

scale forest dieback and interactions with multiple stress factors including other disturbances (e.g., fire, insect outbreaks; Dominique Bachelet, The Nature Conservancy).

Although current observations of die-off are insufficient to determine if worldwide trends are emerging due to a lack of a global monitoring system, recently docu-

mented regional patterns are consistent with projected impacts of global climate change and highlight the substantial risk for widespread climate-induced forest dieback (Craig Allen, U.S. Geological Survey).

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Large Igneous Provinces

**IODP-MI/JOI Large Igneous Province Workshop;
Coleraine, United Kingdom, 22–25 July 2007**

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Catastrophic massive volcanism and contemporaneous environmental change have punctuated Earth history for at least the past 3.5 billion years. Geodynamic and magmatic processes associated with large igneous province (LIP) formation interact with crustal structure and tectonic setting to produce various expressions of LIPs, the most common of which are oceanic plateaus, magma-dominated divergent continental margins, and continental flood basalts. Environmental and biotic perturbations simultaneous with LIP formation include climate changes, mass extinctions, accelerated evolutionary rates, oceanic anoxic events (OAEs), and variations in ocean chemistry. Exploring these relationships promises exciting science.

The LIP workshop, hosted by the Integrated Ocean Drilling Program (IODP) and Joint Oceanographic Institutions, was held at the University of Ulster in Coleraine, U.K. Eighty scientists from 16 nations discussed strategies for advancing understanding of LIPs and associated environmental changes using the three new IODP platforms and related technologies. Over 4 days of plenary and breakout sessions, including examination of the UNESCO World Heritage Giant's Causeway exposure of the North Atlantic LIP, scientists who approach LIPs through field, laboratory, and modeling studies

shared their understanding of the world's LIPs; discussed outstanding problems related to LIP origin, emplacement, and environmental consequences; and outlined a global mission to address these problems via drilling in conjunction with complementary geoscientific studies.

Global studies of LIPs together with investigations into contemporaneous environmental and biotic changes involve many scientific disciplines. The workshop began with global overviews of rift-related and intraplate LIPs as well as environmental consequences of LIPs. Four keynote presentations focused on (1) the most studied rift-related LIP, the conjugate Norway–East Greenland margins; (2) oceanic plateaus—Ontong Java Plateau and Kerguelen Plateau/Broken Ridge; (3) LIP-related biotic changes and OAEs; and (4) capabilities of riser, riserless, and mission-specific IODP platforms. Presentations on the IODP proposal process and drill site characterization addressed practical matters required for drilling.

Multidisciplinary, synergistic approaches are required to address outstanding Earth system problems associated with LIPs, so most of the workshop was conducted in plenary session to take advantage of the full diversity and expertise of workshop participants. Following opening addresses, 49 five-minute presentations by partici-

pants spanned the spectrum of contemporary LIP and paleoenvironmental research. Focused thematic plenary and geographic breakout group discussions ensued, during which participants defined key LIP problems and identified drilling targets.

The workshop concluded with participants defining multiple pathways to drilling key LIPs ranging from individual projects to major mission initiatives, including full cooperation between the IODP and the International Continental Scientific Drilling Program (ICDP), as well as joint academia-government-industry collaborations. Overall, the workshop highlighted that understanding the timing and duration of unique LIP magmatism and emplacement processes has significant implications for Earth system evolution, ranging from mantle geodynamics to climate and major global environmental and biotic changes.

A white paper on LIPs is being prepared for *Scientific Drilling* (a journal published by the IODP with the International Continental Scientific Drilling Program), and the full workshop report will be available at <http://www.iodp.org>, which is also the source of comprehensive information about the IODP.

The full text of this meeting report can be found in the electronic supplement to this *Eos* issue (http://www.agu.org/eos_elec/).

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