

From: Wolfgang Cramer <cramer@nis.pik-potsdam.de>
To: Mike Hulme <m.hulme@uea.ac.uk>, VXT_COPR@luecology.ecol.lu.se (I. Colin Prentice)
Subject: Re: EU proposals
Date: Fri, 22 Nov 1996 15:51:36 +0100

Hm, clearly coordination between the two (if it really ends up as two) groups is absolutely essential, otherwise we would look entirely stupid. The first thing that comes to my mind is that nitrogen would be emphasizing a component of our overall idea which otherwise would not receive great attention - hence it could be, perhaps, amalgamated. They probably see it the other way around: In their problem, climatic variability comes second in importance. My view on this is that all of our model intercomparisons have shown that models essentially do crazy things with interannual variability, simply because nobody ever has tested them for that in any detail. Esser's model would probably be the last candidate to use here, since it is "less mechanistic" than any of the others - in fact, Colin and I seemed to agree to "not necessarily" include it into this proposal. These are just some thoughts for the moment.

I just finished a very first, rough draft of our outline, and I attach it to the end of this message. I have just sent it to Martin Heimann, but I have still not yet talked to him. I also send this whole thing to Colin, hoping that he will catch the thread through it without problems. Gerard Dedieu is the one I want to approach next - Alberte is already talking to him about this in the context with other things.

Cheers,

Wolfgang

On Nov 22, 14:12, Mike Hulme wrote:

> Subject: EU proposals
> Wolfgang,
>
> This email (see below) has just arrived from Andrew Friend. I wonder if we
> are in danger of competing amongst ourselves here, or is the role of N
> sufficiently far away to avoid problems? Do you want me to talk with Andrew
> again or shall I wait for you to get back to me next week after contacting
> Martin? Would Gerd Esser be one of 'our' C modellers?
>
> Looking at the call for proposals it seems that 'Theme 1.1.1 Basic processes
> in the climate system' fits best for us since there is a specific item (5)
> which states: 'studies of global budgets of greenhouse gases with
> particular emphasis on fluxes, transformations and stroage in the biosphere,
> lithosphere and oceans.'
>
> If not here, then maybe under '1.1.3 Climate variability, simulation of
> climate and prediction of climate change' since there is an item (4)
> 'Development, validation and application of models for important
> climate-related quantities such as mean sea-levels, storm and surge climates
> and carbon cycling.' But here there is an emphasis on European approaches.
>
> About EU politics, Balabanis is the guy for ESCOBA, but that doesn't mean he
> is necessarily the one for us. Troen handles a lot of the climate projects
> in 1.1.1, 1.1.2 and 1.1.3. We have quite a bit to do with him. But

it
> depends if there is someone else on carbon etc. Maybe Balabanis is
the
> place to start.
>
> Regards,
>
> Mike
>
> *****
>
> Dear Mike
>
> Thank you very much for your hospitality the other day. I enjoyed my
visit and
> look forward to continued collaboration. With regard to ESCOBA, this
project is
> in domain 1.1 of the Environment and Climate Programme, and is thus
the
> responsibility of Balabanis.
>
> Has there been any progress with regard to a new proposal? I have
contacted
> Gerard Dedieu, and he says that he will have to think about the idea
some more.
> Meanwhile, I have received an invitation from Gerd Esser (another
ESCOBA
> partner) to put together a new proposal to look at 'The role of
nitrogen in the
> carbon balance of the terrestrial biosphere' for submission in
January. A
> couple of the other ESCOBA partners have expressed interest in this
proposal.
> Part of the new project will be to use global process-based carbon
models, such
> as our Hybrid model, to assess the biospheric sink for C (and its
geographical
> distribution) over the period 1750 to 1990. I guess there could be a
role for
> an improved climatology here.
>
> I could investigate further the current intention with regard to
climatology in
> this project if you wish.
>
> Andrew
>
>-- End of excerpt from Mike Hulme

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Global, spatially explicit assessment of the interannual
variability in terrestrial carbon storage

VERY FIRST, INCOMPLETE draft for a new research proposal
to be submitted to the European Union
for the second phase of the Third Framework "Environment and
Climate"

Goal

A critical uncertainty in assessments of global change impacts
and feedbacks is the source/sink relationship for carbon
between atmosphere and the terrestrial biosphere, and
particularly its interannual variability. Recent advances in
modelling of atmospheric and biospheric processes, combined
with significant progress in data gathering for climate, CO2
and O2, now allow for a dedicated experiment that is likely to
reduce this uncertainty. Equilibrium approaches to the

simulation of global carbon fluxes are no longer adequate for this, since empirical studies are showing both a long-term trend and a significant interannual variability of CO2 fluxes, which appear to be most strongly driven by climatic impacts on terrestrial vegetation.

Experimental design

For a time period of several decades, we propose to perform a simulation of biospheric carbon fluxes using:

- ú a range of currently available biospheric models (ongoing intercomparisons indicate that there is no clear 'best approach' - therefore this project will use several approaches <<and we would like to include the CESBIO people for the testing of all model outputs against global seasonal fPAR observations - or does this overload the project?>>),
- ú a realistic, historical high-resolution climatology (which so far does not exist - a recent IGBP-workshop has however clearly identified the need for it and what would be necessary to achieve it within a short time-frame),
- ú a land use map from currently available observations <<or from satellite?>>),
- ú a 3D atmospheric transport model for the calculation of net CO2 concentrations at the stations where these are observed <<and of course those measurements themselves>>.

Land use and different climatic elements will be combined in factorial combinations to investigate the role of each element in the full system response.

<to be continued... A critical question to me at this time is whether the project should go for two timeframes: if there is, in addition to the timeframe of available CO2 measurements, also a 10 year timeframe, then we could compare all models against available seasonal fPAR profiles from satellites and hereby assess their capacity to recover other aspects of biospheric dynamics. Another question is whether we should also throw in a GCM experiment to allow for future scenarios.>

Expected results

- ú Improved understanding of the global carbon cycle - realistic seasonal and interannual simulations are essential for identifying regional responses of the terrestrial biosphere
- ú From that: Improvements of mitigation assessments such as those required by the IPCC
- ú Global, historical, high-resolution climatology which is required by other assessments of impacts of global change

Consortium participants

Contractors

- ú Potsdam Institute for Climate Impact Research (PIK), Potsdam, Germany (Wolfgang Cramer): Project coordination, experimental design and analysis
- ú Climatic Research Unit, University of East Anglia (CRU-UEA), Norwich, UK (Michael Hulme): Development of a global high-resolution historical climatology
- ú Max Planck Institute for Meteorology (MPIM), Hamburg, Germany (Martin Heimann): Atmospheric transport model, ocean component, analysis of results against measurements, TBM simulations using SILVAN
- ú possibly a fourth one (CESBIO, Toulouse?) if we decide to go for a significant remote sensing component

Subcontractors

- ú Department of Ecology, Lund University, Lund, Sweden (I. Colin Prentice): TBM simulations using BIOME3
- ú Institute of Terrestrial Ecology, Edinburgh, UK (Andrew Friend): TBM simulations using HYBRID
- ú Department of Chemistry, Frankfurt University, Frankfurt,

Germany (Gundolf H. Kohlmaier): TBM simulations using FBM
ú Sheffield University, Sheffield, UK (F. Ian Woodward):
TBM simulations using Sheffield-DGVM or DOLY
ú (if politically possible:) Center for Resources and
Environmental Studies, Australian National University (ANU-
CRES), Canberra, Australia (Michael F. Hutchinson):
Development of suitable scaling algorithms for climatic data
assimilation