

**ANNUAL REPORT FOR THE IUGS/IAGC WORKING GROUP ON
GLOBAL GEOCHEMICAL BASELINES**

1) TITLE OF CONSTITUENT BODY

IUGS/IAGC Working Group on Global Geochemical Baselines

2) OVERALL OBJECTIVES

To prepare a global geochemical baseline to document land degradation and pollution in the context of national geochemical variations; and against which to measure future global change affecting the Earth's land surface.

In the short to medium term this involves:

Implementation of the recommendations of IGCP 259, published in *Darnley A.G. et al 1995 A Global Geochemical Database for Environmental and Resource Management. Recommendations for International Geochemical Mapping Final Report of IGCP Project 259. Earth Sciences 19, UNESCO, Paris (1995)* as follows:

- Collection and analysis of Global Reference Network, a series of multi-media geochemical samples, according to procedures established in UNESCO Publication 19, Darnley et al, 1995.
- Design and publication of a Field Manual detailing sampling methods for collection of the GRN samples.
- Design and production of an Analytical Manual detailing analytical methods for analysing the GRN samples.

3) ORGANISATION

The project is led by a Steering Committee which co-ordinates the activities of four Technical Committees and contributions made by individual Country Representatives.

• STEERING COMMITTEE

Honorary President Dr Arthur Darnley, Geological Survey of Canada

Co-Leaders Prof Jane Plant, British Geological Survey

Dr David Smith, US Geological Survey

Scientific Secretary Ms Lorraine Williams, British Geological Survey

Treasurer Mr Sandy MacFarlane, British Geological Survey

• ANALYTICAL COMMITTEE Dr H Sandstrom, GSF

Co-ordinates the work plan for the analysis of the samples and the activities of the laboratories.

• DATA MANAGEMENT Dr T Tarvainen, GSF

Supervises sampling strategy and co-ordinates the sampling progress of the participating countries, databasing for sample information and analytical results.

• REGIONAL CO-ORDINATORS Prof R Salminen (FOREGS)

Co-ordinate project activities of groups of neighbouring countries and report back to Steering Committee.

• PUBLIC INFORMATION Prof P R Simpson, BGS

Advertises and promotes the aims, objectives and achievements of the project to as wide an audience as possible, including by use of the World Wide Web.

4) EXTENT OF NATIONAL/REGIONAL/GLOBAL SUPPORT FROM SOURCES OTHER THAN IUGS

The project does not have any other source of direct funding. However, within Europe, National Geological Surveys and associated Institutes have provided staff time and support to the project to complete the preparation of a GRN.

5) INTERFACE WITH OTHER INTERNATIONAL PROJECTS

This project is closely associated with the work of the FOREGS Geochemistry Working Group. In addition, the INCO-COPERNICUS project, a laboratory standardisation project involving Western European and former Soviet Block countries, is associated with this project. The project also has links with the IAEA and potential links with GTOS, the Global Terrestrial Observing System are being investigated.

6) CHIEF ACCOMPLISHMENTS IN 1998

The project is divided into Regions to facilitate co-ordinating of sampling and analysis. The European Region has been the most active this year. This region is co-ordinated by the FOREGS Geochemistry Working Group and is led by Prof Reijo Salminen of the Geological Survey of Finland. At the beginning of the year the project published a Field Manual, a technical document that describes, in detail, the sampling methods that have been agreed by the participating countries. This document was published by GSF (Guide 47) and is available on the World Wide Web at <http://www.gsf.fi> and <http://www.bgs.ac.uk>.

During the summer, fourteen European countries collected geochemical samples for the Global Reference Network. A further seven countries have ordered equipment and have firm commitments to collect samples in 1999. Five new countries have expressed a strong interest in joining the project; Albania, Latvia, Luxembourg, Switzerland and Russia.

The samples are currently awaiting analysis. A work plan for analysis has been completed. A technical document, similar to the Field Manual, will be produced in the near future, to detail the analytical procedures and methods that have been agreed. Analysis of the water samples is about to begin.

The project has designed it's own web site which is available at the following address:

<http://www.bgs.ac.uk/bgs/w3/argg/iugs/iugshome.htm>

The Annual Meeting was held in Naples, Italy (1-3 October 1998) in conjunction with the FOREGS Geochemistry Working Group Annual Meeting. The Minutes are attached to this report.

Elsewhere, the CCOP were asked to act as a Regional Center for the project. The CCOP includes Vietnam, China, Cambodia, Thailand, Indonesia, Phillipines, South Korea, Malaysia and Japan.

Brazil is continuing with its programme of geochemical sampling, as is Colombia. India is planning to instigate a national geochemical mapping programme in the near future. Botswana have recently implemented a national

geochemical mapping programme following the recommendations of Darnley et al, 1995.

7) **CHIEF PROBLEMS ENCOUNTERED IN 1998**

The main problem encountered by the project was the lack of the funding required to achieve the aims and objectives of the project.

In 1996 the UN Committee on Natural Resources approved a resolution recommending the establishment of a Global Land Monitoring Programme which would be based on the recommendations in the project's report "*A global geochemical database for environmental and resource management*", published by UNESCO in 1995. This recognition by a UN agency was regarded as a major step forward towards obtaining the funds necessary to implement the project.

A meeting of this UN Committee was to have taken place in March 1998, and it was anticipated at that time, as a result of discussions between interested UN agencies, that steps would be taken to act upon its earlier resolution.

Unfortunately, shortly before the 1998 meeting was to take place, the UN CNR was reconstructed to focus solely on water and energy resources. As a result, consideration of the proposed Global Land Monitoring Programme has been deferred indefinitely, and early action by UN agencies seems very improbable. A new start has had to be made to find funding for the project.

8) **CHIEF PRODUCTS IN 1998**

FOREGS GEOCHEMICAL MAPPING FIELD MANUAL

Salminen R. et al., 1998

Geological Survey of Finland Guide Number 47

IUGS/IAGC Working Group on Global Geochemical Baselines - Web site

L. Williams & C. Johnson, 1998

@<http://www.bgs.ac.uk/bgs/w3/argg/iugs/iugshome.htm>

A logo has been designed for the project and can be seen on the web site.

The project title is

IUGS/IAGC Working Group on Global Geochemical Baselines and the strapline is **Environmental Geochemistry for Global Survival**.

A reference list of published papers and conference presentations follows:

Darnley, A.G. and Garrett, R.G. 1998 Global Geochemical Baselines – an update. Episodes Vol. 21, no 1, pp 43-44.

Darnley A.G. et al 1995 A Global Geochemical Database for Environmental and Resource Management. Recommendations for International Geochemical Mapping

Final Report of IGCP Project 259. Earth Sciences **19**, UNESCO, Paris (1995)

Demetriades, A. 1998 Global Geochemical Baselines: A fundamental International Project for Environmental Management. Bulletin of the Geological Society of Greece, Vol 32/1, p 321-329.

Plant, J.A., Baldock, J.W., Haslam, H.W. and Smith, B. 1998 The role of geochemistry in environment and epidemiological studies in developing countries. *Episodes* Vol 21, No.1, 19-27.

Smith, D.B., Plant, J.A., Garrett, R.G., and Darnley, A.G., 1997 A Global Geochemical Reference Network: The First Step Toward Establishing Global Geochemical Baselines for Environmental Management: Geological Society of America Abstracts with Programs, Vol. 29, no. 6, p. A-435.

1998 Presentation of Keynote Lectures, Geoscience 98, Keele, UK and International Meeting on the Environment, Hong Kong.

9) SUMMARY OF EXPENDITURES IN 1998

The project did not receive any funding from IUGS for this year.

10) WORK PLAN FOR NEXT YEAR AND FOR THE FOLLOWING YEARS

The samples that have already been collected will be analysed in the agreed laboratories according to the work plan already devised. Those countries in Europe that have agreed to sample next year will commence their sampling programmes. Those new countries that have expressed an interest in the project will be asked to formulate sampling plans for 1999.

The analytical methods used in the project will be published in the form of a technical document, similar to the existing Field Manual for sampling of geochemical media.

A database will be created to store all of the sample locational information and data management protocols will be discussed. The data produced from the analyses of the samples will be available to all participants for interpretation.

Countries outside Europe will be encouraged to observe the work done by the FOREGS Geochemistry Working Group and to try to formulate similar working relationships and sampling programmes.

The next IUGS meeting will take place in Vancouver, Canada, in April 1999. The next Annual Meeting will coincide with the 2nd International Conference on Environmental Geochemical Baseline Mapping in Vilnius, Lithuania, October 1999.

11) SUMMARY BUDGET FOR NEXT YEAR

The European countries that are committed to sampling and analysing their samples in the forthcoming year will have an expenditure approaching 750,000 USD. Countries wishing to participate outside Europe will increase this expenditure accordingly.

12) POTENTIAL FUNDING SOURCES OUTSIDE IUGS

Dr Gunter Faure, President of the IAGC, has expressed his strong support for the project and we are in discussion with him regarding potential funding for some of our participants to attend meetings.