

## ICDP Status and Future

### CURRENT STATUS as of January 2021

#### ICDP Project Schedule 2020/2021

#### ICDP Projects in operation in 2020

- Collisional Orogeny in the Scandinavian Caledonides (COSC-2)
- Jurassic Earth System and Timescale (JET)

#### Upcoming ICDP Projects

- Geological Research through Integrated Neoproterozoic Drilling: The Ediacaran-Cambrian Transition (GRIND-ETC)
- A Strainmeter Array Along the Alto Tiberina Fault System, Central Italy (STAR)
- Trans-Amazon Drilling Project (TransAmazon)
- Drilling Overdeepened Alpine Valleys (DOVE)

**ICDP Workshops** (CUBO Cornell University, NICA-BRIDGE, Deep Dust 2.0)

#### ICDP Outreach Activities

#### Proposal Submissions 2020

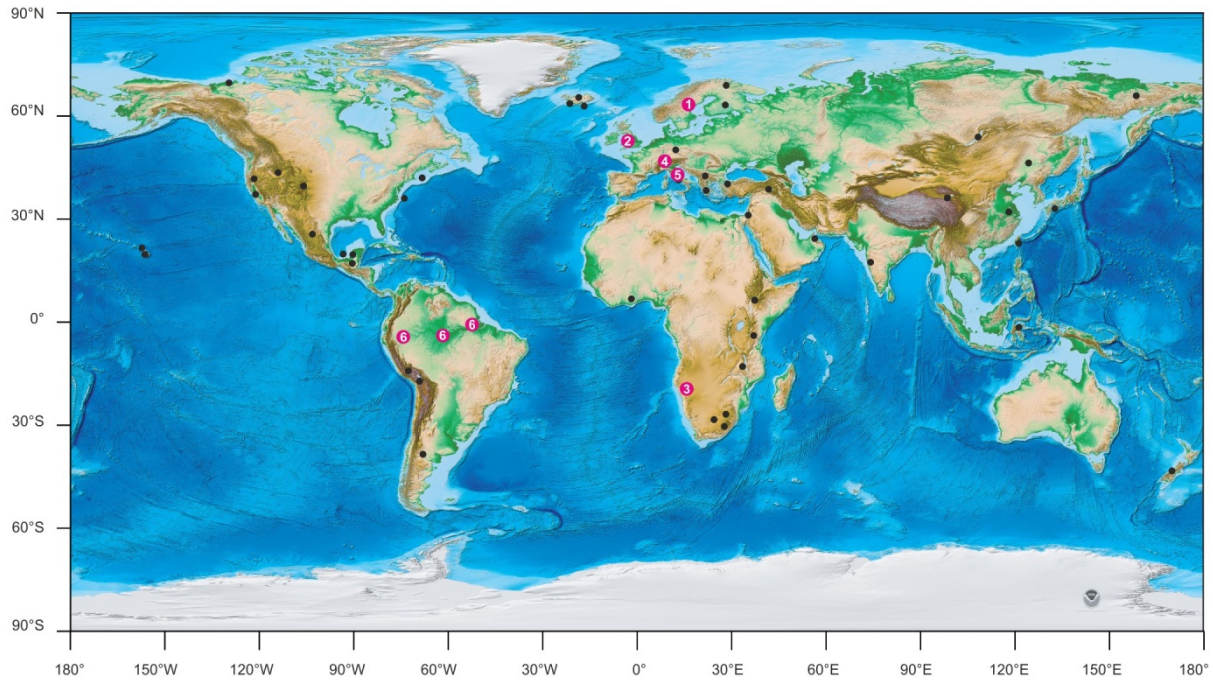
#### New ICDP Science Plan

#### L2S – a new ICDP-IODP drilling initiative

#### First applications of mDIS

#### ICDP Profile

## ICDP Project Schedule 2020/2021



### ICDP Projects in operation in 2020

1 COSC-2	May – August 2020	Sweden
2 JET	Oct – Dec 2020	UK

### ICDP Projects scheduled for 2021

3 GRIND-ET	Spring 2021	Namibia
4 DOVE	Spring 2021	Switzerland, Germany
5 STAR	Summer 2021	Italy
6 TransAmazon	Fall 2021	Brazil

## ICDP projects in operation in 2020



### **Collisional Orogeny in the Scandinavian Caledonides (COSC-2): Drilling the main Caledonian décollement and into the basement of the Fennoscandian Shield**

The Collisional Orogeny in the Scandinavian Caledonides (COSC) scientific drilling project is investigating mountain building processes at mid to lower crustal levels in a deeply eroded Paleozoic collisional orogen of Himalayan dimensions by means of two boreholes in Jämtland, Sweden. The 2,496 m deep COSC-1 borehole was drilled 2014 and provided detailed insights into continent-continent collision, including the hydrogeological state and geothermal gradient of the mountain belt as well as the deep biosphere in metamorphic rocks and the crystalline basement [Lorenz et al., 2015]. The COSC-2 site was drilled May-August 2020 to define the character and age of deformation of greenschist facies thrust-sheets, the main Caledonian décollement and the Precambrian basement that underlie the nappes drilled in COSC-1.

After 4 months, the drilling at the COSC-2 site was successfully concluded on 12th August 2020, comprising a main borehole (COSC-2A) that reached down to 2,276 m depth and a short hole (COSC-2B) cored to 116 m to cover the top interval of COSC-2A. The core recovery rate was close to 100%. The main borehole is open (uncased) below the 100 m surface casing, providing ideal conditions for borehole experiments.

The geology of COSC-2A held some lithological surprises especially regarding the level of main Caledonian décollement: below 775 m depth, COSC-2 sampled an imbricated section of quartzites, diverse conglomerates and tuffs down to the depth of a linear seismic reflection that was originally interpreted as the décollement, but in contrast seems to correlate with the top of a thick section of porphyry. The main décollement therefore appears to be located at shallower depth.

An extensive set of downhole logging data was acquired directly after drilling by the ICDP-OSG in cooperation with a team of Lund University. The COSC-2A borehole was logged over the complete length for natural gamma radiation GR, spectrum GR, sonic, oriented caliper, electrical resistivity, magnetic susceptibility, and temperature. An acoustic borehole wall imager was run from bottom to 1,165 m. Borehole seismic measurements in 2021 will help to define and correlate seismic boundaries with lithology and structures observed in the drill core. A detailed lithological description of the drill core and sampling for laboratory work will be performed in 2021.



*COSC-2A drilling in Jämtland, Sweden. Photo: Henning Lorenz.*



## **Jurassic Earth system and Timescale (JET)**

The major goal of the ICDP JET project is to produce a new global standard for the Early Jurassic Epoch, a time of extreme environmental change. Through the Early Jurassic there are well-documented examples of rapid transitions from cold, or even glacial climates, through to super-greenhouse events, the latter characterized worldwide by hugely enhanced organic carbon burial, multiple large-magnitude isotopic anomalies, global sea-level changes and mass extinctions. These events not only reflect changes in the global climate system but are also thought to have had significant influence on the evolution of Jurassic marine and terrestrial biota. JET will integrate Astrochronology, Chemostratigraphy, Biostratigraphy, and Magnetostratigraphy and, combined with existing data from the old Mochras core, will become the international standard for these crucial 25 million years of Earth history.

The initial plan of re-drilling a 45-year-old borehole at the Mochras Farm on the coast of Cardigan Bay (Wales) had to be revised due to permitting issues. The new site (Prees),

situated close to a former oil and gas exploration well that fulfills and even exceeds the initial science objectives, was drilled in the Cheshire Basin (Shropshire, England) from October to December 2020. Drilling at Prees reached a total depth of 656 m and recovered 114 cores of very good to excellent quality and recovery rate. The team reached the project's goal by drilling through the complete Jurassic sequences and well into the Upper Triassic lacustrine red beds (Brooks Mill Mudstone) and, thus, achieved the primary objectives with regard to the Jurassic – Triassic boundary strata. Despite pandemic restrictions it was possible to assemble a core team of on-site scientists from Exeter, Leeds and Southampton universities, and the British Geological Survey. Core logging and scanning was conducted at the National Core Repository and Core Scanning Facility (CSF) in Keyworth, Nottingham, and will continue with detailed work in 2021.



*A biostratigraphically significant (and magnificent) ammonite from Prees core (JET). Ammonites provide one of the most finely resolved biostratigraphic schemes in the Phanerozoic. Photo: Amy Elson.*

## ICDP Operations scheduled for 2021



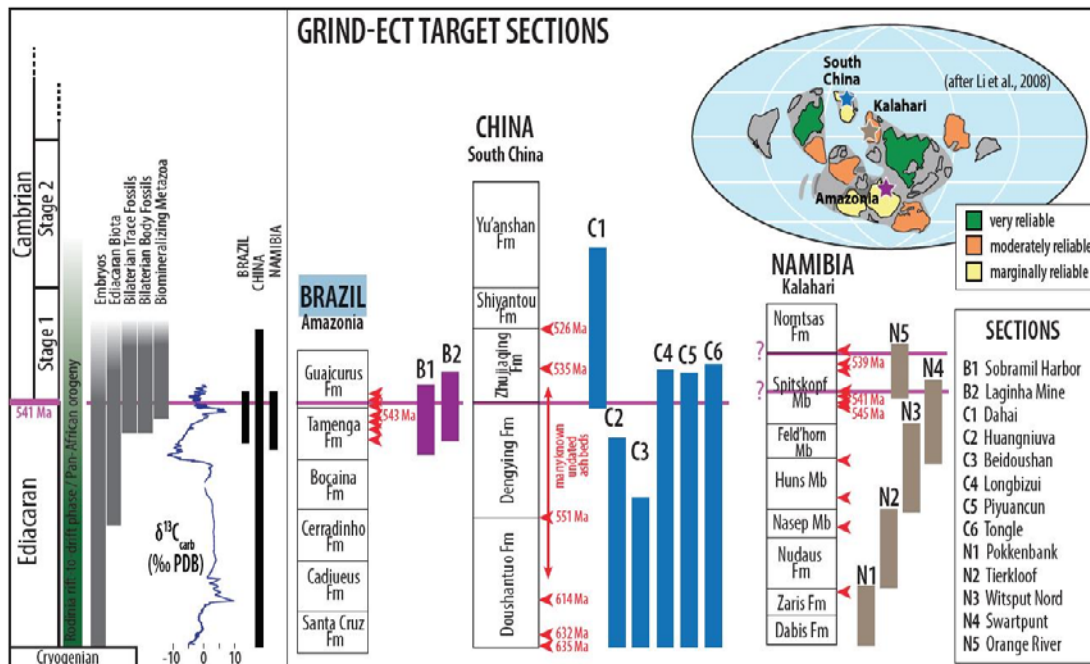
### Geological Research through Integrated Neoproterozoic Drilling: The Ediacaran-Cambrian Transition (GRIND-ETC)

The Neoproterozoic Era (1000 - 541 Ma) is one of the most dramatic in Earth history: metazoans evolved, the supercontinent Rodinia formed and broke apart, the global carbon cycle underwent high-amplitude fluctuations, oxygen concentrations rose and climate experienced at least two episodes of worldwide glaciation. The multi-phase GRIND project will obtain cores, each from 150 to 550 m, through the archetype successions that record the environmental and biogeochemical context during which life on Earth exploded. The specific targets of the first GRIND phase are the Ediacaran-Cambrian transition strata (560-530 Ma) of west Brazil, south China and south Namibia. The objective is to create a core network of correlative ECT strata that will enable constructing a highly resolved, temporally constrained geobiological, stratigraphic and geochemical database, as well as to provide a legacy archive for future research. The goal is to understand the drivers of the Neoproterozoic Earth system revolution: it began with simple eukaryotes that populated Earth during the preceding billion years of the Mesoproterozoic, underwent multiple Snowball Earth events, and emerged with the oxygenated, diverse ecosystems of the Cambrian. The three-nation drilling program will be undertaken sequentially.

The first phase of drilling in Namibia between September and November 2019 at Tierkloof in the southern Namibian desert retrieved 1,862 m drill core from 7 sites. Drilling in Namibia will resume in spring 2021 with drilling a final hole, followed by successive drilling activities in Brazil and China. All cores will be split and either being archived in repositories within each of the target nations or used for research purposes by GRIND-ECT scientists and for education and training for national capacity building and outreach activities. The working half of all cores will be permanently stored in the German Federal Institute for Geosciences and Natural Resources (BGR) in Berlin-Spandau, Germany. At a complementary drill site in Amazonia, Brazil will recover a similar section deposited at the end of the Proterozoic eon.



*GRIND drilling and core description in Namibia in fall 2019.*



Schematic showing GRIND-ECT target sections in Brazil (B1-2), China (C1-6) and Namibia (N1-5), and their temporal relationship to key evolutionary, C-isotope and tectonic events. Red arrows represent ash beds. Inset map shows locations of drill sites (marked by stars) on a paleocontinent reconstruction for the formation of Gondwana during the late Ediacaran.



### A Strainmeter Array Along the Alto Tiberina Fault System, Central Italy (STAR)

STAR aims at deploying a STRainmeter ARray in shallow boreholes to monitor slow (aseismic) deformation to address questions about the relationship between creep, slow slip, dynamic earthquake rupture and tectonic faulting at the low-angle normal Alto Tiberina fault (ATF) in the Northern Apennines. Understanding the physics controlling both -seismic and aseismic-slip on a single fault patch, has implications for seismic hazard and risk assessment globally. STAR will consist of six 80-160 m deep vertical boreholes covering the portion of the ATF that exhibits repeating earthquakes as an indicator for fault creep at shallow depth (~4 km). Boreholes will be instrumented with strainmeters, seismometers and pressure transducers. Each site will be also equipped with surface GPS and a meteorological instrument allowing correlation between seismicity, degassing (CO<sub>2</sub>, Rn) measurements and subsurface strain. STAR will provide the international community an opportunity to study creep at local scale and over periods of minutes to months poorly constrained by other geophysical instruments. STAR drilling is planned to be conducted in summer 2021.



## Trans-Amazon Drilling Project

The Trans-Amazon Drilling Project will address fundamental questions about the geologic and biotic evolution of the Amazon, focusing on (1) how Cenozoic climate and geologic history, including uplift of the Andes and development of the Amazon fluvial system, influenced the origins of the Amazon rainforest and its incomparable biodiversity; and (2) the origin of the Amazonian “Pentecaua” diabase sills, one of Earth’s largest intrusive complexes, and the impacts of this intrusion on the atmospheric gas composition and mass extinction at the Triassic/Jurassic boundary. It is planned to drill the entire Cenozoic sequence (and for two sites also the underlying diabase sequence) in five continental sites in four different ancient sedimentary basins that are aligned along the modern Amazon River and that transect the entire near-equatorial Amazon region of Brazil, from the Andean foreland to the Atlantic Ocean. This transect, coupled with proposed IODP sites on the Amazon continental margin, will encircling nearly 10% of Earth’s equatorial circumference. Spud in of the first well is currently planned for summer 2021.



*The Amazon region is target of upcoming ICDP drilling activities. Photo: Paul Baker.*

## Drilling Overdeepened Alpine Valleys (DOVE)

The sedimentary infills of glacially overdeepened valleys are, together with glacial geomorphology, the best-preserved direct archives of extents and ages of past glaciations in and around mountain ranges. DOVE intends to recover a number of sediment cores from glacially overdeepened structures at several complementing locations within the Alps and their foreland. Besides the basic scientific goals, DOVE also addresses a number of applied objectives such as groundwater resources, geothermal energy production, and seismic hazard assessment. The first sites to be cored in 2021 will be a sequence of late Quaternary glacial deposits of about 150m thickness at the Glatt valley in NE Switzerland, a 200-m-thick succession of glacio- to lacustrine-sediments in Basadingen (N Switzerland) and the Tannwald site in S Rhine Glacier deposits of S Germany comprising about 200 m of little to strongly compacted tillites. Drilling is scheduled to start in May 2021.



## ICDP Workshops

ICDP funds workshops to support groups of international scientists with an outstanding scientific theme of socio-economic relevance that requires drilling. The workshops serve to form a broad and competent Science Team and to develop full drilling proposals to ICDP and other co-funding agencies or industry. ICDP also supports post-drilling workshops after completion of the operative work and basic core and sample description for e.g. discussing of initial results and organizing individual sampling. Over the past years, ICDP supported the conduction of workshops with a broad topical spectrum addressing various future drilling projects.

Workshops 2020	Date and Venue	Participants	Countries
Deep Geothermal Test Borehole, Cornell Campus	January 8-10, 2020, Ithaca, New York, USA	64	6
Paleoclimate, Paleoenvironment, and Paleoecology of Neogene Central America: Bridging Continents and Oceans (NICA-BRIDGE)	March 2-5, 2020 Montelimar, Nicaragua	49	12
Probing Continental Climate Of The Late Paleozoic Icehouse-Greenhouse Transition (Deep Dust 2.0)	January 27-28, 2020 Paris, France	33	8
Lake Izabal Basin Research Endeavor (LIBRE)	POSTPONED Antigua, Guatemala	-	-

Due to the current pandemic situation, no workshops have yet been announced for 2021.

## ICDP Outreach Activities

### Journal SCIENTIFIC DRILLING






Two issues (Vol. 27 and Vol. 28) of the ICDP-IODP program journal SCIENTIFIC DRILLING, edited by ICDP-OSG and IODP scientists, were published 2020 by Copernicus Publications. The two issues included five 'Science Reports', two 'Reports on Technical Developments', and five 'Workshop Reports'. As in 2019, the quality and quantity of manuscripts submitted to SCIENTIFIC DRILLING remained high in 2020 and confirmed the uniqueness of this journal in the geosciences community.



## ICDP at conferences

Due to the pandemic situation, the usual international conferences with ICDP presence were either postponed or changed to an online format. The 36th International Geological Conference IGC in India, which was scheduled for March 2020, was postponed to August 2021. The EGU General Assembly and the AGU Fall Meeting were both held virtually. ICDP was represented at the virtual 2020 EGU General Assembly (May 4-8) with the online session “Achievements and perspectives in scientific ocean and continental drilling”, jointly organized with ICDPs marine counterpart IODP. 25 papers on new findings from drilling in the marine and terrestrial realms were presented and lively discussed online by more than 180 participants.

During the 2020 AGU Fall Meeting, on December 7, ICDP held a joint virtual Town Hall meeting together with CSDCO (Continental Scientific Drilling Coordination Office, Minneapolis, USA) that was attended by 75 participants. Marco Bohnhoff (ICDP Executive Director) and Anders Noren (Director CSDCO) provided updates on news and recent developments from both programs, Roz Coggon introduced the new IODP Science Plan and ICDP-PI Steve Hesselbo reported about a drilling project in UK (JET). The presentations were followed by a Q&A round and the opportunity to meet in virtual breakout groups for specific discussion.

			<b>Rules of the game</b>
			<ul style="list-style-type: none"> <li>✓ Microphone muted</li> <li>✓ Camera on or off</li> <li>✓ Use chat function</li> <li>✓ Unmute microphone when prompted</li> </ul>
News and Views LacCore/CSDCO	Anders Noren		
News and Views ICDP	Marco Bohnhoff		
New IODP Science Plan	Roz Coggon		
JET - Drilling at Prees, UK	Steve Hesselbo		
Q&A	All		

## ICDP proposal submission 2020

Seven Full Proposals, six Workshop Proposals and one Pre-Proposal were submitted by January 15, 2020. The number of proposals remains at high level, albeit with a slightly lower number of submissions than in 2018 and 2019.



## New ICDP Science Plan

The new ICDP Science Plan 2020-2030 was released on 1st of October 2020. The Science Plan runs under the headline 'Billions of years of Earth Evolution', informs about the program structure of ICDP and outlines the four scientific key themes for continental scientific drilling in the coming decade: Geodynamic Processes, Geohazards, Georesources, and Environmental Change.

In this framework future ICDP projects will focus on the evolution of planet Earth, past climates, the effects of large impacts and mass extinctions, the formation and wise utilization of our most significant resources, and in-situ monitoring of volcanoes and fault zones. The linkage to wider societal challenges will include climate action, mitigation of natural hazards, affordable clean energy, sustainable cities and communities and clean water and sanitation.



The Science Plan was developed in close cooperation with ICDP's offshore sibling, the International Ocean Discovery Program, IODP. Jointly with IODP, the ICDP aims now also at fostering the successful cooperation by implementing new Land-to-Sea Drilling projects that require combined onshore and offshore – amphibious – scientific drilling to tackle the key scientific themes.

The ICDP community is kindly invited to discover the new ICDP Science Plan and to start brainstorming about new drilling initiatives and to spread the word on ICDP in science networks. Download the [Science Plan](#) here and watch an [introductory video](#).

## L2S – a new ICDP-IODP drilling initiative

To date, ICDP and IODP have jointly funded proposals which demonstrate a scientific need for either both land and sea drilling (e.g., New Jersey Shallow Shelf ICDP/IODP Expedition) and drilling shallow marine locations where the collaboration between IODP and ICDP can achieve much more than either entity on its own. The new Land-to-Sea (L2S) Proposals replace Amphibious Drilling Proposals and are for projects that can be jointly implemented by ICDP and IODP. Both programs focus on various challenging themes of global geoscientific and socio-economic relevance, including Geodynamic Processes, Geohazards, Georesources, and Environmental Change. **L2S proposals need to require scientific drilling at both onshore and offshore sites or at shallow marine sites.**

There is now a common proposal submission process at each proposal stage and a joint review process by IODP and ICDP with a clear schedule and set of guidelines for proponents. This will reduce the workload and simplify the process for L2S proposal proponents, improve the effectiveness and speed of the review process and hopefully encourage more people to submit such proposals. All L2S projects will need to start with a Preliminary Proposal, followed by (if successful) by a Workshop Proposal, and then a Full Proposal.



## First application of mDIS

The Drilling Information System (DIS) is the ICDP data portal for field, lab and sampling data to facilitate data management of drilling projects. A completely new version of the DIS called the mobile DIS (mDIS) was developed in 2018 and 2019. For the first time mDIS is now platform independent and can be utilized from smartphone to desktop devices alike. It is based on open-source components, web-based, and platform-independent. A beta version of mDIS designed for fieldwork was presented to the community at the EGU 2019 General Assembly. First mDIS deployments in the field have been conducted during GRIND and Eger Rift drilling to capture critical datasets of the recovered rock samples, on-site sample requests, and drilling engineering data, together with a unique International Geo Sample Number (IGSN) to ensure a high-quality reference data set available for all science team members of a drilling project.

The first two projects, COSC-2 and JET successfully apply the new “expedition-mDIS” for sample and data management during drilling. Moreover, the OSG team started data migration to mDIS for the still highly active ICDP project “Far-Deep” as well as for ICDP cores at the core repository of the Federal Institute for Geosciences and Natural Resources (BGR) in Spandau/Berlin, Germany.



MOBILE DRILLING INFORMATION SYSTEM

## ICDP Profile

Scientific Drilling is an indispensable tool of modern Earth Science research, because it provides the only means of obtaining direct information about on-going processes below the surface of the Earth and at depth. Drilling allows determining *in-situ* properties of solid materials and fluids, and permits testing of hypotheses and models derived from surface and remote sensing observations. Drill holes may be used as a natural laboratory for experiments and observatories for long-term monitoring of ongoing active geological, microbiological processes. Earth drilling, therefore, plays a critical role in scientific research directed towards improving our understanding of the workings of our planet and has a key role in solving urgent societal problems.

Multinational efforts in continental scientific drilling have been coordinated by ICDP since 1996. The concept for this program was developed in response to the geosciences community's need for scientific drilling as an essential tool to achieve a better understanding of fundamental Earth processes and structure. The program is based on comingled funding and international cost sharing, joint efforts of international science teams, as well as technology and knowledge sharing. The program concentrates on topics of high international priority, and drilling projects are conducted at locations of global geological significance. The organization is simple and flexible, comprises an independent science review board and executive and oversight committees. Administrative assistance and substantial operational support are provided by the GFZ German Research Centre for Geosciences in Potsdam. Funding is provided by a growing number of member countries, usually through corresponding national funding agencies.

ICDP fosters proposals through international workshops that assist researchers in the development of a drilling proposal. To date, more than 90 ICDP workshops have been funded and have resulted in more than 50 ICDP supported and successfully executed drilling projects. Thematically the activities have focused on paleoclimate investigations, earthquake and volcano research, impact events, geodynamics, and potential energy resources (see below for current and future themes). Many scientific results from these drilling and Earth observation projects have been published in high-ranking scientific journals. Training of scientists in engineering, on-site science and data management technologies is also an important component of ICDP's strategy to foster the success of ICDP-related drilling proposals. The journal "Scientific Drilling" (jointly issued with the International Ocean Discovery Program IODP), serves to communicate developments from current projects as well as workshop reports and announcements for future scientific-drilling related activities.

### Global Partners

ICDP has currently (as per December 31<sup>st</sup>, 2020) 22 members including 21 countries (Austria, Belgium, China, Czech Republic, Finland, France, Germany, Iceland, India, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, South Africa, Spain, Sweden, Switzerland, the United Kingdom and USA), and, in addition, UNESCO as member organization. Expressions of interest in membership and/or negotiations are currently underway with Australia, Brazil, Russia, Turkey, Portugal, Denmark, among others. The GFZ German Research Centre for Geosciences in Potsdam is the Executive Agency of the ICDP and acts on behalf of the ICDP members.

## Support Level

Drilling projects are an integral component of major geoscience research programs, including comprehensive pre-site investigations, accompanying laboratory studies, drilling (directly supported by ICDP), and measurements and tests in the drill hole. Drilling programs are costly and only realizable to a limited extent by any entity acting alone. International cost sharing, optimal utilization of all available resources, incorporation of international leading experts, and application of the existing knowledge combined with selection of optimal drilling locations (“World Geological Sites”), are all essential elements of the international continental scientific drilling program ICDP.

ICDP is financed through the annual contributions of its members. The membership fees are negotiated between new members and ICDP and vary, based on a number of criteria that include economic factors, scientific impact and manpower and population of the respective country. Low income developing countries can become ICDP member under the UNESCO membership umbrella.

The ICDP funds are used, for the most part, for co-funding of approved ICDP projects and for executing ICDP workshops and training courses. In addition, funds cover expenditures for the maintenance of the ICDP Equipment Pool which includes the ICDP Drilling Information System (DIS). The annual membership income to support ICDP activities is approximately \$3.5M.

The philosophy of ICDP support for projects is based on the “comingled funding” principle. This means that the ICDP –after an in-depth scientific and strategic evaluation- provides part funding of a project that then typically serves as door opener for acquiring matching funds. The financial contribution by ICDP to directly support a drilling project varies between about 5% to about 70% (in rare cases) of the total operational costs.

The program is based on a reliable budget with regular financial contributions by the member institutions, strict expense policies including moderate project funding with no long-term financial commitments and very low program administration costs. This allows for attracting new Earth science communities through opportunities to get workshop and project proposals funded. ICDP’s organization, its financing through comingled funding, and the bottom-up project policy, which is relying on unsolicited proposals and thus driving the program at large, is serving as a model for other programs.

## ICDP Organizational Structure and Management

**The Assembly of Governors (AOG)** provides financial and scientific oversight of the ICDP. It determines the program policies, decides on EC-recommended full proposals and allocates the amount of comingled ICDP funding for each individual drilling project. In addition, the AOG decides on the annual program plan, associated budget and discusses the long-range plans of the ICDP as they are prepared and proposed by the EC.

**The Executive Committee (EC)** is responsible for the scientific orientation and objectives of the program. It decides on workshop and technical proposals, reviews the operational, technical, managerial and financial feasibility of full proposals, recommends funding of full proposals to the AOG, assembles the scientifically prioritized projects into an annual and multi-year program plan. The EC is made up of one appointee from each ICDP member country and nominated by the respective funding partners of the program. EC members

typically are science managers with expertise in drilling and/or coordination of major research projects.

**The Executive Director (ED)** represents the ICDP internationally and has the executive responsibility for carrying out the program. She or he plays a key role as the international spokesperson and ambassador for the ICDP and oversees the OSG during the planning, implementation and termination of ICDP-supported scientific drilling projects. Another key duty is to translate the program plan into annual and long-range program and budget plans.

**The Science Advisory Group (SAG)** is an independent body of internationally renowned experts in the research fields covered by the program. Its task is to carry out thorough scientific evaluations of all pre-proposals, full proposals and workshop proposals as they are submitted to the ICDP. The SAG also assigns priority on each proposal based on expected scientific impact, outreach and educational potential. The SAG recommendations are the primary input to the EC as it develops projects for both annual and long-range programs. The SAG has developed the following set of evaluation criteria:

- Quality of Science
- Need for Drilling
- Qualifications of Proponent
- Societal Relevance
- Budget
- Responsiveness to previous recommendations
- Technical Feasibility
- Adequacy of Site Characterization
- Cost Effectiveness
- Project Organization

**The Operational Support Group (OSG)** plays a major role in supporting the management of the program and in providing expertise and stability to planning and operation of the overall program. The GFZ German Research Centre for Geosciences in Potsdam handles the administration of the program, including financial accounting and contractual support. Currently the GFZ finances from its own budget a group of six scientists, engineers and technicians who compose the core of the ICDP Operational Support Group and are based at the GFZ. The OSG serves to support the following functions:

- Providing technical and scientific liaison to SAG and EC
- Developing Joint Research Ventures for each project authorized by the EC
- Managing and supporting the Secretariats for AOG and EC
- Assisting in contracting and permitting
- Supporting scientific and engineering drill-site operations



- Supporting field facility for core and sample description and management
- Providing all data collected during each project through a readily accessible data management system for ICDP projects, the Drilling Information System (DIS)
- Preparing – through ICDP’s DIS - Initial Reports that describe drilling, engineering, sample and core description, and also procedures for each project
- Providing training courses in scientific drilling prior to and during drilling projects
- Organizing outreach activities on major international geoconferences (AGU, EGU, IGC)
- Editing the IODP-ICDP journal ‘Scientific Drilling’
- Developing, purchasing and maintaining an ICDP Equipment Pool comprising scientific-technical instruments and tools for on-site use during ICDP projects
- Providing management support for individual ICDP projects
- Providing and operating ICDP equipment

Management of ICDP activities at the GFZ takes place by the following personnel:

- Prof. Dr. Marco Bohnhoff (Executive Director)
- Dr. Ulrich Harms (Executive Secretary and Head of the ICDP Operational Support Group).

*Credits: Topographic/Bathymetric world map (Page 2) with courtesy from NOAA. All photos by ICDP, if not mentioned otherwise.*