SUPPORT FOR GCTE-LUCC OPEN SCIENCE CONFERENCE
ON GLOBAL CHANGE

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FINAL REPORT
DOE Award No. DE-FG02-97ER62466
"Support for the GCTE-LUCC Science Conference on Global Changes"

Abstract: The Global Change and Terrestrial Ecosystems (GCTE) core project of the International Geosphere-Biosphere Program (IGBP) and the Land-Use/Cover Change (LUCC) core project of IGBP and the International Human Dimensions Program (IHDP) held a major open Science Conference in Barcelona, Spain, on 14-18 March 1998. At the Conference scientists presented the most recent research findings from these two international projects, explored emerging cross-cutting linkages between the projects, and highlighted the importance of the regional approach to global change research. This grant from the U.S. Department of Energy, Office of Biological and Environmental Research, provided support for the Conference by contributing to the production of conference literature and by supporting the participation of U.S. scientists in the Conference.

Background and Rationale: The Global Change and Terrestrial Ecosystems (GCTE) core project of the International Geosphere-Biosphere Program (IGBP), and the Land-Use/Cover Change core project of the IGBP and the International Human Dimension Program (IHDP) held an open Science Conference in Barcelona, Spain, on March 14-18, 1998. The GCTE project focuses on the effects of changes in climate, atmospheric composition, and land use on terrestrial ecosystems, and the consequent feedback to climate and atmosphere. The objective of the LUCC project is to document and understand global land-use and land-cover change, the forces that drive it, its relationship to climate and biogeochemistry, and the links between sustainability and land use.

The theme of the Conference was "Earth's Changing Land". Major topics of the Conference included:

- Changes in Ecosystem Functioning, and the Implications for the Earth System.
- Vegetation/Land Cover Changes at Local, Landscape and Global Scales.
- Global Change Impacts on Agricultural Production, Forestry and Biodiversity.
- Special Symposium on "Regional Approaches to Global Change Research" with special sessions on Europe.

The main thrust of the Conference was to bring the global change community together in a common forum to:

- present the latest understanding on global change impacts on the terrestrial biosphere and feedbacks to climate, and on impacts of land-use/cover change,
- understand the regional implications of global change,
- promote communication and collaboration between scientists working on GCTE research and those becoming involved in LUCC,

- develop strong links between research community and the policy and resource management sectors,
- meet like-minded colleagues from around the world to discuss scientific progress and possibilities for future collaborations, and
- identify future research needs and strategies for "Living with Global Change".

For GCTE this was a second open Science Conference. The first one was held in May, 1994, at Woods Hole, Massachusetts, attracted 420 participants, and was spectacularly successful by all accounts. The number of participants was far in excess of what had been expected and reflects both the timeliness and importance of the Conference, and the number of researchers interested in the topic. GCTE recently completed a synthesis of research results from the first five years of the project, and has also completed a new five-year plan. Thus, the timing was very appropriate for a second Science Conference. The LUCC project has been underway for just a couple of years but by spring of 1998 was ready for its first conference.

It was particularly appropriate and important for the two projects to meet together because of the very extensive overlap in their areas of research. Within ecology there continues to be a growing appreciation of the importance of land use and cover change in explaining current ecological patterns and in driving future ecosystem change. While land-use is already considered within the framework of GCTE, the LUCC project focuses specifically on aspects of land-use and cover change that are beyond the scope of GCTE. In particular, it incorporates the social sciences and thus hopes to provide new understanding of the social forces behind land-use change.

Objectives: The objective of this grant was to provide support from the U.S. Department of Energy to help cover costs associated with the GCTE-LUCC Open Science Conference on Global Change, held in Barcelona, Spain, on March 14-18, 1998. Specifically, the Department of Energy funds were to be used to cover costs associated with the production of conference literature and the participation of U.S. scientists at the Conference.

Project Outputs: One of the key outputs for the Conference as a whole was the Abstracts volume, which totaled 387 pages. The volume was distributed at the Conference to all participants. In addition a series of synthesis papers are in preparation that will be submitted to several different peer-reviewed journals.

Accomplishments: The Conference was the first joint meeting of the Global Change and Terrestrial Ecosystems (GCTE) core project of the International Geosphere-Biosphere Program (IGBP) with the Land-Use/Cover Change core project of the IGBP and the International Human Dimensions Program. The Conference was successfully held as planned. It was attended by approximately 850 scientists, representing 51 countries. The number projected had been 800-1000. A total of 420 participants attended the first GCTE Science Conference in 1994. There were a total of 430 poster presentations, 127 oral presentations, and 19 *ad hoc* meetings.

The Conference provided an opportunity for scientists from around the world, representing the ecological and land-use change science communities, to interact and exchange information. The Abstract volume provides the only comprehensive summary of the proceedings of the Conference.

While it is impossible to summarize all that went on at the Conference, several themes dominated the presentations and discussions:

- There was widespread recognition of the importance of human dimensions of global change. Virtually all of the Earth's terrestrial ecosystems are managed to some extent, and this has many important implications the Earth's biogeochemical cycles and for our capacity to predict how these will be altered by global change.
- The increasing importance of understanding the effects of global change at the regional level was highlighted in many presentations. While understanding of the overall Earth system is needed, the potential for highly heterogeneous effects in different regions means that this challenging aspect of global change is a high priority for continued work.
- There has been a transition from a linear, cause and effect notion of how global change operates to a more systems oriented approach that incorporates interaction and feedback loops, as well as the potential for non-linear responses. Overall, the focus is switching from 'drivers' of global change to the systems being impacted and the consequent feedbacks.

Publication List:

Abstracts. The Earth's Changing Land; GCTE-LUCC Open Science Conference on Global Change. 1998. Published by Generalitat de Catalunya, Instituto Cartografic de Catalunya.

A series of other manuscripts are in preparation for submission to peer-reviewed journals.