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Global Climate Observing System (GCOS)
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Background: The Global Climate Observing System (GCOS) was established in 1992 to ensure that data are obtained and made available to meet the needs of users for climate information. Areas of application include (1) climate system monitoring and climate change detection and attribution; (2) assessing impacts of, vulnerability to, and adaptation to climate variability and change, e.g., changes in terrestrial ecosystems and sea-level; (3) research to improve understanding and prediction of the climate system; and (4) application to sustainable economic development.

On behalf of the Global Observing Systems and their Sponsoring Agencies, GCOS began to engage the Conference of Parties (COP) of the UN Framework Convention on Climate Change (UNFCCC) in the mid 1990's. GCOS prepared a *Report of the Adequacy of the Global Climate Observing System* for the 4th session of the Conference of the Parties (COP-4) in Buenos Aires in 1998. This report investigated the common assumption "that there are more than enough observations being collected to meet these [the Convention's] needs, especially given all the recent improvements in observational technologies. In practice, available observations often have major deficiencies with respect to climate needs." These deficiencies have the potential to lead to inaccurate conclusions concerning the impacts and mitigation of climate change. COP-4 then adopted decision 14, which recognized the importance of climate observations, recognized the inadequacies of current networks and noted "the need to identify priority capacity-building needs related to participation in systematic observation" especially in developing countries.

At its 5th session, the Conference of Parties adopted a more definitive decision on systematic observation (decision 5/CP.5), which would have:

- All Parties to provide detailed reports on systematic observation in accordance with the UNFCCC reporting guidelines on global climate observing systems developed by GCOS. Annex I Parties are to report in conjunction with their national communications. Non-Annex I Parties are to report on a voluntary basis.
- Convention secretariat, in conjunction with the GCOS secretariat, develop a process for 'synthesizing and analyzing' the information submitted.

Based on a recommendation of its Steering Committee and in consultation with its science panels, the GCOS secretariat has developed a prospectus for a 'synthesis and analysis' process for the information submitted to COP in November 2001 that is responsive to COP decision 5/CP.4. This will result in two reports.

Synthesis Report: The UNFCCC secretariat, with assistance from GCOS, initially will prepare a compilation and synthesis report drawing together the basic information from the reports by Parties. This synthesis report will be prepared as soon as practicable as a UNFCCC document following normal Convention practice and will provide a preliminary analysis of support by Parties for systematic observation.

Analysis Report: A Second Adequacy Report: Building on the UNFCCC synthesis report, GCOS will co-ordinate and guide a further analysis utilizing data and information on operational and research observing systems from all available sources, such as national, regional and international organizations. The objectives will be to determine what progress has been made since the first report in 1998 in defining and implementing climate observing networks and systems; to determine the degree to which these networks meet with scientific requirements and conform with stated observing principles; and to assess how well current systems and planned improvements meet the needs of the Convention. This analysis will result in the preparation of a second *Report of the Adequacy of the Global Climate Observing Systems*.

The analysis process will draw upon international scientific experts including members of the GCOS Science Panels and will consider the conclusions of the Third Assessment Report of the IPCC. It will also address new developments and emerging opportunities such as the increasing capabilities shown by satellite systems to provide long-term, calibrated climate observations, and new techniques for integrating global *in situ* and satellite observations.

A special Task Team of scientists covering the disciplinary spectrum will plan the analyses and organize the report with guidance from a Steering Group drawn from the GCOS Steering Committee and with participation of the UNFCCC secretariat. The Report will be considered and endorsed at an international scientific conference of scientists and stakeholders and be made available to Parties for comment. The goal will be to produce a relatively succinct scientific report on the state of the global observing systems for climate, with wide acceptance by all stakeholders including the Parties to the UNFCCC. The GCOS Steering Committee views this report as responding to decisions 5/CP.5 and 14/CP.4 and providing significant benefit to the UNFCCC Conference of Parties.

Given the importance of the climate research and operational community in the United States and the size of the US contribution to systematic observations globally, GCOS is interested in involving AMS members and other climate scientists in this 'Adequacy' process. We would hope that AMS members would find participation in this effort both challenging scientifically and worthwhile in providing practical benefits to international decision making and in furthering the improvement of global observing systems for climate.