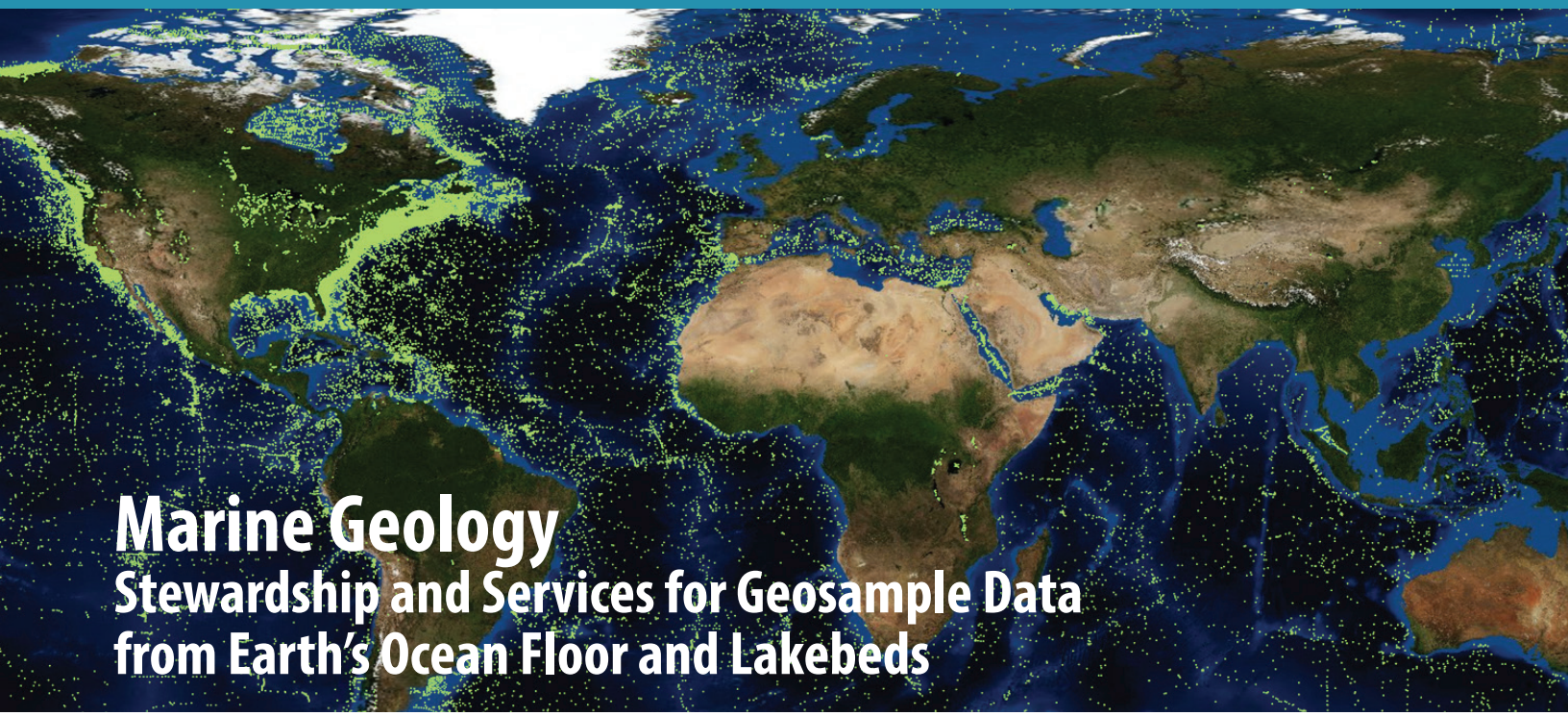


Marine Geology
Stewardship and Services for Geosample Data from Earth's Ocean Floor and Lakebeds

The Marine Geology archive at NCEI contains descriptions, images, and analyses of sediment and rock samples collected from the ocean floor and lakebeds. Data come from sources around the world, including NOAA's National Ocean Service (NOS), Office of Ocean Exploration and Research (OER), and the National Marine Fisheries Service (NMFS).

NCEI is also responsible for archiving data collected under the National Science Foundation (NSF) Division of Ocean Sciences Sample and Data Policy (https://www.nsf.gov/pubs/2017/nsf17037/nsf17037.jsp). This includes samples collected during the last 50+ years of scientific ocean drilling programs, including the current International Ocean Discovery Program (IODP). Additional datasets come from national and international academic institutions and other government agencies.

The scientific drilling vessel, Joides Resolution, and cores collected on one of the expeditions.

WHY STUDY SEAFLOOR COMPOSITION?

Seafloor composition can be used to:

- Study offshore pollution patterns to help sustain healthy coasts
- Locate dredge material sources for beach replenishment
- Study past climates for environmental prediction
- Estimate the impacts of gas hydrate releases
- Locate offshore mineral resources
- Determine offshore structure sites (eg: submarine cables, drilling platforms)
- Provide ground truth values for remotely sensed data used for environmental assessment and prediction
- Learn more about how Earth and its environmental systems function

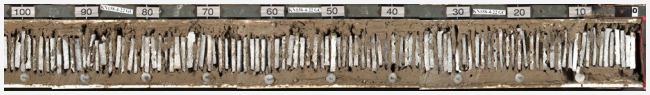
The Index

Most of NCEI's geologic data holdings are accessible through the Index to Marine and Lacustrine Geological Samples (IMLGS; https://www.ngdc.noaa.gov/mgg/curator/). The IMLGS is a community designed and maintained resource enabling researchers to locate and request seafloor and lakebed geologic samples archived by partner institutions. The index is based on core concepts of community oversight, common vocabularies, and consistent metadata to build a shared interface. Participating curators have contributed metadata for over 210,000 seafloor and lakebed cores, grabs, and dredges archived in their collections.

NCEI provides:

- Community oversight
- Shared interface and common vocabularies
- Long-term data stewardship and archive

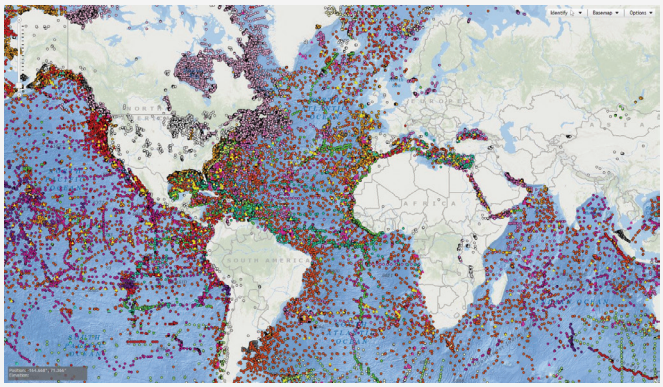
"Beautiful glassy basalt from the East Pacific Rise. Many scientists have used the glass for isotope studies, studies on volcanoes dynamics, carbon cycling, and more."



"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 paleomagnetics." Nichole Anest, Interim Curator, LDEO

Benefit to the Public and Supporting National Goals

The NCEI Marine Geology archive consolidates data from sources around the world, making the data readily available for climate research, fisheries management, locating mineral resources, identifying sites for offshore structures, and establishing the extent of the U.S. Extended Continental Shelf. For data consumers, the archive facilitates knowledge sharing, one of NOAA's explicit missions. Collaboration of multiple institutions in the archive embodies the NOAA Habitat Blueprint goal of fostering and leveraging partnerships. For researchers who analyze samples, the archive provides a means of complying with National Science Foundation and National Ocean Policy recommendations that data be submitted to national archive centers for long-term stewardship.



COMMUNITY INVOLVEMENT

- Antarctic Marine Geology Research Facility (AMGRF)
- British Ocean Sediment Core Research Facility (BOSCORF)
- Byrd Polar Research Center (BPRC)
- Sediment Laboratory Geological Survey of Canada (GSC)
- International Ocean Discovery Program (IODP)
- Lamont-Doherty Earth Observatory (LDEO)
- National Lacustrine Core Repository (LacCore)
- National Oceanic and Atmospheric Administration (NOAA)
- Oregon State University (OSU)
- Scripps Institution of Oceanography (SIO)
- University of Rhode Island (URI)
- U.S. Geological Survey (USGS) Repositories
- Woods Hole Oceanographic Institution (WHOI)

https://www.ngdc.noaa.gov/mgg/geology/