

Global strategy for investigating Earth's geodynamics emerges from international collaboration

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Fifty-one researchers, prominent Earth scientists representing 15 countries, gathered recently in Switzerland to forge a global strategy for advancing understanding of continental rifting and break-up through the use of a new array of multiple drilling platforms provided by the Integrated Ocean Drilling Program.

The group's emerging plan is discussed in an article in the Nov. 14 edition of Eos, a publication of the American Geophysical Union. The authors are Millard (Mike) Coffin of the University of Tokyo; Dale Sawyer of Rice University, Houston; Timothy Reston of University of Birmingham, UK; and Joann Stock of the California Institute of Technology, Pasadena.

Continental-rifting and continental break-up are not yet well understood by scientists. Mike Coffin, lead author and one of the meeting's co-chairs, explains: "We do not yet understand the driving forces of rifting and break-up, or the tectonic processes that control and accompany the phenomena. We need to investigate the mechanisms that generate huge volumes of magma that flow very quickly over broad areas of rifting margins, and the role of fluids and volatiles during rifting. Also, there is an unknown heat budget associated with rifting." He adds, "Only a comprehensive, multi-disciplinary approach that includes ocean drilling will move us to greater understanding of these processes."

The emerging scientific drilling proposal includes sampling relatively young, active rifting zones in the western Pacific Ocean (near Papua New Guinea) and the Gulf of California; sampling ancient continental margins off East Greenland, Norway, the British Isles, and western Australia to investigate magma-forming and eruption processes associated with rifting and breakup; and testing tectonic hypotheses at hyper-extended margins in the south Atlantic Ocean, off the Iberian peninsula, and off the coast of Newfoundland.

The researchers involved with the continental rifting and break-up proposal expect to submit their drilling proposal to the Integrated Ocean Drilling Program (IODP), the world's most ambitious international marine research program, next April. IODP undertakes scientific ocean drilling expeditions to investigate solid Earth cycles and geodynamics; environmental change, processes and effects; the deep biosphere and the seafloor ocean. Expeditions are developed from drilling proposals submitted by scientists, individually or in groups. Submitted proposals are accepted and evaluated twice a year: April 1 and October 1.

Source: Integrated Ocean Drilling Program Management International

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