



Under Secretary for Science

Washington, DC 20585

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Dr. Michelle S. Broido
Associate Vice Chancellor for Basic Biomedical Research,
and Director, Office of Research, Health Sciences
University of Pittsburgh
Scaife Hall, Suite 401
3550 Terrace Street
Pittsburgh, P A 15261

Dear Dr. Broido:

By this letter, I am charging the Biological and Environmental Research Advisory Committee (BERAC) to undertake a review of the Free-Air:CO₂ -Enrichment (FACE) and related experiments that are supported by the Biological and Environmental Research (BER) Climate Change Research Division. The October 2005 BERAC review of the BER Terrestrial Carbon Processes research recommended further evaluation of the FreeAir-CO₂ -Enrichment (FACE) experiments to provide guidance on "How long should a current site remain operational, and where might new sites best be established?" The BERAC report noted that " ... while long-term continuity of some FACE sites is clearly warranted, DOE should periodically evaluate when a site has reached a point of diminishing scientific returns." Accordingly, I am asking that a follow-on BERAC FACE Panel be convened to:

- Review the scientific information that has come from each of the DOE FACE experiments and assess their potential to yield new findings if the ongoing experiments are continued. BERAC is requested to provide its advice as to whether any or all of the ongoing FACE experiments supported by BER, which are relatively costly to maintain and operate, have reached or are reaching a point of diminished scientific return such that continuing them is, or shortly will be no longer justified;
- Provide a set of recommendations concerning which DOE FACE experiment sites, if any, should be maintained, which should be phased out, and where it would be appropriate to establish one or more new ones to address programmatic goals requiring such experiments;
- Review and provide an assessment of CO₂ enrichment experiments and approaches where a non-FACE type protocol (e.g., open-top enclosures) is employed. Different approaches for CO₂ fumigations and field manipulations involving other variables may also be considered.

A number of proposals for FACE-type CO₂ enrichment experiments and other types of carbon cycle research were submitted in response to a recent carbon cycle solicitation. The BERAC Panel is requested to provide guidance on the broader range scientific questions and ecosystem types that have been proposed for employing FACE-type of

investigations of carbon cycle processes. Specifically, the Panel is also asked to assess additional issues of:

- Escalating costs of conducting FACE experiments, and their impacts on scientific studies in a flat budget environment;
- The scientific need and technical feasibility of modifying FACE experimental approaches to consider additional greenhouse gas or climatic influences on carbon processes and terrestrial ecosystems;
- Alternative approaches for conducting FACE-type experiments that offer significant cost advantages relative to conventional FACE designs.

Since the October BERAC review observed that there is broad interest in results from FACE investigations, it would seem advisable to populate the FACE Panel with representatives from the scientific community that uses information and data from such experiments and from the community that is more involved in the design and technology requirements for such large-scale experiments. This should include user interests of other Federal Agencies (e.g., U.S. Dept of Agriculture/Forest Service) and representatives from industry. From the scientific community, panelists might include a CO₂ experimentalist, a carbon cycle modeler, and others with knowledge of protocols and approaches for conducting large-scale field experiments. It is assumed, of course, that Panel members would be free of conflicts of interest with respect to current and past participation in FACE experiments. BER's staff can help identify conflicted and non-conflicted potential Panelists.

There is time urgency to implement this review because early FY 2007 funding decisions will be dependent on the outcome. It would be very helpful if the Panel could provide a preliminary report of its findings in September before the start of the FY 2007 fiscal year.

I recommend that Dr. James Ehleringer be asked to chair a subcommittee of BERAC to undertake this review.

Sincerely,



Raymond L. Orbach

Reference:

Recommendations on the DOE Terrestrial Carbon Cycle Research Program, a report prepared December 2005 (in response to the charge dated April 18, 2005) - see pp 4-5 for discussion and recommendations of the FACE component of TCP review.

cc: Elwood, Jerry
Thomassen, David