International Ocean Discovery Program (IODP): The Latest Incarnation of Almost Five Decades of Scientific Ocean Drilling Excellence

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*Austin A James[1]
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1. University of Texas at Austin, Jackson School of Geosciences, Institute for Geophysics
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IODP (2013-2023) represents the latest phase of the longest running, most successful scientific collaboration in the history of the Earth sciences. IODP follows on from three earlier phases, the Deep-Sea Drilling Project (DSDP, 1968-1983), the Ocean Drilling Program (ODP, 1983-2003) and the Integrated Ocean Drilling Program (IODP, 2003-2013). IODP is now a collaborative program, in which member countries (currently 25) provide a broad variety of drilling/coring/sampling capabilities to explore changes in the Earth system through geologic time. The United States (U.S.) supplies IODP's flagship –the leased commercial drillship *JOIDES Resolution*. The "JR", as she is affectionately known by the thousands of scientists and students who have sailed aboard her on more than 100 drilling expeditions around the world, has been serving the scientific drilling community since 1984. To address deep objectives within sedimented continental margins and in the crust, where overpressured fluids may create a hazard to drilling safety, Japan contributes the riser-equipped *Chikyu*; that vessel has completed a number of important expeditions along the Japanese/Nankai margin, and has also investigated the zone of slip associated with the 2011 Tōhoku earthquake. Finally, the European Consortium for Ocean Research Drilling (ECORD) contributes "mission-specific platforms" (MSPs), e.g., lift-boats, jack-ups, special purpose drilling vessels, to address targets not suitable for the other platforms - those in shallow water, like reefs and continental margins, and in ice-covered high latitudes.

IODP is entirely motivated by competitively reviewed proposals from the international community. These proposals respond to a decadal Science Plan, "Illuminating Earth's Past, Present and Future" (see iodp.org), developed and written in response to extensive discussions among the world's best Earth scientists. The vast majority of proposals are written by scientific teams from member countries and consortia, but IODP proposals often include scientists from non-member countries interested in scientific ocean drilling. IODP is also presently especially interested in adding countries bounding the South Atlantic to its membership ranks, as the JR will be there within the next 4-5 years; efforts have recently been underway to engage South Africa and Namibia. The Japanese are presently negotiating with Australia to bring *Chikyu* to the Lord Howe Rise for both deep and shallow drilling there. ECORD has plans to use MSP technologies to drill both in the Arctic (on the Lomonosov Ridge) and in the Gulf of Corinth (within a complex rift system there) between now and the end of the current phase of IODP in ~2018.

All IODP expeditions are staffed by technicians and scientific "parties" derived from member country/consortia communities. Those parties always represent a spectrum of appropriate disciplines, and include graduate students and educators. Members are expected to provide funding (e.g., salary, fellowships) for that participation, along with post-expedition support for scientific research, education and outreach, synthesis workshops, and other activities that showcase the program's world-class scientific results, e.g., lectures at academic institutions and museums. Cores are stored in perpetuity, in

repositories in Japan, Germany, and in the U.S., as the ultimate legacy of scientific ocean drilling.

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