

## **Chairperson's Comments**

**J. Bruce**

## **Chairperson's Comments on Session I- "STATE OF THE ART IN COMPUTER MODELS".**

**Chairperson- James P. Bruce.**

### **IPCC WG3 Co-Chair**

This first technical session, through presentations and discussions of a high standard, effectively launched the Workshop towards its two main goals - provision of opportunities to discuss input assumptions in Integrated Assessment Models, and provision of essential background information on model components. Presentations addressed the main components - socioeconomic models related to greenhouse gases and sulphate aerosol emissions, climate system models, impact assessment modeling, as well as economic issues in abatement strategies.

In the first presentation, Dr. Jae Edmonds not only introduced the socioeconomic component, but gave a valuable overview of IAMs, their capabilities and weaknesses. He emphasized the point that the output of IAMs are only as good as their weakest link, and they cannot create certainty if modeling components are uncertain. Some major input assumptions relating to emissions that clearly need further testing are: the rate of growth of developing country emissions, trends in fuel substitution and in particular, possible large scale increase in coal use; rates of technological change and development of non-fossil technologies; and rates of diffusion of newer technologies within and to developing countries. Emission reduction costs estimates are dependent on these assumptions, although a robust outcome is that intentional cooperation and flexibility in timing will reduce global costs.

Steven Schneider discussed both the most sophisticated ocean atmosphere Global Climate Models, and Simple Climate models. The latter are usually used in IAMs and so, verification of such models against a range of GCMs outputs is essential to provide confidence in this component

The state of the art in modeling impacts on natural and managed ecosystem due to climate change was reviewed by Rick Leemans, with particular emphasis on the IMAGE model. He emphasized the complexities and feedbacks involved in changes in CO<sub>2</sub>, climate and in vegetation and biodiversity and their implications for water resources, food production and spread of tropical diseases.

Certain economic issues that require development of a greater consensus to allow convergence of IAM results, were identified and discussed by Professor Akihiro Amano. In particular, the selection of an interest rate can have profound effects on estimates of either costs of emission limitations or estimates of climate change damages. Professor Amano offered an innovative and constructive approach to resolve differences between those analysts who advocate use of a relatively high market discount rate and those who believe that a lower "social" discount rate is appropriate for IAMs directed towards climate change issues.

The discussion period opened up issues of the relevance and ability of IAMs to describe and address developing country situations, e.g. Africa. The discussion also focused on the often chaotic nature of social responses, as well as differences in value systems and the problem of responding to climate surprises. None of these are well reflected in IAMs.

This session produced an exceptionally good introduction for the Workshop, to IAMs and their component parts, and set the stage for a critical examination of strengths and shortcomings of this methodology.