Editorial Preface

Dear Reader:

A survey among leading Earth scientists in Europe and the U.S.A. yields a ranking of topics in geosciences: earthquake prediction (21%), climate change (20%), origin of life (10%), deep Earth processes (9%), sustainable energy resources (7%), volcano eruption prediction (6%), and plate tectonic challenges (5%). This issue of *Scientific Drilling* reflects full accord with these key topics.

Fundamental research in support of earthquake prediction is pursued by IODP through an ambitious drilling and observatory experiment (page 4). Workshop reports address possibilities to recover ephemeral fault-zone properties immediately after large earthquakes (page 66), to drill into New Zealand's Alpine thrust fault (page 75), and to study a low-angle normal fault within the western U.S. (page 57). Regarding climate change, a report from a joint IODP-ICDP workshop addresses high resolution paleoclimate records from lakes, ice and oceans, and how these can be integrated to elucidate key climate drivers (page 46); an example is the Laguna Potrok Aike drilling campaign in southern Argentina (page 29).

The Archean Barberton Mountain Greenstone Belt in southern Africa preserves clues on early life and Earth conditions (page 24). In recent geological times, the East African Rift formed, and its basins and lakes provided environments for our ancestral hominids to develop under the influence of a variable climate and landscape. A meeting in Addis Ababa, Ethiopia addressed drilling plans to recover 6 My of environmental history, and tie this to the record of hominid evolution (page 60). A high priority of IODP is to drill the equivalent offshore marine sequence within the Gulf of Aden. However, safety issues currently prevent IODP to join ICDP in this exciting endeavor to understand our evolutionary past.

A large gathering of Earth and ocean drilling scientists will take place in Bremen on 23–25 September to discuss a new scientific ocean drilling program to replace IODP by 2013 (*INVEST*; www.marum.de/iodp-invest.html). With the legendary drilling vessel *JOIDES Resolution* refurbished and successfully back in service to IODP (page 38), and with current scientific drilling activities being well aligned with topics of high scientific and societal rank, this meeting is well positioned to define future goals. One of the five overarching themes of the *INVEST* meeting is "Earth-Human-Earth Interactions". Incidentally, a recent editorial in *Science* (17 July 2009) states that there is "urgent need to confront human-induced global environmental change". Earth scientist involved with drilling indeed seems to have their feet well attached to the ground, and ready to take on such future challenges.

The important role of the major drilling programs in providing for a holistic understanding of our global environment is also a clear message from the new president of IODP (page 83), calling for enhanced collaboration between drilling and other major research programs. Welcome to this 8th issue of *Scientific Drilling*!

Hans Christian Larsen
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Front Cover: The *JOIDES Resolution* departed Honolulu, Hawaii, on 9 May 2009 at the beginning of Expedition 321: Pacific Equatorial Age Transect 2. Photo Credit by WIlliam Crawford, IODP/TAMU. (See page 38)
Left inset: Core from the frontal thrust, IODP Expedition 316. The thin dark layer in the center represents major displacement. (See page 8)

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IODP is an international marine research drilling program dedicated to advancing scientific understanding of the Earth by monitoring and sampling subseafloor environments. Through multiple drilling platforms, IODP scientists explore the program's principal themes: the deep biosphere, environmental change, and solid Earth cycles.

ICDP is a multi-national program designed to promote and coordinate continental drilling projects with a variety of scientific targets at drilling sites of global significance.

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