

# Methodological assessment of contributions to climate change

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# Background

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- 1996: Brazil made proposal to share emission reductions among Annex I Parties according to their relative historical responsibility (their contribution to global average surface temperature increase)
- 1997: The Kyoto Protocol was adopted, COP refers scientific and methodological aspects of the proposal to the SBSTA
- 1998: Side event on the margins of COP4 organized by Brazil
- 1999: Expert meeting on the proposal held in, and organized by, Brazil
- 1999: SBSTA 11 decides to review the proposal by SBSTA 14
- 2001: First UNFCCC expert meeting identifies next steps
  - Additional analyses on indices for contributions to climate change
  - Calculation by different simple climate models with harmonized input parameters in an open process
  - Assessment of the influence of different parameters

# Mandate

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SBSTA 14 (July 2001) encouraged Parties

- To pursue and support the research effort on the scientific and methodological aspects of the proposal by Brazil as recommended by the experts meeting and to communicate such activities to the secretariat

SBSTA 14 requested the secretariat

- To continue to coordinate the review of this proposal
- To facilitate the dissemination of scientific and methodological information on this proposal
- To organize an expert meeting before SBSTA 17 (November 2002)
  - to share information on the development of the scientific and methodological aspects of the proposal by Brazil,
  - to broaden participation and
  - to build scientific understanding of this subject

**To this end, the secretariat invited Parties to encourage research institutions to participate in a process to share information**

The organization of the expert meeting is subject to the availability of supplementary funds 3



# Organization

## of the information sharing process

- Preparation of a message to Parties (sent 26 March 2002)
- Support by the University of East Anglia, UK (Dr. Sarah Raper):
  - Technical support
  - Web site with relevant data
  - Focal point for technical questions
  - Compilation of the results
- Workshop to exchange information on preliminary results (Week of 23 September 2002, pending availability of funds)

# Participation

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## **Institutions that have so far expressed an interest in participating:**

- MCT (Brazil)
- CICERO (Norway)
- CSIRO (Australia)
- University of Illinois / UIUC (USA)
- EPA / Battelle (USA)
- NIWA (New Zealand)
- DEA (DEA-CCAT) (Denmark)
- RIVM (Netherlands)
- Hadley Centre (UK)
- University of East Anglia (UK)
- University of Louvain (Brussels)
- Lawrence Berkley (USA)
- Institute/Applied Energy (Japan)
- RITE (Japan)
- CRG (USA)

# Objective

## of the workshop in September

- To to assess comparable results on the contributions to climate change (based on report of first workshop):
  - Calculations by different simple climate models with harmonized input parameters in an open process
  - Additional analyses on indices for contributions to climate change
  - Assessments of the influence of different parameters and parameterizations
- To broaden participation
- To build scientific understanding of this subject
- To identify next steps, including future analysis

### **Possible workshop agenda:**

Session 1: Comparison of preliminary results

Session 2: Development of emissions history and associated uncertainties as well as observations needed for validation

# Further information

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[www.unfccc.int/issues/ccc.html](http://www.unfccc.int/issues/ccc.html)

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# General questions

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for the information sharing process

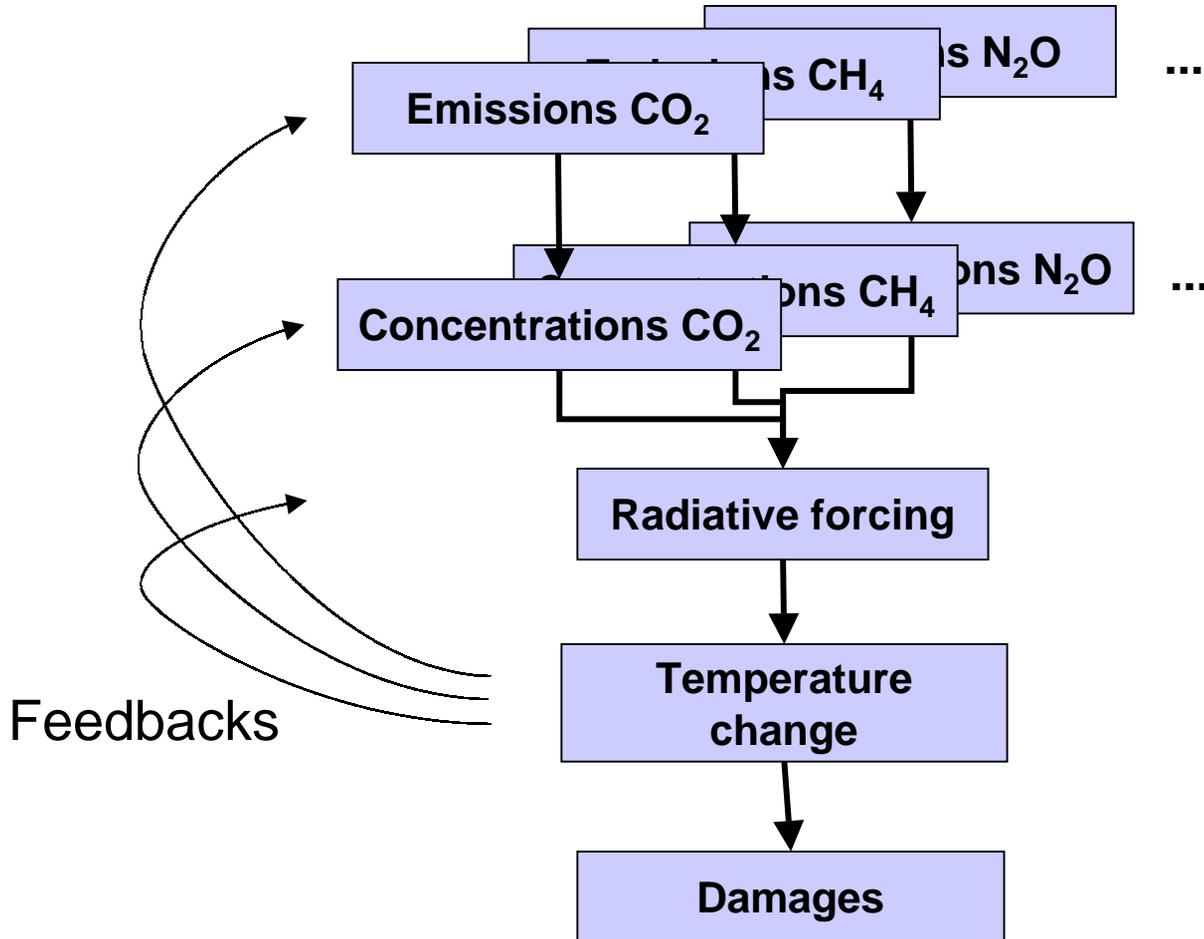
- Is it *possible* to calculate the contributions to climate change of various sources of greenhouse gas emissions and what are the limits to this approach?
- What is the influence of possible *methodological* choices when calculating contributions to climate change?
- What are the critical *scientific* issues when calculating contributions to climate change?

# What is the influence of possible *methodological* choices?

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- How does the choice of different indicators affect contributions to climate change?
- How should the fact be treated, that an emission of a tonne of CO<sub>2</sub> has a different effect today than it had 100 years ago and than it will have in the future?
- How do different starting dates (e.g. 1750, 1950, 1990, 2000) affect contributions?
- Which sectors and gases and other forcing agents should be included?

# Cause effect chain



# What are the critical *scientific* issues?

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- How sensitive are the results to different input parameters and ways to describe the climate system?
  - Different sets of historical emissions data
  - Representation of the carbon cycle and the accumulation of other gases in the atmosphere
  - Representation of the radiative forcing due to increased concentrations
  - Representation of the temperature response to the increased radiative forcing
  - Inclusion of emissions of aerosols and ozone precursors
  - Feedback mechanisms
- What are suitable historical data sets of emissions of greenhouse gases, greenhouse gas precursors and aerosols?
- How should the models be validated against the observed temperature records and what is the effect of such validation?
- What are the uncertainties involved in the calculation?

# Schedule of the modelling exercise

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## Phase I:

- The participating groups demonstrate the ability of their simple models to reproduce the global mean results of more complex models (such as GCMs) for historical emissions and the SRES A2 emissions scenario  
Deadline: **1 June 2002**

## Phase II

- Changes in greenhouse gas concentrations and temperature should be calculated using an agreed set of parameters
- These changes should be attributed to four country groups
- The sensitivity of simple model results to this set of parameters should be analyzed
- Analysis of the sensitivity of the the results to any other assumption is encouraged  
Deadline: **1 August 2002**

# Further information

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