



InterRidge Program Plan Addendum 1993

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I InterRidge Update Summary 1993

The past year has been a particularly eventful one for the InterRidge Initiative. Throughout the year meetings and workshops have been held, ideas exchanged and information shared as InterRidge evolves towards the completion of its first phase in 1994. The outcome of the workshops has played an important role in shaping both planning and implementation schemes for the upcoming year. Scientific priorities and problems identified by the community in workshop discussions and reports have defined the first steps necessary to translate the general scientific objectives of InterRidge into specific plans and projects. The upcoming year will see the further definition, initiation and implementation of a number of InterRidge Projects and the honing of the InterRidge Program Plan.

The membership of InterRidge continues to grow: Germany has indicated its intention to join the United States, France, the United Kingdom, Japan and Spain as a Principal Member and Iceland, Canada, Portugal and Australia have indicated that they will continue as Associate Members in 1994. The InterRidge Office and the members of the Steering Committee are continuing outreach efforts to other countries carrying out Mid-Ocean Ridge research around the world.

In addition to organizing workshops and meetings, InterRidge has been preparing to rotate host countries. On January 1, 1994 InterRidge will take up official residence at the University of Durham in the UK and Roger Searle will take on the duties of InterRidge Chair. In October of 1993 Trileigh Stroh turned the post of InterRidge Co-Ordinator over to Heather Sloan who will take her place as Acting Co-Ordinator at the University of Washington and transfer to the University of Durham in December.

With the relocation to the UK, InterRidge will begin a shift from the planning stage into an implementation stage, facilitating and organizing projects focusing on specific scientific problems. Efforts will also be made towards maintaining and developing links with other international programs and organizations such as ODP, SCOR and ICSU. In addition to facilitating and co-ordinating international communication and co-operation, InterRidge will begin compiling an electronically accessible information data base of recent and current ridge cruises.

The Working Groups established at the 1992 General InterRidge Meeting in York have

continued to develop the three principal themes of the InterRidge program of ridge research: Global, Meso-scale and Active processes. Consideration is being given to forming a fourth Working Group focusing on ridge related biological research.

In April 1993 the Global Project Working Group held a workshop in Paris with the objective of outlining a strategy to characterize the entire Mid-Ocean Ridge System within the next decade [see summary *InterRidge News*, vol. 2, no. 1]. The workshop focused on the least known sections of the Ridge System: the Southwest Indian Ridge, the Southeast Indian Ridge, the Pacific-Antarctic Ridge.

The Meso-scale Working Group organized two workshops this year centered around the themes of ridge segmentation, fluxes associated with accretionary processes and back-arc basins. The Segmentation and Fluxes Symposium held at the University of Durham in the UK on September 22 & 23, drew more than 110 participants from 7 countries. The two-day Workshops following the Symposium identified a number of critical problems related to fluxes and spatial/temporal variation on the segment scale. The Back-arc Basin Workshop was held at the University of Washington, Seattle, USA on October 11-13. Discussion centered around the influence of subduction on accretion in back-arc basins.

One objective of the Global and Meso-scale Workshops was to produce reports documenting problems, approaches and implementation plans aimed at furthering the international ridge research effort. These reports are currently in preparation and will be published as two volumes in early 1994.

The Active Processes Working Group is preparing a similar document intended to serve as a basis for discussion in a workshop to be convened in spring 1994.

The Global and Meso-scale workshops held in 1993 were oriented towards encouraging communication and exchange within the international ridge sciences community with the objective of better identifying the principal scientific questions concerning current ridge research, and of translating the general ideas into draft outlines of an implementation plan. With the achievement of this first, workshop stage, it is appropriate that the Steering Committee uses the results of the workshops to re-align, if necessary, the direction and approach of InterRidge concerning the organization of the scientific

program in the near future. After debate of the issues, the following decisions were taken:

- **Symposia and Workshops:** InterRidge will continue to act as a facilitator of international communication and exchange of ideas, plans and information through the organization of symposia and workshops. Such meetings, with well-defined aims (general or highly focused) and constructed as a complement to various international meetings (e.g. AGU) have already demonstrated their usefulness, and appear to have wide support in the community.
- **InterRidge Stamp:** While InterRidge will aid in the coordination of multi-national and bi-lateral projects initiated by individual groups or nations, it will not at this time proceed further with the idea of issuing a formal InterRidge endorsement to specific funding proposals. The InterRidge Program Plan, together with other documents such as workshop reports, will serve to define the broad objectives of InterRidge and, coupled with a rolling addendum, may be used by investigators, reviewers and funding agencies to evaluate the "InterRidge relevancy" of a research proposal.
- **Initiation and coordination of an InterRidge Project:** InterRidge will seek to define, initiate and eventually co-ordinate actions within the Global, Meso-scale and Active Processes projects. The priority will be to develop strategies to address problems which are too complex or too large to be effectively undertaken using the resources of any one nation. In this regard, coordinated, "non-directed" science projects with a written science plan of the Fara type can help the ridge sciences community and appear to be well viewed by funding agencies. InterRidge projects would be based on compelling scientific questions identified as being of international interest in workshops and meetings, and in consultation with InterRidge countries. To advance this kind of "non-directed" science, InterRidge will need to play a proactive/reactive role. Action along the following lines should begin in 1994:

1. Send to National Correspondents (for circulation among national institutions and groups, and for discussion by the scientific committees of national programs) a list of proposed project themes and possible geographic foci drawn from InterRidge Global and Meso-scale Workshops. InterRidge countries would be asked what they see as appropriate targets for a collaborative InterRidge effort, and whether

and how they would be interested in participating.

2. Adjust the project(s) according to responses received from InterRidge nations.
3. Publicize the resulting InterRidge project or projects and organize the necessary workshops to develop strategies and concrete implementation plans. These would be a reference for proposals submitted to various national funding agencies. Project co-ordinators and convenors for the workshops would be chosen by discussion between the Steering Committee and the InterRidge working group concerned. InterRidge should aim to be able to include in its budget a travel fund to help bring participants to meetings and workshops or to bring investigators from different nations together to collaborate on specific actions.

Possible themes/geographic foci for InterRidge Project(s) coming out of the

Global and Meso-scale Workshops include:

- Fluxes on a segment scale
 - 4-D architecture of the lithosphere
 - Mapping/sampling in the Indian Ocean: Southwest Indian Ridge, Southeast Indian Ridge and the Australian-Antarctic Discordance.
 - Tomography experiment in the Lau Basin
 - Compilation of a comprehensive Global Mid-Ocean Ridge Atlas.
- **Information Data Base:** Following well received initial publication of track lines of recent and funded mid-oceanic ridge projects at sea (see InterRidge News), the InterRidge Office will compile an information data base consisting of a geographical index of surveys, sample locations and other data. Information would be solicited from principal investigators and it would be accessible, for example, by anonymous ftp or gopher. (This catalog would serve as the first phase of a three phase project if the decision is taken at some later date to expand the information data base into a data archive.) The second step would be to integrate and archive data bases collected as part of the InterRidge research effort. This work would be "science-driven" rather than purely archival; a possible InterRidge role would be to help to prepare proposals which focus on integration of data sets from a particular geographical area specified in an InterRidge project. The third phase would concern the compilation of historical data sets dating from the '80s onward, starting with the most recent and working

backwards. Important unpublished data bases exist (in Germany and Russia for example). This would be the most time consuming and costly of the three phases. However, a number of data base archives already exist, for example at LDGO, and would not need to be duplicated but merely referenced through the information/index system. To encourage investigators to contribute their

data sets, InterRidge could help in the coordination of cooperative projects or publications, thereby providing "feedback" to contributors. Through the organization of meetings where investigators present their data bases, InterRidge could provide incentive and opportunity to publish or make available these data. Germany is suggested as a possible venue for a first such meeting.

II InterRidge Structure and Constitution 1993

1 THE STEERING COMMITTEE :

J.R. Delaney	(U.S.; Co-chair)
H.D. Needham	(France; Co-chair)
D. Désbruyères	(France)
R. Detrick	(U.S.)
P.J. Fox	(U.S.)
J. Francheteau	(France)
C.H. Langmuir	(U.S.)
M. Sinha	(U.K.)
K. Tamaki	(Japan)

Note: R. Searle (UK) will take over the InterRidge Chair in January 1994.

2 NATIONAL CORRESPONDENTS :

- + Australia : T. Crawford
- + Canada : J. Malpas
(replacing M. Keen)
- * France : J. Francheteau
(replacing H.D. Needham)
- ❖ Germany : H. Schmincke
- + Iceland : K. Gronvold
- Italy : E. Bonatti
- * Japan : K. Tamaki
(replacing H. Fujimoto)
- Korea : Sang-Joon Han, Bong Choo Suk
- Mexico : J.E. Aguayo-Camargo
- Norway : E. Sundvor
- + Portugal : J. Miguel A. Miranda
- Russia : L.V. Dmitriev
- * Spain : J. Acosta, M. Canals
- Sweden : N. Holm
- * U.K. : J.R. Cann
- * U.S.A. : J. Delaney

- * countries which have agreed to join InterRidge as Principal Members in 1993.
- + countries which have confirmed or indicated their intention to become Associate Members of InterRidge in 1993 or 1994.
- ❖ country which has indicated intention to join as Principal Member.

3. WORKING GROUPS :

3.3 Global Working Group

C.H. Langmuir	(U.S. ; chair)
H. Bougault	(France)
J. Lupton	(US)
J.C. Sempéré	(U.S.)
K. Tamaki	(Japan)
V. Tunnicliffe	(Canada)

3.2 Meso-scale Working Group

M. Sinha	(U.K., chair)
R. Detrick	(U.S.)
H. Elderfield	(U.K.)
T. Matsumoto	(Japan)
C. Mével	(France)
R. Searle	(U.K.)
B. Taylor	(U.S.)

3.3 Active Processes Working Group

J.R. Cann	(U.K., chair)
E. Baker	(U.S.; EDR*)
P. Dando	(U.K.; observatories)
J. Delaney	(U.S.; observatories)
D. Désbruyères	(France; observatories)
P. Einarsson	(Iceland; EDR)
D. Fornari	(U.S.; EDR)
J. Honnorez	(France; observatories)
H. Hotta	(Japan; observatories)
J.M.A. Miranda	(Portugal; EDR)

* Event Detection & Response.

4 LIAISONS WITH OTHER PROJECTS AND ORGANIZATIONS

Ocean Drilling Program (ODP): J. Bender
Int. Lithosphere Panel (ILP): J. Mutter
SCOR: M. Sinha

III InterRidge Publications 1993:

InterRidge Aims and Organisation

InterRidge Steering Committee Meeting Report 1993

InterRidge News, 1993, 2, 1, pp. 32.*

InterRidge News, 1993, 2, 2, pp. 4 (bulletin)

*InterRidge News presently has a circulation of 1600.

IV Meetings and Workshops 1993:

Global Working Group:

Investigation of the Global System of Mid-Ocean Ridges,
Paris, France, 9 7 10 April, 1993.

Meso-scale Working Group:

Segmentation and Fluxes at Mid-Ocean Ridges: A Symposium & Workshops,
Durham, UK, 22 - 25 September, 1993.

Back-Arc Basin Studies Workshop,

Seattle, USA, 11-13 October, 1993.

Administrative Meetings:

Steering Committee Meeting 1993,
Seattle, USA, 26 & 27 October, 1993.

1. WORKSHOP REPORT SUMMARIES

1.1 Global Working Group Report 1993

1.1.1 Investigation of the Global System of Mid-Ocean Ridges

April, 1993, Paris, France
Convenor: Charles H. Langmuir

After identification of global studies as a priority objective for InterRidge, there was a request for letters of interest from the global community of earth scientists, to identify those interested in participating and to identify the ocean basins where there would be a critical mass of interest and resources to mount a co-ordinated program. This report stems from a planning meeting to which all those who submitted such letters were invited. The meeting was attended by 47 participants from six nations. The main body of this report represents the outcome of working groups who met to state the problems of scientific interest for each region in more detail, and to consider how to make progress in sea-going operations on three mega-segments of ridge of the Pacific Antarctic Ridge, the Southwest Indian Ridge, and the Southeast Indian Ridge. There was also a critical mass of interest in letters of response for the Arctic Ridges, but it was decided that further planning for this region would take place at a subsequent meeting to be held in the fall of 1994.

An ultimate aim of the global program is to obtain sufficient data of high quality to allow the creation of a truly global data base for ridges, accessible by computer, and also published as a global atlas of the ridge system. This requires careful attention to existing data, as well as mechanisms to have data be contributed in common format, and managed successfully. A global ridge atlas based on international co-operative investigation of the ocean

ridge system would be an historic document that would also provide the basis for intelligent selection and planning of subsequent generations of investigations of the earth's submarine frontier.

The principal foci of this report are the deliberations of the three working groups on the Southeast Indian Ridge, the Southwest Indian Ridge, and the Pacific Antarctic Ridge. In addition to the general issues presented briefly above, it is clear in these discussions that many specific questions of both regional and broader scientific interest come to the surface when actual programs are considered for specific regions. These regional issues then become an important aspect of each area of study, and supplement the broader questions that come from consideration of the ocean ridge system as a whole. In the course of the first day, participants presented submitted and funded projects for study in the Indian Ocean. During the ensuing discussions, working groups defined inventoried existing data sets, identified data gaps and outlined approaches to completing data coverage in the regions mentioned above. More specific discussion of the role of InterRidge in co-ordinating and facilitating the scientific efforts is contained in the following section of this summary.

Co-operative Strategies to Accomplish Inter-Ridge Global Objectives. Much effort was spent at this workshop and the subsequent Steering Committee Meeting trying to devise an effective and fair mechanism for achieving global co-ordination. Global studies of the ocean ridge system are by their nature diverse in geographical location and tools deployed. Furthermore, each nation has its own priorities, funding styles, deadlines, etc. Proposals are driven by individual investigators, and the review process makes it difficult to fashion co-ordinated programs that need to take place in

sequence with fixed time tables. Several ways of involving InterRidge in the process were explored, but no generally acceptable mechanism was found. Furthermore, a high level of co-ordination in this context can often lead to long delays, due to the difficulties of interfacing the funding and logistics of expeditions from different nations. Despite these difficulties, the benefits of international collaboration and organisation are obvious. No nation has the resources to undertake the global project on its own. And no one nation has all the requisite tools for global studies. Even where there is overlap in logistical capability, there are significant constraints for each nation on the tools that can be deployed in the diverse ocean basins over a five year time scale. These considerations identify a clear planning challenge to enable a co-operative global investigation of ocean ridges while preserving the initiative and creativity of individual investigators and the independence and priorities of the various InterRidge nations.

Although a high level of directed co-ordination is not feasible or desirable in the current organisation and resources of InterRidge, there are nonetheless several actions that can aid the accomplishment of global objectives. The objectives listed below reflect both discussions at the Paris meeting and subsequent input from the InterRidge Steering Committee.

- To arrange workshops to explore and define critical scientific problems. This often leads to the planning of joint programs.
- To keep the community informed of funded and proposed programs, since this knowledge often of itself leads to the next natural step in the global exploration process, and helps to avoid duplication of effort.
- When a logistical opportunity presents itself, to bring together diverse investigators from the different nations to share strategies, which leads to the optimisation of individual programs, and the planning of joint and co-ordinated programs.
- To aid, and eventually to fund, the inclusion of individual investigators from one nation on another nation's cruises. Often for a small amount of money, an additional tool can be deployed or person's skill made use of which otherwise would never be able to be applied in a particular area.
- To identify and encourage the theoretical and modelling studies that will interpret and help to guide the extensive field programs.

These activities require an active role for the InterRidge office. In fact, the success of these actions will depend in large part on the energy and initiative of a civic-minded individual or office. To help to create this level of energy, a global working group with representatives from the major nations to aid in the dissemination of information and the development of opportunities would be useful. Ultimately these activities will require a modest but significant level of funding to hold planning meetings, maintain an electronic bulletin board, mail information, and partially fund add-on programs that would add efficiency to the global experiment.

We also note that one of the main benefits of the global program would be to have the data in a standardised format, available to all scientists. Such data syntheses are difficult to fund for an individual investigator, and often do not have the immediate scientific pay-off that is necessary to be competitive in the peer review system. Furthermore, data syntheses must have longevity and maintenance, and to be useful must have careful attention to data quality. Such a synthesis, in published form, would ultimately form a global atlas of the ocean ridge system, and could be one of the major long term benefits of global studies. It seems unlikely to take place within the current framework of investigator-driven research. InterRidge could play an important role in setting standards and creating and sustaining this important product.

1.2 Meso-Scale Working Group Reports 1993

1.2.1. Introduction

The summary presented here is taken from reports produced by participants in the Meso-scale Working Group's meetings entitled "Segmentation and Fluxes at Mid-Ocean Ridges: A Symposium and Workshops" and "The Back-arc Basin Studies Workshop". The chapters of this volume have been devoted to the Symposium: Segmentation and Fluxes at Mid-Ocean Ridges; and to the three workshops: Segmentation at Mid-Ocean Ridges; Quantification of Fluxes at Mid-Ocean Ridges; and Back-Arc Basin Studies.

1.2.2 Segmentation and Fluxes at Mid-Ocean Ridges: A Symposium and Workshops

22-25 September, Durham, UK

Co-Convenors:

Segmentation: Jian Lin, Roger Searle, and John Sinton;

