
- An Open Letter to POGO members, their governments and funders -

On the importance of international cooperation for scientific ocean drilling

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The Partnership for Observation of the Global Ocean (POGO), an international consortium of nearly 60 oceanographic research institutes that work together to promote and support global ocean observations, raises concerns over the reduction in scientific ocean drilling that will inevitably result from planned changes to the funding and operating structure of the JOIDES Resolution. Ocean drilling is an important contributor to our knowledge of the Earth system, which the ocean is an inextricable part of, with key applications including climate research and forecasting, carbon sequestration studies, and earthquake and tsunami prediction.

As the second phase of the International Ocean Discovery Programme (IODP-2) draws to an end, the US National Science Foundation (NSF) has decided not to renew its cooperative agreement with Texas A&M University for operations and maintenance of the vessel beyond September 2024¹. SIEM Offshore, the owner of JOIDES Resolution, is planning to keep the vessel available for scientific operations under a new model, with potential partial support from NSF. Meanwhile, new agreements are being established between the European Consortium for Ocean Research Drilling (ECORD) and Japan Agency for Marine-Earth Science and Technology (JAMSTEC), to launch the next international ocean drilling programme, IODP³.

As Earth's population expands, changing climate conditions, increasing demand for resources, and the risks of geohazards such as earthquakes and tsunamis demonstrate the need for better understanding of the close connection between the Earth system and daily human life. Millions of years of Earth system change are recorded in the sediments and rocks located beneath the seafloor, providing a baseline record against which we can compare current and future planetary change. The seafloor itself contains potentially valuable new resources and hosts novel microbial communities that live at the limits of habitability².

Three quarters of the ocean floor lie over 3,000 metres below the surface (Stewart & Jamieson, 2019³), which poses a huge logistical challenge to sample the seafloor at the global scale that is required to address the aforementioned challenges. JOIDES Resolution is currently one of two scientific drilling vessels that can operate at depths down to 6,000 m, and the only one that has been deployed in all ocean basins. While POGO recognises that other nations operate, or will be operating, drilling vessels and that ocean drilling requires an international effort and cooperation among many nations, we also stress that the number of drilling vessels and their temporal and spatial coverage should currently be maintained, if not increased.

Given the unique capabilities of the JOIDES Resolution and the scale at which the vessel was previously being deployed, the changes announced by NSF are anticipated to have the following impacts:

1. Significantly reduced global capacity for scientific drilling of the sea floor at depths greater than 3,000 m
2. Number of scientific ocean drilling expeditions reduced by over 80%, from six per year to about one per year post-2024 with alternative platforms
3. Workforce development: a whole cadre of young geological oceanographers have built their careers in anticipation that they would have access to drilled materials from new sites

A decrease in the global scientific ocean drilling capacity will have the following implications:

1. Research requiring global access to the deep ocean in paleoclimatology and paleoceanography and in geohazards will be severely hampered.
2. Research involving hard rock coring or the installation of subseafloor monitoring observatories will be severely diminished.

In response to these recent decisions, and following discussions at its 2024 Annual Meeting, the Partnership for Observation of the Global Ocean:

- **Underlines that the capability to probe the ocean by deep scientific drilling is essential for understanding the Earth System, past, present and future, and the importance of the quality of science undertaken in any area of ocean research and observation, including deep ocean drilling.**
- **Supports all efforts required to maintaining the long-term, global capacity for scientific ocean drilling, including at depths between 3,000 and 6,000 m.**
- **Calls on its members, their governments and funders to coordinate and collaborate globally towards an integrated, long term strategy for scientific ocean drilling, and in particular to advocate for increasing national ocean sciences budgets for dedicated funding to design, support, and operate “mission specific platform” programmes, to boost innovations that enhance global capabilities for alternative sub-seafloor sampling approaches, such as long coring, lander drilling and underwater robotic solutions, and to establish cooperation for co-sponsoring scientific drilling operations into the future.**