NEW RAINFALL PREDICTION METHOD DIRECTLY BENEFITS AGRICULTURAL AND FLOOD FORECASTING IN SOUTH ASIA

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Research shows that precipitation can be forecast 20 days in advance over central India by using a Baysean wavelet regression statistical scheme. The regression variables are derived from current understanding of the physics of intraseasonal variability.

Accurate intraseasonal forecasts (20–30 days) are perhaps the most important from an agricultural and water resources perspective. An accurate forecast three weeks in advance can provide a distinct reduction in agricultural vulnerability to climate variations and the ability to take advantage of favorable future conditions. Forecasting on 20–30 day time scales is much more important than forecasting interannual variation (e.g., El Niño time scales). Hitherto, 20–30 day forecasts have been difficult or impossible to make because of the inability of models to simulate intraseasonal variability and the lack in understanding of the basic physics. New insights on the physical nature of monsoon variability, coupled with new statistical techniques, has allowed us to move forward.

How important are the forecasts shown in the figure on the cover? A. Subbiah of the Asian Disaster Preparedness Centre (ADPC) in Thailand, an agricultural expert, feels that use of these forecasts could increase agricultural yield by 20–30 percent. In that sense, the increase in yield may be equivalent to that achieved during the "Green Revolution" that accompanied the introduction of new grain species in the 1960s. Another very exciting by-product of this prediction method, is that the same technique can be used for river discharge into Bangladesh, thus providing a 20–25 day lead time for floods.

This technique does not require sophisticated weather and climate modeling infrastructures. Once data links are made available the techniques can be used locally. Thus, capacity building is relatively minimal. More development has to be done as we would like these forecasts to be probabilistic. However, technical transfer to Bangladesh and Indian user communities is relatively simple and can easily be accomplished within the next 18 months to 2 years.

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COUPLED MODEL INTERCOMPARISON PROJECT

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The Coupled Model Intercomparison Project (CMIP) is an activity of the WCRP Working Group on Coupled Models (WGCM). CMIP was initiated in 1995 with the general goal of collecting and intercomparing simulations from global coupled climate models. These models are high end state-of-the-art comprehensive climate simulation tools with components typically consisting of atmosphere, ocean, sea ice and land surface. The resolution of the components generally ranges from roughly 5 degrees to about 2 degrees latitude-longitude in the atmosphere, and from about 5 degrees down to ½ degree in the ocean. Vertical levels are typically about 15 to 25 levels in the atmosphere, and roughly 20 to 45 in the ocean. Any type of spin-up and/or flux adjustment is allowable to find initial conditions for the control integrations of these models since it is virtually impossible to specify these techniques across all coupled models. Thus, CMIP is a "level 1" intercomparison (Gates, 1992) where available simulation results are compiled, analyzed and intercompared. The transition to a true "level 2" intercomparison (where coupled model experiments are done under exactly the same standard conditions) has proved challenging; the very rapid development efforts in coupled models, their great computational expense, and their ever increasing complexity mitigates against a consensus view as to what constitutes "standard conditions."

The first CMIP workshop was held in 1998 in Melbourne, Australia, and a summary of that workshop and some preliminary results from CMIP intercomparisons were described by Meehl et al. (2000). A number of results related to contributions provided by CMIP appeared in the IPCC Third Assessment Report (e.g., McAvaney et al., 2001;

Cubasch et al., 2001). A further compilation of intercomparison results from CMIP is given by Covey et al. (2000), and an example of CMIP results is shown in the figure on page 16, taken from Covey et al. (2003).

Part of the motivation of CMIP arose from the IPCC process in that many of the global coupled models are relied on for high visibility climate change simulations. Thus, it is important for the global coupled climate modeling community to undertake a comprehensive evaluation of current global coupled models. Additionally, experience with other model intercomparisons such as the Atmospheric Model Intercomparison Project (AMIP) has shown that such an exercise provides valuable information to the participants to point the way toward subsequent model improvement.

Further information on CMIP can be found on the web page http://www-pcmdi.llnl.gov/cmip/.

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WORKSHOP/MEETING SUMMARIES

7TH GAME INTERNATIONAL SCIENCE PANEL MEETING

6–7 November 2002
Tokyo, Japan

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The 7th GEWEX Asian Monsoon Experiment (GAME) International Science Panel meeting (GISP) was held at the Earth Observation Research Center of the National Space Development Agency of Japan (EORC/NASDA) under the auspices of Ministry of Education, Culture, Sports, Science and Technology and NASDA. A total of 35 participants including observers and experts from 10 countries attended.

After the opening speeches by Prof. Yasunari, Chairperson of GISP and Mr. Otsuki, Director of EORC/NASDA, reports were given on GAME related international programs and projects, such as the GEWEX Hydrometeorology Panel and Coordinated Enhanced Observing Period (CEOP).

GAME is in Phase II, where the emphasis is on analysis of GAME data sets and the modeling of the Asian monsoon climate and hydrological cycles. Many working group reports were presented on Phase II activities and results, including the following:

- New scientific results on the hydrometeorological processes in the Asian monsoon region from the Tropics to the Siberian Arctic region. Particularly, the land-atmosphere interaction process in some typical climate and vegetation condition in monsoonal Asia have been revealed in diurnal through seasonal time scales. Cloud and precipitation processes have also been scrutinized in the tropical region, the Meiyu-Baiu frontal zone in the subtropical China, and on the Tibetan plateau area.

- The role of regional-scale water-fed rice paddy field (which is a typical land surface condition in monsoonal Asia) has been studied in the development and modifying of the precipitation systems, using the cloud-resolving atmospheric model forced by surface energy fluxes observed through HUBEX and GAME-AAN(Asian AWS Network). The result strongly suggested that the water-fed rice paddy field plays an important role in forming the meso-