



**INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
WORKING GROUP I**

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**IPCC Workshop on Climate Sensitivity
Paris, July 26 – 29, 2004**

Date: October 6, 2003

Enclosures: 2

Sir/ Madam

We are pleased to bring to your attention the plans of the Intergovernmental Panel on Climate Change (IPCC) to conduct a scientific workshop on the topic of 'Climate Sensitivity'. This workshop is being generously hosted by the Government of France and will take place at the École Normale Supérieure in Paris on July 26-29, 2004.

It may be recalled that the IPCC has been established jointly by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) to:

- (a) make periodic assessments of the science, the impacts and the socio-economic aspects of climate change and of adaptation and mitigation options to address climate change;
- (b) assess, and develop as necessary, methodologies such as the IPCC Guidelines for National Greenhouse Gas Inventories;
- (c) provide, on request, scientific, technical, and socio-economic advice to the Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) and its bodies.

Climate sensitivity is broadly defined as the change in global mean temperature produced by a given radiative forcing of the climate system. It is recognized as one of the most important parameters in climate science, providing a simple yet useful way to compare different climate models and a key link between radiative forcing and the global responses of coupled atmosphere–ocean climate models.

The 20th Session of the IPCC (Paris, February 2004) decided that Working Group I should hold a workshop to consider the topic of climate sensitivity broadly including the results emerging from the various climate modeling projects and perspectives based on information from relevant observational and paleoclimatic studies. The workshop provides a key opportunity to bring together modeling groups to compare results, develop approaches, and advance understanding of these issues in support of the IPCC Fourth Assessment Report (AR4). The workshop involves interaction and collaboration with key efforts within the World Climate Research Program (WCRP) as well as with individual modeling groups worldwide.

A copy of the scope of the workshop is attached for your consideration, as is a list of the members of the steering committee that has been established to provide scientific guidance on the content of the meeting. Given its scientific nature and specific focus, the attendance of appropriately qualified experts is vital for the success of this workshop. If your Government wishes to nominate such experts to participate in the workshop please do so by providing their names, current email and full postal

addresses, and curriculum vitae. We would be grateful if materials could be sent via email if at all possible, and no later than November 24, 2003, to:

IPCC Working Group I

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Selection from among those nominated will take into account the need for a balance of expertise relevant to all aspects of the workshop, as well as a balance of geographical representation. The total number of participants at this workshop will be restricted to 120. Limited financial support will be available from the IPCC Trust Fund for representatives from developing countries and countries with economies in transition. Part of the available funds may be reserved for the experts to be invited by the IPCC.

Please accept assurances of our highest consideration.



Susan Solomon
co-chairs, IPCC Working Group I



Qin Dahe

To: Ministries of Foreign Affairs of the Members of the UN and of WMO

Cc: IPCC Focal and Contact Points

Enclosures: 1. Scoping document – IPCC XX/Doc.5 revised to reflect Government comments
2. List of members of the Workshop steering committee

IPCC Working Group I Workshop on Climate Sensitivity

Scope and Aims

IPCC Working Group I (WG I) will hold a workshop on the topic of Climate Sensitivity in 2004 as a major keystone in activities preparing for the WG I contribution to the IPCC Fourth Assessment Report (AR4).

Background

One of the most important parameters in climate science is the 'climate sensitivity', broadly defined as the global mean temperature change ($^{\circ}\text{C}$) for a given forcing, often that of a doubling of atmospheric carbon dioxide. Climate sensitivity has played a central role throughout the history of IPCC in interpretation of model outputs, in evaluation of future climate changes expected from various scenarios, and it is closely linked to attribution of currently observed climate changes. An ongoing challenge to models and to climate projections has been to better define this key parameter, and to understand the differences in computed values between various models. Throughout the last three IPCC assessments this basic parameter of the Earth's climate system has been estimated as being in the range 1.5 to 4.5 $^{\circ}\text{C}$ (i.e., uncertain by a factor of three), making this parameter central to discussions of uncertainty in climate change.

WG I is concerned to sharpen understanding of the differences between general circulation models used in climate change research.

Currently the primary reason for the substantial range in model based estimates of climate sensitivity is widely believed to be differences in their treatment of feedbacks – particularly cloud feedbacks, but systematic intercomparisons have not been done to confirm that this is so for the current generation of models. Within international climate modeling projects, the development of new models together with both formal and informal model intercomparison exercises that are currently taking place by various groups suggest that a renewed focus on the reasons for different model estimates of climate sensitivity may be particularly useful at this time.

In addition, some recent studies suggest that new insights into the likely range of climate sensitivity may be possible through comparisons of models and observational data – both contemporary and historical or paleoclimatic. Observation/model intercomparisons will be a special focus of this workshop.

Other recent studies raise issues regarding the limitations of applicability of forcing/response relationships in the climate system - such as questions regarding the degree of predictability of climate and its relevance for estimates of climate sensitivity, and the degree to which forcings such as those due to solar, well-mixed greenhouse gases, or aerosols may produce different responses. A review of these questions about the interpretation of climate sensitivity could also sharpen scientific understanding and would hence be of benefit to the WG I AR4.

In summary, there is broad interest for a carefully planned workshop on climate sensitivity. Given the importance of the climate sensitivity parameter, it is likely that the outcome of this workshop will provide a major focus for the discussion and treatment of climate models in the WG I contribution to AR4.

Aims

The aims of the climate sensitivity workshop would be to:

- evaluate a range of climate model results so as to relate different climate sensitivity estimates to differences descriptions of physical processes, particularly those related to atmospheric water vapor, clouds, lapse rate changes, ocean heat uptake, treatment of evapotranspiration, land-atmosphere coupling, etc.;
- obtain a more comprehensive picture of the relationships between climate sensitivity and other model features such as resolution, numerical approach, radiative transfer parameters, etc.;
- consider how current, historical, and/or paleoclimatic data can aid in the determination of the likely range of climate sensitivity;
- improve the understanding of the interpretation and limits of the climate sensitivity concept, including for example possible dependencies upon different forcing agents, predictability questions, and transient and steady-state responses;
- start a process towards objective assessment to critically determine whether the range 1.5 to 4.5°C remains appropriate in the AR4 – e.g. by defining criteria that may assist in the evaluation of results from many different climate models.

Approach and Timetable

Given the range of issues to be considered and the commitment that would be required from major modeling groups around the world, the process will be structured by a broad-based scientific steering group. Planning for the workshop will be carried out by the steering group. Organizational support for the meetings, and production of a workshop report will be carried out by the WG I TSU.

In order to include a carefully constructed intercomparison of climate model results as part of the proposed workshop, a preliminary expert meeting will foster explicit analysis of feedbacks, in collaboration with WCRP activities on this topic. The expert meeting is currently planned for April 2004 in Exeter, UK.

The workshop will take place on July 26-29, 2004 in Paris, France.

IPCC Workshop on Climate Sensitivity

Members of the Steering Committee

Co-chairs:

S. Bony (France),
J. Meehl (USA)

B. McAvaney (Australia),

Committee members:

Jonathan Gregory (UK),
Herve Le Treut (France),
Cath Senior (UK),
S. Joussaume (France)*,
V. Ramaswamy (USA),
J. Jouzel (France)*,
V. Meleshko (Russia)

Ulrich Cubasch (Germany),
Bill Collins (USA),
Dehui Chen (China)*,
George Boer (Canada),
A. Kitoh (Japan),
L. Yong (China),

*Unconfirmed as of August 26, 2003