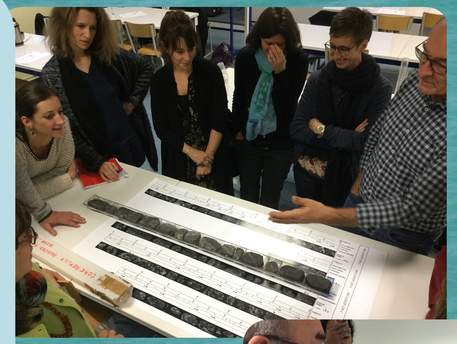
ODP and IODP core replicas are the best substitute to show and tell our scientific results to the public.

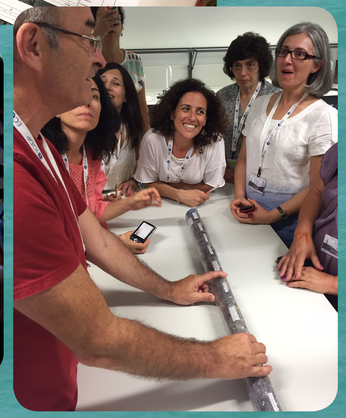
Since 2012, more than 30 exhibitions have been organised at European events like Open Days in science centres, European Researchers' Nights, scientific exhibitions in museums, science festivals and also at the COP21 in Paris in 2015.

In the classroom

Core replicas are used to support teaching science to a wide range of students, from middle schools and high schools to university courses, and also ECORD Summer Schools and teachers' workshops (ECORD School of Rock).

In the classrooms, students can investigate these core replicas with additional geological resources (microfossils, thin sections, etc.), seismic data, various images and experimental protocols (e.g. carbonate content) and discover how these samples were collected from below the seafloor.





(all photos ECORD/IODP)

... and also about the technological challenges?

- **Mid-Eocene Arctic sediments:** drilling at 88°N in 2-4 m thick sea ice moving at 0.5 kt
- **Plate-boundary fault zone:** drillpipe length of about 8 km and weight of more than 350 tons
- **Upper-lower oceanic crust:** drillpipe length of 5 km and coring in very hard rocks

More information about ODP/IODP core replicas on

http://www.ecord.org/resources/core-replicas/

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