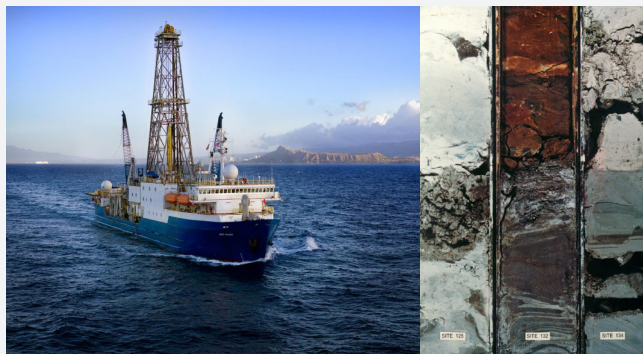




Marine Geology

Stewardship and Services for Geosample Data from Earth's Ocean Floor and Lakebeds

The Marine Geology Archive at the National Centers for Environmental Information (NCEI) contains more than 17 terabytes of analyses, descriptions, metadata, and images of sediment and rocks obtained from the ocean floor and lakebed environments. A diverse collection of programs and institutions have and continue to contribute marine and lacustrine geological data to NCEI, including the U.S. Extended Continental Shelf Project, past and present international ocean drilling programs (DSDP, ODP, and IODP), many physical sample repositories representing U.S. and international academic institutions and government agencies, such as NOAA National Ocean Service Hydrographic Survey, NOAA Office of Ocean Exploration and Research, U.S. Geological Survey, Smithsonian National Museum of Natural History, and many other past and present projects and programs related to NOAA's mission.

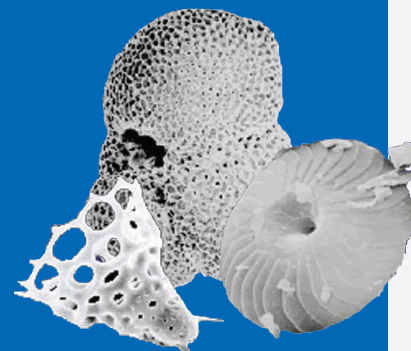


(L) The scientific drilling vessel JOIDES Resolution. (R) Images of cores collected from the JOIDES Resolution during a Deep Sea Drilling Project expedition.

WHY STUDY MARINE GEOLOGY?

Marine geology can be used to:

- Understand past climate change for environmental prediction.
- Assess benthic habitat.
- Assess offshore pollution patterns for sustaining healthy coasts.
- Find sources of dredged material for beach replenishment.
- Locate strategic offshore mineral resources.
- Assess the impacts of offshore geohazards.
- Determine suitable sites for offshore infrastructure (e.g., wind turbines).
- Ground-truth acoustic and other remotely sensed mapping data.
- Learn more about Earth and how its environmental systems function.



(L) Radiolarian, (C) Foraminifera, and (R) Coccolith. These three types of microfossils are used in paleo-oceanographic research. Photos courtesy of Dr. William Ruddiman from: Ruddiman, W.F., 1985, *Climate Studies in Ocean Cores*, in *Paleoclimate Analysis and Modeling*, ed. Alan D. Hect, John Wiley & Sons, NY.

The IMLGS

NCEI's geological data holdings are largely accessible through the [Index to Marine and Lacustrine Geological Samples \(IMLGS\)](#). The IMLGS is a community designed and maintained resource that enables scientists and engineers to discover and access (i) the digital data gleaned from seabed and lakebed geological samples collected throughout the world as well (ii) the actual physical samples archived at partner institutions. The IMLGS is based on core concepts of community oversight, common vocabularies, consistent metadata, and a shared interface. Over the decades, participating repositories have contributed data to the IMLGS from now-over 228,000 seabed and lakebed cores, grabs, and dredges archived in their collections. NCEI provides long-term data archive and database support, data stewardship, and data access, while enhancing the discoverability and accessibility of the physical samples archived at partner institutions.



"Beautiful glassy basalt from the East Pacific Rise. Many scientists have used the glass for isotope studies, studies on volcanoes dynamics, carbon cycling, and more." Nichole Anest, Curator, LDEO

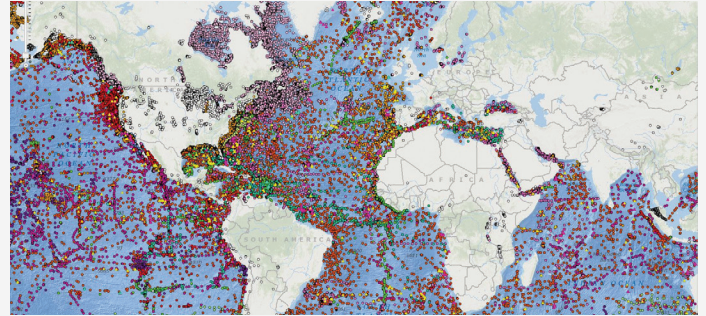


"Curated sediment core from the North Atlantic that has undergone high-resolution sampling (evident from the styrofoam acting as a place-holder/marker for the missing mud). The samples have been used for C-14 dating, isotope studies, foram and IRD counts, and paleomagnetism." Nichole Anest, Curator, LDEO

Benefit to the Public and Supporting National Goals

The NCEI Marine Geology Archive facilitates knowledge sharing, one of NOAA's explicit missions. The Archive consolidates data sourced from around the world, making the data readily available to scientists and engineers for fisheries management, climate research, seabed mapping, locating offshore mineral resources, identifying suitable sites for offshore infrastructure, assessing offshore geohazard risks, establishing the extent of the U.S. extended continental shelf, among many other research and blue economy activities.

The collaboration of so many national and international institutions and agencies in the Marine Geology Archive embodies NOAA's mission for sharing knowledge, which in turn further facilitates NOAA's mission for understanding, predicting, conserving, and managing the oceans and coasts, and the ecosystems and resources found within. For scientists funded by NOAA, the [National Science Foundation](#), and other federal agencies, the Marine Geology Archive also provides a means for complying with national policy requirements that data be submitted to national archive centers for long-term stewardship.



COMMUNITY INVOLVEMENT

- **Antarctic Core Collection (Oregon State University)**
- **British Ocean Sediment Core Research Facility**
- **BPCRC Polar Rock Repository**
- **Continental Scientific Drilling**
- **Geological Survey of Canada**
- **GEOMAR Helmholtz Centre for Ocean Research Kiel**
- **International Ocean Discovery Program**
- **Lamont-Doherty Earth Observatory**
- **National Museum of Natural History**
- **National Oceanic and Atmospheric Administration**
- **Oregon State University**
- **Scripps Institution of Oceanography**
- **U.S. Geological Survey**
- **University of Rhode Island**
- **Woods Hole Oceanographic Institution**

<https://www.ncei.noaa.gov/products/marine-geology-geophysics/geology>

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