

# The LIP Reader

Newsletter of the Commission on Large-Volume Basaltic Provinces  
International Association of Volcanology and Chemistry of the Earth's Interior IAVCEI



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Newsletter Production

Judith Haller and Toni Lee Mitchell

LIP (large igneous province) researchers from far and wide congregated at the IAVCEI General Assembly in Canberra, Australia, several weeks ago, and the meeting provided a wealth of intriguing new results and many opportunities for informal interaction. Graced by lovely spring weather, the Australian National University provided fine facilities for the gathering in Australia's scenic capital. As you will note on the masthead, the Commission on Large-Volume Basaltic Provinces has superseded the old Task Group, thanks to the your enthusiastic response to the initial issue of *The LIP Reader* and to the widespread interdisciplinary interest in large igneous provinces. In this second issue, we address several topics raised during the inaugural meeting of the Commission in Canberra, topics which will further the work of the Commission. We also summarize past and future meetings, describe products and services available from the Commission, and recount recent LIP results from the Ocean Drilling Program. Once again, we welcome your ideas, your input to *The LIP Reader*, and your recruiting of more scientists to join the Commission.

## Commission on Large-Volume Basaltic Provinces

Shortly after IAVCEI formed the Task Group on Large-Volume Basaltic Provinces in 1992, preparation commenced for the first issue of *The LIP Reader*. Just over 700 copies were mailed to prospective members earlier this year, and approximately 170 scientists have joined the Commission. These scientists hail from 20 countries on all continents except Antarctica, and represent about 20 earth science disciplines. The first meeting of the Commission was held during the IAVCEI General Assembly, and was attended by approximately 20 members. In addition to outlining the Commission's goals and reviewing past Commission activities, several issues were raised concerning future Commission activities.

### Steering Committee

The Commission, at present, is run by Mike Coffin and John Mahoney. Given the membership size and broad array of geoscientific disciplines represented, the task of guiding the Commission would be served better by a group of ten to fifteen scientists from different geoscientific fields. Ideally, most work of such a Steering Committee would take place via phone, fax, or internet. We would like to solicit the entire Commission membership for volunteers to serve on the Steering Committee; we would like at least one member to represent each of the following disciplines: geochemistry, geochronology, geodynamics, igneous petrology, marine geophysics, metamorphic petrology, paleomagnetism, planetary geology, seismic stratigraphy, seismology, structural geology, tectonics, and volcanology. Please contact Mike Coffin or John Mahoney to register your interest or simply for further information. We would like to have a Steering Committee in place by 1 January 1994.



### Volume on Large Igneous Provinces

The realization that continental flood basalts, volcanic passive margins, and oceanic plateaus share many features in common, and the usefulness and success of *Continental Flood Basalts*, edited by Doug Macdougall, lead us to consider a similar volume or volumes which would provide review papers on all major large igneous provinces. Interest in such a project appears high; the next step is to solicit interest in contributing to and editing the volume. Please contact Mike Coffin or John Mahoney if you are interested in either (or both).

### Workshops/Short Courses/Special Meetings

A major component of the Commission is the dissemination of knowledge, and forums for this include workshops and short courses associated with major meetings and conferences, as well as special meetings. Planning such activities usually requires a lead time of 12 months or more; the 1995 IUGG XXI General Assembly in Boulder, Colorado (see "Meetings Schedule" below), is probably a good target for the Commission's first short course or workshop. A short course or workshop on effusive (as opposed to explosive) volcanism was suggested as an example.

Special meetings, such as GSAmerica's Penrose and AGU's Chapman, or NATO's Advanced Study Institutes, are another possibility, but usually require a somewhat longer lead time for funding applications and planning. One idea would be to bring planetary geologists working on lunar, Martian, and Venusian basaltic provinces together with continental flood basalt and oceanic plateau researchers to compare and contrast LIPs on three planets and a moon. Once again, please contact one of us if you are interested in helping to organize any short course, workshop, or special meeting relevant to LIPs.

### Distinguished Lecturer Series

Another aspect of education is disseminating knowledge about LIPs to the broader geological community. Organizations such as AAPG and JOI/USSAC sponsor distinguished lecturer series, which could be a model for the Commission. Funding is a major issue here; neither IAVCEI nor the Commission have the resources to devote to a series. Organizations such as NATO, UNESCO, NSF, and the EC may be interested in contributing to such an endeavor. Please contact one of us if you are interested in investigating the feasibility of a Distinguished LIP Lecturer Series.

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## Previous Meetings

As a preface, synopses of recent meetings are welcome contributions to *The LIP Reader*. Please send your ~200 word review to one of us.

***The Stratigraphic Record of Global Change, Society for Sedimentary Geology (SEPM) 1993 Meeting, University Park, Pennsylvania, USA, 8-12 August 1993.*** At a meeting focusing on global change, sedimentologists had the opportunity to learn about LIPs in a session entitled "Causes of Global Change: II. Impacts and Mantle Convection". Although LIPs have been postulated as agents of global change for several decades, causal relationships have not yet been firmly established, although temporal correlations are becoming better defined. Highlights of the meeting included correlation of Early Cretaceous magmatism in the Pacific Ocean to global warming, an oceanic anoxic sub-event, and paleobiological changes (Arthur *et al.*; Erba), as well as to mantle convection expressed as seafloor spreading and deep plumes (Larson). Dimensions and emplacement rates for five LIPs—Ontong Java and Kerguelen oceanic plateaus, North Atlantic volcanic margins, and Deccan and Columbia River continental flood basalts—suggest influences on global environment (Coffin). D'Hondt *et al.* evaluated the generation and environmental effects of sulfuric acid aerosol at the K/T boundary. Slightly later, at the end of the Paleocene, environmental changes correlate with massive, transient volcanism associated with continental breakup in the North Atlantic region (Thomas and Eldholm).

***Ancient Volcanism and Modern Analogues, IAVCEI General Assembly, Canberra, Australia, 25 September–1 October 1993.*** By far the largest of 15

separate symposia at the meeting was that on "Continental Intraplate and Passive Margin Volcanism"; papers dealing with LIP-related topics also were presented in symposia on "Picrites, Komatiites, and Associated Mineralization" and "Chemical Evolution of the Mantle". Points of general interest included evidence that the Emeishan flood basalts of southwestern China are roughly contemporaneous with the Siberian Traps far to the north (Chung and Jahn). For the large Paraná province of South America, Mantovani *et al.* presented  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  dates indicating a 138–128 Ma period of eruptive activity, much longer than previously proposed; as a corollary, widespread, chemically defined magma types in the Paraná may be time-transgressive. On the other hand,  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  results for the Madagascan province indicate a <3 m.y. interval of eruption, with most ages at  $86.5 \pm 0.5$  Ma (Storey *et al.*). Gill *et al.* suggested that the Early Tertiary basalts of West Greenland may have been caused by a mantle plume different from the Icelandic plume to which they are commonly ascribed. A study of Columbia River lavas by Self *et al.* and Finnemore *et al.* concluded that, rather than being emplaced very quickly at extremely high rates, flood basalt flows are erupted slowly over a period of years or even decades by endogenous growth. The importance of far-traveled acidic lavas in some LIPs was underscored in talks by Harris, Steward and Foden, and Milner *et al.* Presentations by at least six groups interpreted geochemical trends in various LIPs (and in one case, lamproites) in terms of contamination of magmas by either lower or upper continental crust; several papers argued for distinctive mantle source regions as well.





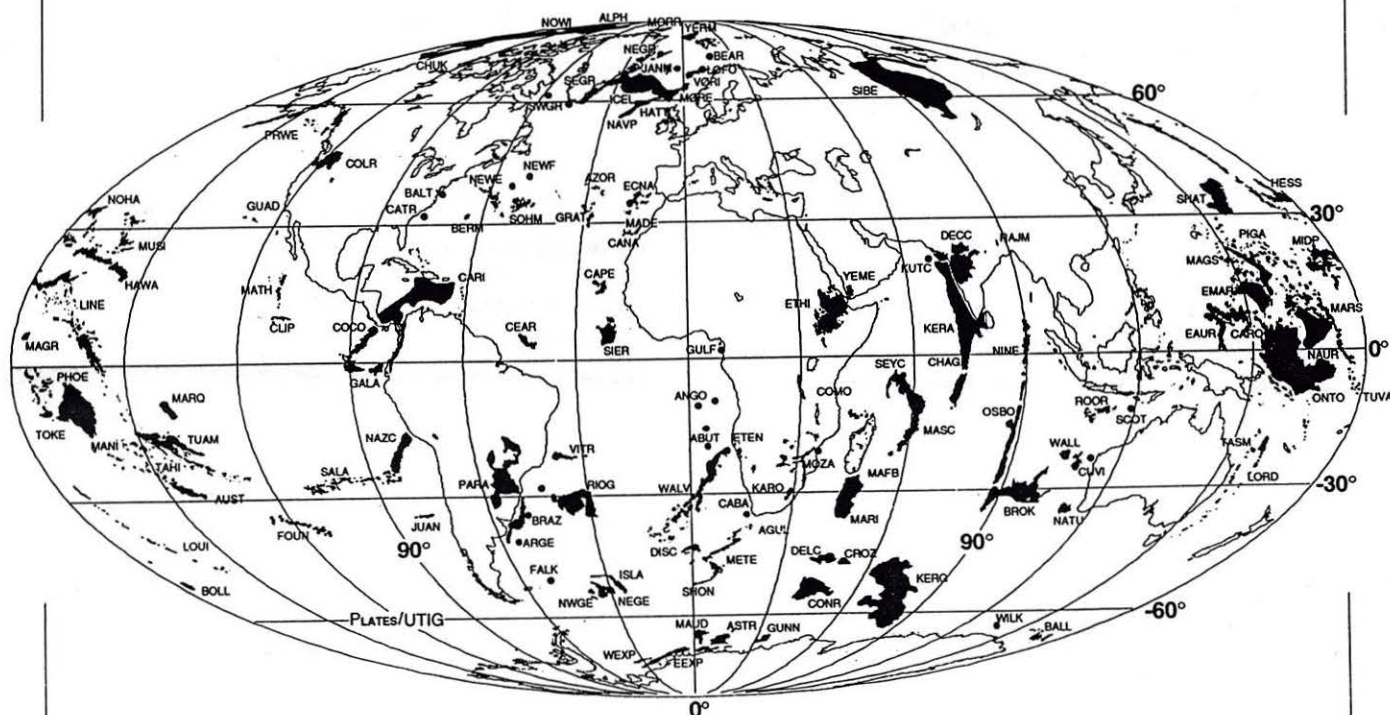
## Commission Products and Services

We continue to provide products and services to Commission members. Our LIP bibliography now contains over 1000 references, thanks to contributions from several Commission members (more contributions are welcome!). The bibliography was created using EndNote software operating on Macintosh computers. A directory of Commission members, contact addresses and numbers, and research interests is contained in a FileMaker Pro file for Macintosh computers. Both the bibliography and directory are available as Microsoft Word (Macintosh) files as well.

LIPs are defined as voluminous emplacements of predominantly mafic extrusive and intrusive rock whose origins lie in processes other than "normal"

seafloor spreading. A new offering is a digital database of approximately 100 *in situ* LIPs < 250 Ma (reproduced below), available either as an ASCII file or as a Canvas file for Macintosh computers. A version of this figure appeared in the 10/93 issue of *Scientific American*, and is scheduled to appear in the 2/94 issue of *Reviews of Geophysics*.

Copies of the bibliography, directory, and LIP data base are available in three formats. For a simple paper copy, just ask Mike Coffin. For a copy on diskette, please send a blank 3.5 inch diskette to him. Finally, the digital data files can be transferred over internet. Send a message via internet to Mike Coffin for instructions on how to access the files.



## LIPs and ODP

As *The LIP Reader* goes to press, scientists led by Commission members Hans Christian Larsen of Denmark and Andy Saunders of the United Kingdom are braving autumn gales aboard Ocean Drilling Program's (ODP) drilling vessel *JOIDES Resolution* off southeast Greenland while drilling the North Atlantic Tertiary volcanic province. Initial shipboard reports indicate that the entire feather edge of the seaward-dipping reflector sequence, totaling ~775 m of basalts and dacites, was penetrated at Site 917 for the first time. Drilling continues at Site 918 into the main, thicker part of the wedge.

As described in our last issue, ODP is the largest international earth sciences research project,

with an annual budget of ~US\$45 million. ODP has advanced knowledge of submarine large-volume basaltic provinces significantly by drilling oceanic plateaus, volcanic passive margins, submarine ridges, and seamount chains. The program is proposal-driven, and anyone may submit a drilling proposal. Guidelines for writing and submitting proposals may be obtained from the JOIDES Planning Office, School of Oceanography, University of Washington, WB-10, Seattle, WA 98195. Phone 1.206.543.2203. Facsimile 1.206.685.7652. Internet: [joides@ocean.washington.edu](mailto:joides@ocean.washington.edu) Information on ODP's long-range thematic plans can be obtained from the same address.



# Upcoming Meetings

## 1993

6-10 December: **American Geophysical Union Fall Meeting**, San Francisco, California, USA. This meeting includes a special section entitled, "Geochronological and Tectonic Constraints on Flood Basalt Volcanism", now scheduled for 6 December. Information: AGU-Meetings Dept., 2000 Florida Ave., N.W., Washington, D.C. 20009, USA. Telephone: 1.202.4626900. Facsimile: 1.202.3280566. Internet: sbell@kosmos.agu.org

## 1994

9-15 May: **Mafic Magmatism through Time, Workshop**, St. Malo, France. Information: Nick Arndt or John Ludden, Géosciences Rennes, Université de Rennes 1, Ave. de Général Leclerc, 35402 Rennes CEDEX, France. Telephone: 33.99.286779. Facsimile: 33.99.2866780. Internet: arndt@univ-rennes1.fr

23-27 May: **American Geophysical Union Spring Meeting**, Baltimore, Maryland, USA. Abstract deadline: 3 March 1994. Information: AGU-Meetings Dept., 2000 Florida Ave., N.W., Washington, D.C. 20009, USA. Telephone: 1.202.4626900. Facsimile: 1.202.3280566. Internet: sbell@kosmos.agu.org

5-11 June: **Eighth International Conference on Geochronology, Cosmochronology and Isotope Geology**, Berkeley, California, USA. Information: Paul Renne, Geochronology Center, Institute of Human Origins, 2453 Ridge Rd., Berkeley, California 94709, USA. Telephone: 1.510.644.1350. Facsimile: 1.510.845.9453.

4-8 July: **The Icelandic Plume and its Influence on the Evolution of the NE Atlantic**, Arthur Holmes European Research Conference,

Reykjavik, Iceland. Registration/Deposit deadline: 31 December 1993. Information: Heide Gould, The Conference Dept., The Geological Society, Burlington House, Piccadilly, London W1V 0JU, UK. Telephone: 44.71.4349944. Facsimile: 44.71.4398975.

14-19 August: **International Symposium on the Physics and Chemistry of the Upper Mantle**, São Paulo, Brazil. Abstract deadline: 28 February 1994. Information: Prof. Wilson Teixeira, Instituto de Geociências - Universidade de São Paulo, PO Box 20899, 01498-970 São Paulo, Brazil. Telephone: 55.11.8138777, extension 3987. Facsimile: 55.11.2104958. Internet: brenha@iag.usp.br

12-16 September: **International Volcanological Congress, IAVCEI**, Ankara, Turkey. Abstract deadline: 30 April 1994. Information: Dr. Ayla Tankut, Organizing Secretary, International Volcanological Congress, IAVCEI Ankara 1994, Dept. of Geological Engineering, Middle East Technical University, 06531 Ankara, Turkey. Telephone: 90.312.2101000, extension 2682-2679. Facsimile: 90.312.2101263. Internet: atankut@trmetu.bitnet

24-27 October: **Geological Society of America Annual Meeting**, Seattle, WA, USA. Information: GSA Meetings Dept., P.O. Box 9140, Boulder, CO 80301, USA. Telephone 1.303.4472020. Facsimile: 1.303.4471133.

## 1995

2-14 July 1995: **International Union of Geodesy and Geophysics XXI General Assembly**, Boulder, Colorado, USA. Abstract deadline: 1 February 1995. Information: IUGG XXI General Assembly, c/o American Geophysical Union, 2000 Florida Ave., NW, Washington, DC 20009, USA.

# The LIP Reader



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