

MEMORANDUM of UNDERSTANDING

between

**THE NATIONAL SCIENCE FOUNDATION
of
THE UNITED STATES OF AMERICA**

and

THE MINISTRY OF EARTH SCIENCES

concerning PARTICIPATION of

INDIA

in

THE INTERNATIONAL OCEAN DISCOVERY PROGRAM

as a member of

the *JOIDES Resolution* CONSORTIUM

The International Ocean Discovery Program (IODP) is a multinational program of scientific research in the oceans which uses drilling and logging to undertake research on earth system processes ranging from changes in the earth's climate to the rifting and drifting of continents. The IODP builds on the scientific results of the Deep-Sea Drilling Project (DSDP) initiated in 1968, the Ocean Drilling Program (ODP), which succeeded the DSDP in 1985, the Integrated Ocean Drilling Program, which began in 2003 and the encouragement that the United Nations Convention on the Law of the Sea has provided to international cooperation in marine scientific research. The IODP seeks to expand the international sharing of intellectual and financial resources, which have been critical to the success of scientific ocean drilling. The IODP scientific program is identified in the IODP Science Plan: *Illuminating Earth's Past, Present, and Future: The International Ocean Discovery Program Science Plan for 2013-2023*, which highlights four main themes, each encompassing a short list of high-priority scientific challenges. These themes are:

Climate and Ocean Change: Reading the Past, Informing the Future: Utilizing strategies that include latitudinal, longitudinal, and depth transects, scientific drilling will recover ocean floor sediment cores to provide records of past environmental and climatic conditions that are essential to understanding earth system processes.

Biosphere Frontiers: Deep Life Biodiversity and Environmental Forcing of Ecosystems: Samples recovered by ocean drilling permit the study of Earth's largest ecosystems, offering insights into the origins and limits of the deep biosphere, evolution of marine microfauna through times of environmental change, and human origins.

Earth Connections: Deep Processes and Their Impact on Earth's Surface Environment: The dynamic processes that create and destroy ocean basins, shift the position of continents, and generate volcanoes and earthquakes extend from Earth's core to its atmosphere, and are fundamental for understanding global change within the context of planetary evolution.

Earth in Motion: Processes and Hazards on Human Times Scales: Many fundamental Earth system processes, including those underlying major geologic hazards, occur at "human" timescales of seconds to years, requiring new sampling, downhole measurement, monitoring, and active experimental approaches.

The *JOIDES Resolution*, provided by the National Science Foundation (NSF) and operated by the U.S. Implementing Organization, is a non-riser vessel available for IODP operations on a global basis. Operational and management oversight of this drilling vessel and ancillary IODP functions is provided by the *JOIDES Resolution* Facility Board, which consists of leading members of the international scientific community and representatives from the NSF, funding agencies contributing to the operations of the vessel, and the U.S. Implementing Organization. Based upon recommendations from its advisory panels, the *JOIDES Resolution* Facility Board approves annual scientific operations for the vessel.

The NSF and the Ministry of Earth Sciences (MoES), hereafter referred to as the Participants, intend to cooperate in IODP activities during the period 1 October 2013 to 30 September 2019, as described in the following sections:

1 - STATUS OF THIS DOCUMENT

This Memorandum and its annexes are not legally binding, do not give rise to obligations or commitments under international law, and should have no effect as legal precedents.

2 - MEMBERSHIP IN THE *JOIDES Resolution* CONSORTIUM

MoES has elected to be a member to the *JOIDES Resolution* Consortium of the IODP and intends to cooperate and participate in the IODP in support of the IODP science program during the period of 1 October 2013 to 30 September 2019.

All cooperative activities described in this Memorandum, including funding arrangements and exchanges of technical information, equipment, and data, are conducted within the limits of available funds and in accordance with the national laws and regulations of each Participant, as well as with international agreements concluded by the nations in which the Participants are established, particularly any intended to prevent, reduce, and control pollution of the marine environment.

The NSF is acting pursuant to the National Science Foundation Act of 1950 as amended, 42 USC1861 *et seq.* This authorization defines the authority of the NSF to enter into this MOU to cooperate in IODP activities.

3 - DURATION OF MEMORANDUM

The IODP implementation period extends from 1 October 2013 until 30 September 2019. During this period, drilling is to be accomplished from the non-riser platform *JOIDES Resolution* if recommended by the Advisory Panels, approved by the *JOIDES Resolution* Facility Board, and if funding and/or other resources are provided by *JOIDES Resolution* Consortium members for *JOIDES Resolution* operations.

Cooperation under this Memorandum may be discontinued at any time by either Participant. The other Participant should receive written notice at least one year in advance.

4 - SCIENTIFIC PLANNING

Scientific planning and direction of the IODP is a function of the two primary Advisory Panels: the Science Evaluation Panel and the Environmental Protection and Safety Panel. The Advisory Panels are composed of scientists and engineers representing the Participants and other IODP members. These panels provide guidance on the scientific planning of the IODP and recommend science and engineering plans based on proposals from the international science community.

