

## *QUEST-INSU Joint Announcement of Opportunity*

### **EARTH SYSTEM DYNAMICS: UNDERSTANDING ATMOSPHERIC COMPOSITION THROUGH GLACIAL-INTERGLACIAL CYCLES**

The Natural Environment Research Council (NERC, UK) and the Centre National de la Recherche Scientifique (CNRS, France) hereby announce a binational research opportunity under the auspices of the NERC programme Quantifying and Understanding the Earth System (QUEST), led by Professor I. Colin Prentice (QUEST, University of Bristol), and the Institut National des Sciences de l'Univers (INSU), led by Dr Sylvie Joussaume (CNRS-INSU, Paris). The two funding bodies invite proposals from UK-French consortia for an international flagship project in Earth System Dynamics, with the specific aim **to develop a quantitative and predictive understanding of the ice-core record of changing atmospheric composition** using a combination of palaeoenvironmental observations and Earth System models. This collaboration is timely because it will create a critical mass of researchers on a key Earth System science topic where both countries have a major interest and have made substantial investments on both the data and modelling sides. It will bring together the Earth System modelling and palaeoenvironmental research communities in a closer and more focused collaboration than has previously been achieved. The project will run through 2007-2009 and will thus be able to exploit a new generation of coupled climate-carbon cycle-chemistry models that are currently under development in both countries.

The project's primary (but not exclusive) goal will be to explain the major changes in atmospheric carbon dioxide and methane concentration on glacial-interglacial time scales during the past 0.8 million years as recorded in the Vostok and EPICA Dome C ice cores from Antarctica. In doing so, the project will necessarily deal with the interactions between global biogeochemical cycles and the physical climate system, including the nature and effects of changes in the terrestrial and marine biosphere and the causes and consequences of changes in the chemistry of the atmosphere. The existing, worldwide legacy of palaeoenvironmental records from the ice sheets, oceans and continents will be exploited to provide the most complete possible data-based reconstructions of global palaeoenvironments. Existing records may be supplemented with new, carefully targeted downcore measurements if these have a crucial and immediate bearing on the goals of the project. Multi-component Earth System Models (including but not limited to the QUEST Earth System Model, scheduled for completion in early 2009) will be used in an attempt to explicitly model changes in atmospheric composition, isotopic markers, and proxy data for past environments and climates.

The project will build on the current state of knowledge in dynamic palaeoclimatology, based on the joint analysis of climate modelling results and large-scale data syntheses from the terrestrial, marine and cryospheric realms. The project will thus exploit synergies with work carried out within the framework of the Palaeoclimate Modelling Intercomparison Project (PMIP), and projects supported under Theme 2 of QUEST. Careful consideration will be given to the project's potential to deliver a deeper understanding of contemporary global changes and an improved ability to predict the consequences of future human activities for

atmospheric composition and climate. The project will be expected to develop a high profile and to aspire to a position of international leadership in Earth System Science.

Project investigators will be based at research and/or higher education institutions in the UK and France. Wider international co-operation, although not eligible for funding, may form part of the project. Indeed, international synergies, including (but not limited to) collaborations within the EPICA consortium and PMIP, should be invoked wherever appropriate. The administrative arrangements differ between the UK and France because of the difference in the prevailing models for research support in the two countries.

- **NERC funding** may be requested to support full project and personnel costs in eligible UK institutions. NERC has up to £1.6M available to fund 80% of the Full Economic Cost (FEC) of the programme of research (i.e. proposals should request no more than £2M FEC). Costs of research visits by French scientists to UK institutions should be included in this total.
- **CNRS funding** may be requested to support marginal project costs and additional personnel costs in French institutions, up to a maximum total of 200 k€ (of which about half is expected to be for personnel costs). Costs of research visits by UK scientists to French institutions should be included in this total. In addition, a substantial commitment of time and effort by CNRS-funded scientists will be expected. This commitment should amount to approximately 50% of full time for up to 15 scientists.

**Outline Proposals** are invited initially. They may summarize a strategy to address fully the project aims, or they may address a part thereof, but the intention is **in the end to fund a single, UK-French collaborative project**. There will be opportunities for meetings to plan Outline Proposals (contact [colin.prentice@bris.ac.uk](mailto:colin.prentice@bris.ac.uk) before 17 March for information about the meetings, planning and finance).

Outline Proposals should consist of the **NERC INSU-CNRS Joint Outline Proposal form** and a case for support, written in English. Applications should be submitted as e-mail attachments to [ccul@nerc.ac.uk](mailto:ccul@nerc.ac.uk) on or before **Tuesday, 25 April 2006**.

The NERC funding request must be costed on an FEC basis. The CNRS funding request must be presented as a consolidated budget. Contact [f.grousset@epoc.u-bordeaux1.fr](mailto:f.grousset@epoc.u-bordeaux1.fr) for information about CNRS funding.

The case for support should be no more than six pages long and contain a brief track record for the applicants with recent publications, in addition to the science case. A small UK-French independent moderating panel will meet during May 2006 to assess the proposals and select those to go forward with the development of Full Proposals.

Potential applicants should note that information provided on the Outline Proposal form may be made available to other applicants to this QUEST-INSU funding round, where the Outline Proposal review panel request that Full Proposals involve collaborations.

**Full proposals** should be submitted on or before **Thursday, 27 July 2006**. The Full Proposal should be submitted electronically using the Research Councils Joint

Electronic Submission (Je-S) system. This will require a UK Institution to make the submission. Further information for submitting Full Proposals to NERC is provided below.

Full Proposals will consist of a single “Case for Support” (maximum 16 pages) written in English, accompanied by two forms, one for the NERC funding component (for UK participants) and one for the CNRS component (for French participants). Further information about the case for support is detailed below.

It is expected that any computation requirements arising in the UK will be met in the context of QUEST’s computation strategy. Therefore, potential projects requiring resource for computation in the UK should discuss their needs with the QUEST leader, Prof. I. Colin Prentice when developing Full Proposals.

The moderating panel will re-convene in October 2006 and will provide feedback to principal investigators. Feedback may include requests for revisions of content and/or budgets. Additional planning meetings may be held at this stage if needed. Final allocations of funds are expected to be made in December 2006. Projects should be scheduled to begin on 1 January 2007, and to run for three years.

### **Further information for submitting Full Proposals**

All Full Proposals must be in response to an invitation from the QUEST leader.

Researchers invited to bid for funding under this Announcement of Opportunity must submit a Full Proposal via the Research Councils Joint Electronic Submission (Je-S) system by Thursday 27 July 2006. For information on the Je-S process, see <https://je-s.rcuk.ac.uk/eforms/secure/Login.asp>

The FEC Research Grant Application Form Je-SRP1 (NERC) must be used. For collaborative, multi-institutional proposals, each UK organisation must submit a separate Je-SRP1 form. Applicants should identify a lead UK organisation for the purposes of submitting joint proposals. The other UK partners must use the common Je-S reference provided by the Lead. Due to the nature of the Research Councils Joint Electronic Submission system, the French investigators can not submit their own Je-SRP1 form and should be included in the Project Partner section of the Lead Je-SRP1 form.

The funding requested by the UK participants must be costed on an FEC basis on the Je-SRP1 form. Information on FEC can be found in the NERC Research Grants Handbook for Full Economic Cost Grants.

The CNRS funding request must be presented as a consolidated budget, providing details about 1) committed salary costs (CEA, CNRS, EN, etc) as well as 2) additional project and personnel costs (équipement, fonctionnement, vacations). This should be presented on the CNRS-INSU financial appendix and submitted as an attachment through Je-S by the Lead UK organisation at the same time as the Je-SRP1 form.

**Only the Lead organisation should submit the common case for support, the CNRS-INSU financial appendix, and provide details of project partners and nominated referees.**

Requests for any associated Tied Studentship should be made using form RS1a available from the NERC website. The RS1a form should be submitted at the same time as the Je-SRP1 form, as part of the Joint Electronic Submission process. Applicants are reminded that, as for all NERC studentship schemes, tied studentship projects should provide strong training elements and scope for innovation. Furthermore, the success of other parts of the grant proposal should not depend on studentship results.

Applicants are reminded that they and their institution must be registered with Je-S in order to submit applications. As the registration process can take several weeks, non-registered UK investigators and institutions are advised to register with Je-S as soon as possible.

### **Further information about the Full Proposal case for support**

The case for support should consist of:

- A previous track record for each UK and French research organisation, not exceeding 2 sides of A4 for each institution.
- A description of the proposed research not exceeding 16 sides of A4 (including all necessary tables, references and figures). The description should include a clear outline of the project management planning and an element for co-ordination commensurate with the scope and complexity of the project.
- Justification for UK and French costs, investigator effort, use of pool staff resources and any access to shared facilities and equipment being sought. Up to an additional 1 side of A4 per institution may be used.
- An additional side of A4 to summarise for all the institutions in the application, the individuals involved and the resources requested. This is to help reviewers identify which institutions and individuals will be performing which functions and using the respective resources requested.
- For each named research staff post and Visiting Researcher, a CV of up to 2 sides of A4 may be attached. CVs are not required for Principal or Co-Investigators, or Project Partners.