



GEMOC's international links

BACKGROUND

GEMOC has strong international links and these increased and changed significantly through 2003. These links were based dominantly in Asia for the first three years, including China, Japan, Mongolia, Myanmar, Thailand and the former USSR, but have since broadened to include substantial collaborative programs in France, Norway, Germany, United Kingdom, Canada and the USA.

EXAMPLES OF ACTIVE FUNDED PROJECTS IN ASIA

- geophysical analysis of China Geotraverses (including gravity modelling)
- nature and geophysical signature of the lithosphere in southeastern China
- crust-mantle interaction in southeastern China: the origin of the Yanshanian Granites and evolution of southeastern China
- trace element and isotopic characteristics of zircon as indicators of granite magma evolution
- nature of the lithosphere in northwestern China (Tienshan Mountains in Xinjian)
- metallogenesis of southeastern China
- crustal evolution, basaltic volcanism and basin development, north China
- mantle processes in the mantle wedge above the subduction zone in Japan
- thermal contrasts and paleogeotherms in Siberia, Mongolia, eastern China
- diamond exploration, tectonism, and geophysical nature of the lithosphere, Siberia and East Asia
- mantle terranes and tectonic analysis, Siberia
- lithosphere extension and geodynamic processes in east Asia (including the Taiwan region)

FUNDED COLLABORATIVE PROJECTS COMMENCED OR ONGOING IN 2003 INCLUDE:

- The time scales of magmatic and erosional cycles, with Professor C. Hawkesworth (Bristol University), Dr M. Reagan (University of Iowa) and Dr J. Kirchner (University of California).

The North African Workshop Team, University of Jean Monnet, St Etienne (Bill Griffin, Mohammed Abdelsalam, Sue O'Reilly, Peter Bowden and Jean-Yves Cottin).



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Some of the French Connection: Guillaume Delpach, Mathieu Choukroun and Raynald Ethien.



- The nature of lithosphere extension in the Taiwan region and implications for geodynamics in eastern China, with Professor S-L Chung, National University of Taiwan, relevant to the research project of Dr Kuo-Lung Wang (Macquarie University Research Fellow)
- Analysis of off-craton lithospheric mantle in East Central Asia Orogenic Belt, with Dr V. Malkovets, Novosibirsk
- *TerraneChron*TM analysis of the Amazon Craton, with WMC Resources
- Canary Islands lithosphere and volcanism with Prof. E.-R. Neumann (Oslo)
- Tectonic domains in southern Norway using *TerraneChron*TM with Prof. T. Andersen (University of Oslo) and Dr B. Bingen (Norwegian Geological Survey)
- Participation in the *RV Sonne* cruises to investigate the nature of the Campbell Plateau, Southern Ocean with Drs Karsten Gohl and Kaj Hoernle (Alfred Wegener Institute, Bremerhaven)
- Characteristics of the lithospheric mantle wedge in the Luzon-Taiwan subduction zone
- Collaboration continued with Professors A. Giret and J.-Y. Cottin of the

University of Jean Monnet, St Etienne (with reciprocal funding from both sides). A formal agreement between the two universities includes PhD exchange, academic exchange and research collaboration relevant to the nature of the lithosphere in the Kerguelen Archipelago, Crozet Islands and Hoggar. Three PhD programs related to this project are ongoing with Guillaume Delpach and Stephanie Touron (both funded by an International Postgraduate Research Scholarship (IPRS) and a French government Co-tutelle Scholarship) and Raynald Ethien (funded by a Co-tutelle Scholarship).

- Lithosphere studies in the Massif Central of France commenced in collaboration with the Universities of Jean Monnet (St Etienne) and Blaise Pascal (Clermont-Ferrand). The postgraduate program of Stephanie Touron (funded by an IPRS, a RAACE award and a Co-tutelle Scholarship) addresses this topic. Sue O'Reilly and Bill Griffin visited the University of Jean-Monnet for 3 months collaborative research in 2003 while Sue O'Reilly was a recipient of a CNRS Visiting Director of Research Award.
- Hf isotopic composition of rutiles in the South African lithosphere with M. Choukroun (Ecole Normale Supérieure, Paris) and Prof. J.B. Dawson (University of Edinburgh)

- Sulfides and the PGE budget in the mantle beneath the Massif Central with Prof. J.-L. Bodinier (Université Montpellier) and Prof. J.-P. Lorand (National Natural History Museum, Paris)
- Composition and crystal chemistry of mantle amphiboles with Dr M. Tiepolo, Dr R. Vance and Prof. R. Oberti from the University of Pavia, Italy
- *In situ* Sr isotope analysis of marine fossils to constrain stratigraphic/tectonic reconstruction of terranes in New Zealand, with Dr C. Adams (Institute of Geological and Nuclear Sciences, New Zealand)
- Interpretation of the lithosphere structure of the Global Geoscience Transect 21 with Professor Yuan Xuecheng of the China Geological Survey
- Igneous rocks, mineral deposits and tectonic setting: southeastern China and eastern Australia. This collaboration with Nanjing University has expanded from an AusAID grant under the ACILP scheme.
- Lithosphere Mapping and crustal evolution in southeastern China (with Professor Xu Xisheng, Nanjing University, funded by the Chinese National Science Foundation)
- Lithosphere studies in China (with Professor Jianping Zheng). This follows on from a project with a consortium of participating institutions in a 5-year National Priority Program funded by China NSF from 1997.
- Lithosphere structure of North America (with Kennecott Canada)
- Inclusions in diamonds from Canadian lithosphere (with Kennecott Canada Exploration Inc.)
- Trace elements in diamonds from the South African lithosphere (with de Beers)
- Lithosphere Mapping and crustal evolution in the Dharwar Craton, India (with Rio Tinto and Dr E. Babu (National Geophysical Research Institute, Hyderabad) funded by a Boycast fellowship from India)
- Age and magma sources of Chilean Cu-porphyries, with Codelco (Chile)
- Collaboration continued with Dr Scott E. Johnson at the University of Maine, funded by an NSF grant to Johnson, with Ron Vernon as collaborator, working on the San Jose pluton, Baja California, Mexico, and with Dr Scott R. Paterson at the University of Southern California, working on metamorphic-deformation problems in the Cascade Range, Washington. This project is being funded by an NSF grant to Vernon at USC, which also supports an MS student (Luke Jensen).

Refer to the *Research Program* and *Postgraduate* sections of this Report for details of other projects.

GEMOC participants also have a wide range of other research collaborations with colleagues in UK, USA, Europe (France, Germany, Norway, Italy) as described in the section on Research Programs and in Appendix 5.