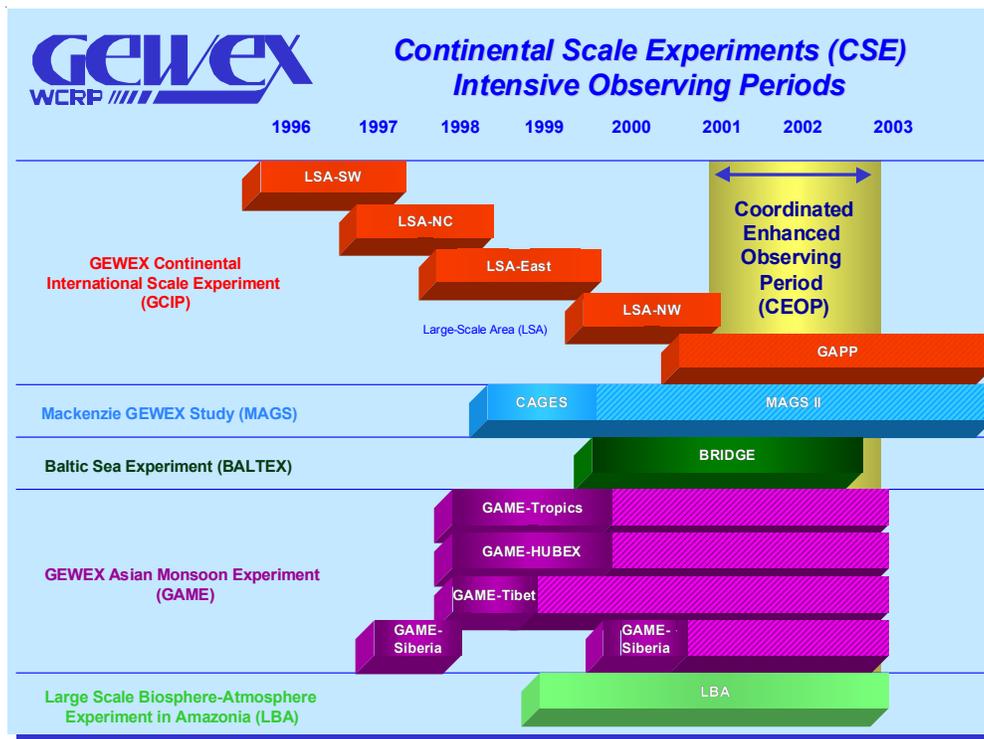


World Climate Research Programme—WCRP

GEWEX Projects Focus on CEOP!



Intensive Observing Periods for GEWEX Continental-Scale Experiments

GAME-TROPICS STUDIES ON DEFORESTATION EFFECTS IN INDOCHINA

**Shinjiro Kanae, Taikan Oki
and Katumi Musiake**
University of Tokyo, Japan

As part of GAME-Tropics, the controversial issue of deforestation effects on regional climate is addressed. Many numerical deforestation experiments have been carried out (e.g., Dickinson and Henderson-Sellers, 1988), with results showing that rainfall decreases as a result of deforestation. However, in most cases these hydrological changes have not been detected through observations. The increasing population and the spreading deforestation over Southeast Asia create an urgent priority to assess the deforestation effects on re-

(Continued on page 4)

Over 300 presentations scheduled for the *Third International Scientific Conference on Global Energy and Water Cycle* to be held in Beijing, China, 16–19 June 1999. (See page 5.)

WHAT'S NEW

- ***Professor Sorooshian New SSG Chairman***
- ***CloudSat Mission Approved!***
- ***GCIP Follow-On Endorsed at SSG***
- ***First LBA CD-ROMs Released***
- ***Tribute to Moustafa Chahine***
- ***Update on GEWEX Data Sets, This Issue***

**Soroosh Sorooshian, Chairman
GEWEX Scientific Steering Group**

Since approval by WCRP’s Joint Scientific Committee (JSC) in 1989, the GEWEX Project has had phenomenal success in achieving its overall objectives. At the JSC meeting in Kiel, Germany, in March 1999, it was evident that many components of GEWEX—the Continental-Scale Experiments (CSE) and the activities of the various GEWEX projects—are outstanding and unique. There is no question that the hundreds of scientists throughout the world who are involved with various aspects of GEWEX deserve a lot of credit for their accomplishments to date. However, we also owe a great deal of gratitude to the individuals directly involved with the GEWEX program for their enthusiastic and unselfish determination to ensure the program’s success. Notably, Dr. Moustafa Chahine, who has chaired the GEWEX Scientific Steering Group (SSG) over the past 10 years, Dr. Pierre Morel and Dr. Hartmut Grassl, respective past and present Directors of WCRP, Sam Benedict in Geneva, and Dr. Paul Try and his staff in Washington, D.C., have all been critical in promoting the objectives of the GEWEX program. I look forward to working with them and seeking their advice as GEWEX moves into Phase II, an exploitation of new satellites and models, and Phase III, the application of GEWEX results to climate prediction.

As with any program, the level of success varies in accomplishing a multiple number of objectives. With respect to the four primary objectives of GEWEX, we have witnessed remarkable success in the areas of modeling, data assimilation, and the assembly and archiving of comprehensive data sets, globally and regionally, across the CSEs. Over the past 10 years, we have also learned many valuable lessons, which emphasize some of the deficiencies that need to be addressed if we are to ensure successful closure of water and energy cycles at different spatial and temporal scales. This is particularly important if GEWEX is to meet one of its more critical objectives, namely “to develop the ability to predict the variations of global and regional hydrologic processes and water resources and their response to environmental change.” Initiatives proposed under Phase II are being identified and developed in order to address and overcome these deficiencies. Needless to say, accomplishing this will require close collaboration and coordination among scientists involved in various CSEs, as well

as with other WCRP programs, in particular, CLIVAR. The Coordinated Enhanced Observational Period (CEOP), which was highlighted in the February issue of *GEWEX News*, will be a high priority in Phase II and will require the direct involvement and input from all scientists involved in CSEs. Looking further ahead, we must take full advantage of the international space agencies’ interest in improved observation of the components of the global water cycle.

At the same time, the GEWEX community needs to actively engage in discussions with colleagues in the CLIVAR program in order to ensure that the various elements of the land-surface processes—which influence the science addressed by CLIVAR—are properly addressed, and to ensure that we in GEWEX benefit from a better understanding of the slower components of the climate system.

Regarding the role of GEWEX in water resource issues, we in GEWEX must become serious about engaging the water resources community to ensure that modeling, observations, and data assimilation activities meet the water community’s requirements for better management of the water resources. The worldwide hydrology currently being fostered by UNESCO and WMO represents an exciting potential partner in this mission.

As the incoming Chair of the GEWEX SSG, I invite you to participate in carrying out this important WCRP mission, and I encourage you to communicate your thoughts and ideas to me, the WCRP Secretariat in Geneva, and the International GEWEX Program Office.

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New Chairman of GEWEX Scientific Steering Group (SSG)

The transfer of the GEWEX Scientific Steering Group (SSG) chairmanship from Dr. Moustafa Chahine to Professor Soroosh Sorooshian was endorsed at the March 1999 World Climate Research Programme Joint Scientific Committee Twentieth Session.

Professor Sorooshian has broad international experience in research and project leadership, including efforts in New Zealand, the Sultanate of Oman, and France. His primary research is in surface hydrology with emphasis on precipitation and remote sensing. He has served in leadership roles on many committees, including the present Chairmanship of the National Research Council, U.S. National Academy of Sciences GEWEX Panel.



Dr. Moustafa Chahine, Jet Propulsion Laboratory, California Institute of Technology.



Professor Soroosh Sorooshian, Hydrology and Water Resource Systems and Engineering at the University of Arizona.

Dr. Moustafa Chahine, the first chairman of the GEWEX SSG, applied his scientific background and knowledge of satellite observing systems to the understanding of the global energy and water cycle. His scientific abilities combined with his organizational leadership were critical in developing GEWEX into a premier international project by molding a variety of existing projects and establishing new projects to collectively address key global energy and water cycle issues. (See *Tribute to Dr. Chahine* on page 11.)

NASA APPROVES CLOUDSAT!

In response to the need voiced by the GEWEX community, NASA has approved a new spaceborne 94 GHz radar mission. CloudSat will fly in 2003 in formation with the Earth Observing System-PM satellite and the recently approved NASA PICASSO-CENA lidar mission. The new measurements from these satellites will provide the GEWEX community with an opportunity to study the three-dimensional structure of clouds from CloudSat measurements which will be complemented by lidar measurements of thin clouds and aerosols from PICASSO-CENA.

Professor Graeme Stephens of Colorado State University and Chairman of the GEWEX Radiation Panel will be the principal investigator of the CloudSat mission. NASA's Jet Propulsion Laboratory, in Pasadena, California, will manage the international mission, which will include participation from the United States, Canada, Germany and Japan.

NOTE TO GPCP CD-ROM USERS

A new version of monthly mean 2.5 x 2.5 degree latitude/longitude merged satellite and gauge precipitation estimates, designated VERSION 1B has been produced and is available on-line from WDCA at <ftp://ftp.ncdc.noaa.gov/pub/data/gpcp/version1>. VERSION 1B has adjustments and corrections to the procedures used to obtain the merged satellite and gauge data. A more completed description of the VERSION 1B data is provided in the documentation files available on-line. The merged satellite-gauge precipitation estimates on the GPCP CD-ROM, designated VERSION 1A, while internally consistent and suitable for study of the spatial and temporal variability of precipitation SHOULD NOT BE MIXED WITH VERSION 1B SINCE DISCONTINUITIES IN SPACE AND TIME WILL OCCUR.

DEFORESTATION EFFECTS IN INDOCHINA

(Continued from page 1)

gional climate and water resources. The percentage of forested land in Thailand, located at the center of Southeast Asia, has decreased from 54 percent in 1961 to 26 percent in 1993. As rainfall has been observed routinely for a long period in Thailand, it may be possible to extract the effects of deforestation on regional climate and rainfall change.

The GAME-Tropics activities include the collection of more than 40 years of rainfall data in Thailand. A linear regression analysis and a non-parametric Mann-Kendall rank test were applied to the rainfall data for each month at each meteorological station from 1951 through 1994 (see Figure 1 on back page). **The purpose of this analysis was to investigate the long-term rainfall trend which may be due to the effect of deforestation. Significant decreases were detected in the time series of monthly rainfall for September, when the rainfall amount is a maximum every year in Thailand.** In September, rainfall amounts at almost every meteorological station have decreased for the past three decades. Not only can decreasing trends be seen, but the magnitudes of these decreasing trends are large, nearly 100 mm per 50 years. Other distinct characteristics were not present in the analysis of other months.

At the same time, numerical experiments with a regional climate model were carried out to examine the tropical deforestation effects on regional climate over the Indochina peninsula. A regional climate model based on CSU-RAMS (Pielke et al., 1992) was applied with 60 km horizontal spacing (50 x 50 grids) and 25 vertical layers. Land surface hydrological processes were simplified and represented only by the evaporation efficiency, albedo and roughness fixed for each grid point and each vegetation type. In the numerical experiments, a part of the Indochina peninsula is changed from grassland (the current vegetation type) to forest (the former vegetation type). See Figure 2 on back page. Simulations were carried out for August and September during 1992–1994. Initial and boundary conditions were interpolated from NCEP Reanalysis. **Results of these numerical experiments show decreasing rainfall over almost all**

the deforested area in September, but not in August.

Significant rainfall over the Indochina peninsula occurs under the influence of the Southeast Asian summer monsoon (SEAM) system. The strong summer monsoon westerlies bring abundant moisture to the Indochina peninsula as a source of rainfall. However, the strong westerlies over the Indochina peninsula disappear and gradually turn to easterlies in September, although this is a period of maximum rainfall. **In short, climate over the Indochina peninsula in August is highly governed by the SEAM and in September it is not.** It is inferred that local land surface-atmosphere interactions and deforestation effects may appear clearly only in September as a result of the weakened monsoon westerlies.

Although a decrease in rainfall is shown for the month of September in the observed data analysis and reproduced primarily by numerical experiments, it is still uncertain whether the decrease in rainfall in September is a result of the deforestation. Analysis of land surface flux observations in the GAME-IOP and extended modeling studies with a more sophisticated land surface scheme are expected to improve our understanding of the mechanisms.

Acknowledgments: Rainfall data were provided by the Thai Meteorological Department. The authors would like to express their appreciation to Professors Sumi, Nakajima and Numaguti (CCSR, University of Tokyo) and Dr. Emori (National Institute for Environmental Studies) for their help, including the use of radiation (Nakajima et al., 1995) and cumulus parameterizations of CCSR/NIES GCM.

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MEETING SUMMARY

GEWEX SCIENTIFIC STEERING GROUP MEETING

**25–29 January 1999
Tucson, Arizona, USA**

At the Eleventh Session of the SSG, the science achievements and plans of the three major groups of GEWEX activities (Hydrometeorology, Radiation, and Modeling and Prediction) were presented. Some of the meeting highlights and recommendations are summarized here.

The SSG agreed that the success of WCRP research programs requires a long series of comprehensive observations with an integrated analysis of the data sets. It was recommended that, since current plans for the satellite and surface observing systems do not dictate a change of analysis schemes in the near future, GEWEX data projects should continue for at least another five years.

The GEWEX Hydrometeorology Panel (GHP) is developing plans for the five GEWEX Continental-Scale Experiments (CSE) to participate in a Coordinated Enhanced Observing Period (CEOP) and the transferability of model results across the CSE regions. The SSG encouraged development of an augmented CEOP. Progress in planning the CEOP was reported in the last issue of *GEWEX News*. The SSG has formulated the implementation of CEOP as a GEWEX initiative that can be undertaken in association with CLIVAR and ACSYS, with a particular focus on the source and sink regions driving and modifying circulations that affect the climate system and many of its anomalies. The follow-on to the GEWEX Continental-Scale International Project (GCIP) in the post 2000 period was endorsed under the framework of a GEWEX American Prediction Project (GAPP).

The GEWEX Radiation Panel (GRP) is working to formulate an integrated scientific framework that expresses the effort to understand and quantify the impact of cloud feedback on the climate system as a main scientific theme for GEWEX. This framework will include the process which links to the current radiation data projects with data expected from the new era of instruments planned for launch during Phase II of GEWEX as part of the Japanese, US and European initiatives beginning next year. Also, under

SOIL MOISTURE DATA UPDATE

The Global Soil Moisture Data Bank has several new data sets available at http://climate.envsci.rutgers.edu/soil_moisture/.

the auspices of the GEWEX Radiation Panel, the Aerosol Radiative Forcing International Science Team with the GEWEX Global Aerosol Climatology Project (GACP) has started work on a 20-year aerosol data set. The SSG endorsed plans to move toward a higher spatial and temporal scale Global Precipitation Climatology Project (GPCP) primary product (see note on page 3).

The GEWEX Modeling and Prediction Panel (GMPP) is working in association with the Working Group on Numerical Experimentation (WGNE) to meet its commitment to assist GEWEX in the production of improved parameterizations for use in General Circulation Models (GCM) of both cloud and the land surface. Activities within the GEWEX Cloud System Study (GCSS) were reported. The SSG support included the formation of a new Working Group on Polar Clouds. Also reported was a recommendation at a recent ECMWF and WCRP/GCSS workshop to update the GCSS Science Plan. A GCSS activity is planned to make all GCSS test case study data sets available to the scientific community at large. An ad hoc data integration and model evaluation working group has been formed to investigate the efficiency of such a task. On the land surface task, the SSG approved GMPP plans that will move forward with the Land-Surface Parameterization–AGCM Coupling Project based partly on the next phase of the Global Soil Wetness Project (GSWP), and endorsed the idea of holding a workshop to investigate these issues.

During the meeting, there was recognition of the benefit to large-scale modeling from the methodology GEWEX has applied toward the development of improved parameterizations. To benefit from this effort GEWEX has asked NASA's Data Assimilation Office to perform impact studies by way of observing system experiments using real data and observing system simulation experiments simulated data to evaluate the potential impact of future observing systems of relevance to GEWEX.

NEW LBA CD-ROMS

The release of Volumes 1–3 of the Pre-LBA CD-ROMS are now available. The Pre-LBA data sets, from an effort led by Brazil, consist of a compilation of all data sets of regional experiments that took place in Amazonia during the last 20 years. To obtain a copy of them, send a note indicating your name, and institution to: Jose A. Marengo, Pre-LBA Data Sets Initiative, CPTEC/INPE, Rodovia Dutra km. 40, 12630-000 Cachoeira Paulista, Sao Paulo, Brazil; E-mail: marengo@cptec.inpe.br.

GEWEX DATA SETS

PROJECT NAME	DATA SET NAME/ TIME PERIOD/DESCRIPTION	MEDIA	SOURCES
International Satellite Cloud Climatology Project (ISCCP)	<p>ISCCP C2/July 1983 – June 1991/Global monthly cloud products at 280-km resolution, 72 variables derived from polar orbiting and geostationary satellites.</p> <p>ISCCP C1/July 1983 – June 1991/Global cloud products at 280 km, 3-hr resolution, 132 variables, derived from polar orbiting and geostationary satellites.</p> <p>ISCCP B3/July 1983 – June 1994 (will continue through June 2000) / Satellite radiance data at 30 km, 3-hour intervals, separately from imaging radiometers on polar orbiting and geostationary satellites.</p> <p>ISCCP D2/1986 and 1989–1992 (will cover July 1983 – Dec 1993)/ Global monthly cloud products at 280 km resolution, 130 variables derived from polar orbiting and geostationary satellites.</p> <p>ISCCP D1/1986 and 1989–1992 (will cover July 1983 – Aug 1994)/Global cloud products at 280 km, 3-hr resolution, 202 variables from polar orbiting and geostationary satellites.</p> <p>ISCCP DX/1986 and 1989–1992 (will cover July 1983 – Aug 1994)/Satellite radiance and cloud retrieval data at 30 km, 3-hr intervals, separately from imaging radiometers on operational polar orbiting and geostationary satellites.</p>	<p>9-track/1600-6250 bpi tape or IBM 3480 cartridges (July 1983 – Dec 1991 on CD-ROM)</p> <p>9-track/1600-6250 bpi tape or IBM 3480 cartridges</p> <p>9-track/1600-6250 bpi tape or IBM 3480 cartridges</p> <p>9-track/1600-6250 bpi tape or IBM 3480 cartridges</p> <p>9-track/1600-6250 bpi tape or IBM 3480 cartridges</p> <p>9-track/1600-6250 bpi tape or IBM 3480 cartridges</p>	<p>ISCCP DATA IS AVAILABLE FROM THE FOLLOWING SOURCES:</p> <p>National Climatic Data Center Satellite Services Group Federal Building 151 Patton Avenue Asheville, NC 28801-5001 Tel: 704-271-4800 Option #5 Fax: 704-271-4876 E-mail: satorder@ncdc.noaa.gov</p> <p>Langley DAAC Mail Stop 157D NASA Langley Research Center Hampton, VA 23681-0001 Tel.: 757-864-8656 Fax: 757-864-8807 E-mail: larc@eos.nasa.gov WWW: http://eosweb.larc.nasa.gov/</p>
Surface Radiation Budget (SRB) Project	SRB Version 1.1 WCRP/SRB SW/March 1985 – Dec 1988/ Shortwave surface radiation parameters	CD-ROM/FTP/TAPE	Langley DAAC, Mail Stop 157D, Hampton, VA 23681-0001 Tel: 757-864-8656; Fax: 757-864-8807 Email: larc@eos.nasa.gov WWW: http://eosweb.larc.nasa.gov/
Baseline Surface Radiation Network (BSRN)	BSRN Surface Radiation Budget – surface based network; 30 stations planned; 24 sites are collecting data. Downward components of solar and thermal irradiance from a globally distributed surface-based network. Ancillary data at some sites include: upwelling irradiances, meteorological observations, aerosol optical depth, UV and PAR. Cloud-based lidar may be installed at some sites in the future.	Internet, other on request.	WWW: http://bsrn.ethz.ch Special requests can be made to Herman Hegner at bsrmadm@geo.umnw.ethz.ch

PROJECT NAME	DATA SET NAME/ TIME PERIOD/DESCRIPTION	MEDIA	SOURCES
Global Water Vapor Project (GVaP)	<p>Nov - Dec 1991/ Raman Lidar water vapor profiles from Coffeville Kansas Experiment .</p> <p>NVAP/1988 - 1996/Blended global water vapor and cloud liquid water data sets using radiosonde, microwave and infrared satellite data with 1 x 1-degree resolution, daily, pentad and monthly averages.</p> <p>Selected NVAP data sets (1988-1994) on CD-ROM, including animations of daily averaged global fields; monthly averaged data and sample months of daily averaged fields.</p>	<p>TAPE</p> <p>TAPE/FTP</p> <p>CD-ROM available through IGPO</p>	<p>Langley DAAC NASA/Langley Research Center Mail Stop 157D Hampton, VA 23681-0001, USA Tel: (757) 864-8656 ; Fax: (757) 864-8807 E-mail: larc@eos.nasa.gov WWW: http://eosweb.larc.nasa.gov/</p> <p>International GEWEX Project Office (IGPO), Suite 450, 1010 Wayne Avenue, Silver Spring, MD 20910 Tel: 1-301-565-8345; Fax: 1-301-565-8279 E-mail: gewex@ceis.com</p>
Global Precipitation Climatology Project (GPCP)	<p>Global Precipitation/July 1987 - Sept 1998 (Updated approximately quarterly)/Monthly 2.5-degree global gridded precipitation data set produced by blending gauge, infrared and microwave satellite estimates of precipitation.</p> <p>Also available is a CD-ROM containing 19 Version 1A precipitation products plus validation data and documentation for the period July 1987 through December 1997. The CD-ROM can be obtained from Nancy Everson, NOAA/NESDIS E/RA2 Room 703B WWBG, 5200 Auth Road, Camp Springs, MD 20746-4304, USA, E-mail: neverson@nesdis.noaa.gov.</p> <p>Global Precipitation for ISLSCP Initiative I /Jan 1987 - Dec 1988/Monthly terrestrial gridded precipitation data sets on a 1-degree grid. There are two files for each month: The area-mean precipitation and the number of stations per grid.</p>	<p>FTP subset on CD-ROM</p> <p><i>NOTE: ONLY FTP DATA AVAILABLE THROUGH GPCP</i></p> <p>ISLSCP Initiative I CD-ROM</p>	<p>National Climatic Data Center, Asheville, North Carolina Tel: (704) 271-4800; Fax: 704-271-4876 E-mail: satorder@ncdc.noaa.gov WWW: http://www.ncdc.noaa.gov/wdcamet.htm#GPCP</p> <p>Global Precipitation Climatology Centre (GPCC) c/o Deutscher Wetterdienst, Postfach 10 04 65 D-63004 Offenbach am Main, Germany Tel: +49 69 80 62 29 81; Fax: +49 69 80 62 29 93 or 2880 E-mail: brudolf@dwd.d400.de ftp://ftp.ncdc.noaa.gov/pub/data/gpcp/gpcc</p> <p>NASA/Goddard Space Flight Center, Mail Stop 902.2 Greenbelt, MD 20771, USA Tel: (301) 614-5224 ; Fax: (301) 614-5268 E-mail: gsf@eos.nasa.gov WWW: http://daac.gsfc.nasa.gov/</p>
GEWEX Cloud System Study (GCSS)	<p>Working Group 1 (Boundary Layer Clouds) Case study data sets</p> <p>Working Group 2 (Cirrus Clouds) Case study data sets</p> <p>Working Group 3 (Extra-Tropical Layer Clouds)/Sept 30, 1994 BASE data sets and Feb 26, 1992 CASPII data sets</p> <p>Working Group 4 (Precipitating Convective Clouds) Model Intercomparison Project (MIP): Case 1 MIP: Case 2 MIP: Case 2, Radiation Code Offline Intercomparison</p> <p>Working Group 5 (Polar Clouds)</p>	<p>WWW</p> <p>WWW</p> <p>CD-ROM</p> <p>WWW/CD-ROM WWW WWW WWW</p>	<p>WG1 - 1995 Smoke case + ASTEX Lag.: http://amath.washington.edu/~breith/GCSS/ 1996 ASTEX: http://www.fys.ruu.nl/~wwwimau/ASTEX/astexcomp.html; 1997 BOMEX: http://www.knmi.nl/~siebesma/bomex.html</p> <p>WG2 - http://eos913c.gsfc.nasa.gov/gcss_wg2/</p> <p>WG3 - Email: Robert.Crawford@ec.gc.ca</p> <p>WG4 - http://www.cnrn.meteo.fr:8000/gcss/ http://www.met.utah.edu/skrueger/gcss/intercomp.html http://rsd.gsfc.nasa.gov/users/djohnson/gcsswg4/ WG5 - http://paos.colorado.edu/~curryja/wg5/home.html</p>

PROJECT NAME	DATA SET NAME/ TIME PERIOD/DESCRIPTION	MEDIA	SOURCES
Global Runoff Data Centre (GRDC)	Variable time period/daily and monthly discharge data for 3,725 stations from more than 2,800 rivers (including sub-basins). 74,106 data sets of mean monthly discharge; 444,151 data sets of mean daily discharge.	Diskette/email/paper	GRDC, Federal Institute of Hydrology Bundesanstalt für Wasserbau, Kaiserin-Augusta-Anlagen 15-17, 56068 Koblenz, Germany ; Tel.: 49 261 1306-5224; Fax: 49 261 1306-5280; E-mail: grdc@bafg.de; WWW: http://www.bafg.de/grdc.htm
International Satellite Land Surface Climatology Project (ISLSCP)	Initiative I/1987 – 1988/ Vegetation, hydrometeorology, soils, snow and ice, meteorology and radiation parameters and variables required for initialization, forcing and validation of global biosphere-atmosphere models. All but the river basin runoff data and the NOAA/NESDIS snow cover provide global coverage on a common 1 x 1-degree grid. Monthly and 6-hourly forcing fields provided. See Initiative I web site for updates and revisions: http://daac.gsfc.nasa.gov/CAMPAIGN_DOCS/ISLSCP/islscp_i1.html .	Initiative I CD-ROM	NASA/Goddard Space Flight Center Mail Stop 902.2, Greenbelt, MD 20771, USA Tel: (301) 614-5224 ; Fax: (301) 614-5268 E-mail: gsfc@eos.nasa.gov WWW: http://daac.gsfc.nasa.gov/
GEWEX Continental-scale International Project (GCIP)	First ISLSCP Field Experiment Data (FIFE)/ Summer 1987; 1989 (Follow-up Experiment)/FIFE was conducted on the Konza Prairie in Kansas during the summer of 1987. A follow-up experiment at the same location took place in 1989. Data includes surface observations and non-image data sets; satellite imagery; Thematic Mapper Simulator (aircraft) imagery; spectro-radiometer and microwave radiometer (aircraft) imagery; and vegetation index, soil moisture, terrain reference, surface temp., and digitized site photographs. GCIP Initial Data Set (GIDS-1)/1 Feb – 30 April 1992/ Atmospheric, hydrologic, satellite and radar composites, and surface data for the Central Mississippi River Basin. GCIP Reference Data Set (GREDS)/No time period/ Topography, land use and other types of data which are expected to change little, if any, during the next several years.	FIFE CD-ROM On-line Subset available on CD-ROM CD-ROM	ORNL DAAC Oak Ridge National Laboratory P.O. Box 2008 Mail Stop 6407 Oak Ridge, TN 37831- 6490 Tel: (423) 241-3952 Fax: (423) 574-4665 E-mail: orn@eos.nasa.gov WWW: http://www-eosdis.ornl.gov/ UCAR/JOSS CODIAC System WWW: http://www.joss.ucar.edu/codiac UCAR/Joint Office for Science Support P.O. Box 3000 Boulder, CO 80307 Tel: 303-497-8987; Fax: 303-497-8158 Email: sfw@ncar.ucar.edu WWW: http://www.ofps.ucar.edu/gcip_in_situ.html ALSO AVAILABLE FROM: GCIP Project Office, 1100 Wayne Avenue, Rm 1225, Silver Spring, MD 20910; Tel: 301-427-2089 ext 187; Fax: 301-427-2222; E-mail: gcip@ogp.noaa.gov

PROJECT NAME	DATA SET NAME/ TIME PERIOD/DESCRIPTION	MEDIA	SOURCES
GCIP <i>continued</i>	<p>GIDS-3/1 April – 31 August 1994/Consists of data collected during the GCIP Integrated Systems Test (GIST) in the Large Scale Area - SW (Arkansas Red River Basin) and provides an initial data set for the warm season.</p> <p>GIDS-4/1 April – 30-Sept 1995/Consists of data collected during the Enhanced Seasonal Observing Period (ESOP-95) as a second GCIP warm season data set in the Large Scale Area-SW (Arkansas-Red River Basin)</p> <p>ESOP-96/1 April – 30 Sept 1996/Consists of data collected during the ESOP for a third GCIP warm season data set in the Large Scale Area-SW (Arkansas-Red River Basin)</p> <p>ESOP-97/ 1 Oct 1996 – 31 May 1997/ Consists of data collected during the ESOP for a GCIP cold season data set in the Large Scale Area-NC (Upper Mississippi River Basin)</p> <p>ESOP-98/ 1 Oct 1997 – 31 May 1998/ Consists of data collected during the ESOP for a second GCIP cold season data set in the Large Scale Area-NC (Upper Mississippi River Basin)</p> <p>EAOP-98/1 Oct 1997 – 30 Sept 1998/ Consists of data collected during the Enhanced Annual Observing Period for an annual data set in the Large Scale-E (Ohio-Tennessee River Basin)</p>	<p>On-line Subset on CD-ROM</p> <p>On-line Subset on CD-ROM</p> <p>On-line CD-ROM Subset in preparation</p> <p>On-line</p> <p>On-line (in preparation)</p> <p>On-line (in preparation)</p>	<p>UCAR/JOSS CODIAC System</p> <p>UCAR/JOSS CODIAC System</p> <p>UCAR/JOSS CODIAC System</p> <p>UCAR/JOSS CODIAC System</p> <p>UCAR/JOSS CODIAC System</p> <p>UCAR/JOSS CODIAC System</p> <p>UCAR/JOSS CODIAC System</p>
Mackenzie GEWEX Study (MAGS)	<p>HYDAT/historical-present/Water Survey of Canada daily streamflow, lake level and sediment data for all Canadian stations.</p> <p>Canadian Daily Climate Data (CDCD) /historical-present/ Daily temperature and precipitation data for all Canadian stations.</p> <p>Canadian Weather and Engineering Data Set (CWEEDS)/ 1950–present/hourly weather for 143 Canadian stations.</p> <p>Related data sets/no time period/basin monthly means; corrected precipitation archive of 78 stations; snow course and snow depth databases, reference data, land cover.</p>	<p>CD-ROM</p> <p>CD-ROM</p> <p>CD-ROM</p> <p>WWW</p>	<p>Linda M. Stirling, Climate Information Branch, AES, 4905 Dufferin Street, Downsview, Ontario M3H 5T4 Tel: 416-739-4399; Fax: 416-739-4446 E-mail: Linda.Stirling@ec.gc.ca</p> <p>Climate Information Branch, Atmospheric Environment Service</p> <p>Climate Information Branch, Atmospheric Environment Service</p> <p>MAGS Home Page: http://www.tor.ec.gc.ca/GEWEX/MAGS.html</p>

PROJECT NAME	DATA SET NAME/ TIME PERIOD/DESCRIPTION	MEDIA	SOURCES
Mackenzie GEWEX Study (MAGS)	<p>CMC special model output archive for MAGS</p> <ul style="list-style-type: none"> - RFE 50-km, Sept – Dec 95 - RFE 35-km, Jan 96 – Mar 97 - GEM 35-km, Apr 97 – ? <p>Beaufort and Arctic Storms Experiment (BASE)/Sept 1 – Oct 15, 1995/MC2 mesoscale model output, RFE regional model output, surface meso-network measurements, special rawinsonde launches, precipitation photography and chemistry, Doppler radar measurements at Inuvik, radar measurements at Tuktoyaktuk, Convair 580 aircraft measurements, special aircraft dropsonde data, CCGS Arctic Ivlk cruise report, ocean current and pack ice data, with internet link to NCAR C-130 aircraft data.</p> <p>SPECIAL BASE CASE STUDY:</p> <p>Sept. 30, 1994 – Warm front off the Western Canadian Arctic. Includes meso-network measurements, soundings, Convair 580 aircraft measurements, aircraft dropsonde data, radar and satellite data.</p> <p>Vertical Profiles through Precipitating Clouds; aircraft measurements through the melting layer</p> <p>Welsh CMC RFE 50-km archive (with additional variables), May 94 – Apr 96</p> <p>SPECIAL CAGES DATA SETS:</p> <p>YSM-97: 01-13 Aug. 1997 – 3-hr soundings, Ft. Smith, NWT</p> <p>YSM-98: 15-31 Jul. 1997 – 3-hr soundings, Ft. Smith, NWT</p> <p>IOP-1: 22 Sep. – 12 Oct., 1998 – 6-hr soundings at sites within and around Mackenzie basin</p> <p>IOP-2: 01-15 Dec. 1998 – radar and sounding data, Ft. Simpson, NWT</p> <p>IPIX: 22 Apr.-14 May, 1999 – radar and sounding data, Ft. Simpson, NWT</p> <p>IOP-3: 22 May – 05 Jun. 1999 - 6-hr soundings at sites within and around Mackenzie basin; special discharge data during spring breakup.</p> <p>IOP-4: 01-15 July, 1999 - 6-hr soundings at sites within and around Mackenzie basin, with 3-hr soundings plus GPS moisture profiling data at Ft. Smith, NWT</p>	<p>WWW</p> <p>WWW</p> <p>CD-ROM</p> <p>CD-ROM</p> <p>CD-ROM</p> <p>CD-ROM (sounding data)</p> <p>CD-ROM (radar data)</p>	<p>Canadian GEWEX Archives: http://www.cmc.doe.ca/cmcc/CMOI/htmls/Gewex_archa.html</p> <p>MAGS Home Page: http://www.for.ec.gc.ca/GEWEX/MAGS.html or BASE Home Page http://www.for.ec.gc.ca/BASE/base_homepage.html</p> <p>Canadian GEWEX Archives E-mail: Robert.Crawford@ec.gc.ca</p> <p>Canadian GEWEX Archives E-mail: Robert.Crawford@ec.gc.ca</p> <p>Canadian GEWEX Archives E-mail: Robert.Crawford@ec.gc.ca</p> <p>Canadian GEWEX Archives E-mail: Robert.Crawford@ec.gc.ca</p> <p>Canadian GEWEX Archives E-mail: Robert.Crawford@ec.gc.ca</p> <p>Canadian GEWEX Archives E-mail: David.Hudak@ec.gc.ca</p>

TRIBUTE TO DR. MOUSTAFA CHAHINE

Dr. Moustafa Chahine was honored at the Eleventh Session of the GEWEX SSG in Tucson, Arizona. This was the final meeting at which Dr. Chahine presided as Chairman.



THIRD INTERNATIONAL SCIENTIFIC CONFERENCE ON THE GLOBAL ENERGY AND WATER CYCLE 16-19 June 1999 Beijing, China

PRELIMINARY PROGRAM OUTLINE

Wednesday, 16 June 1999

OPENING SESSION

Chair: Hong Yan, China Meteorological Administration

Welcome - *Kegang Wen, China Meteorological Administration Representative of MOST of China*

Address - *Soroosh Sorooshian/Moustafa T. Chahine
GEWEX Scientific Steering Group*

Qingcun Zeng, CAST and China WCRP Committee

PLENARY SESSION

Chair: Tetsuzo Yasunari, University of Tsukuba

Plenary Session Speakers are:

Bolin Zhao, Peking University; Taroh Matsuno, Frontier Research System for Global Change; Shiyun Tao, Qingyun Zhang, Shunli Zhang, Chinese Academy of Sciences; Soroosh Sorooshian, Kuo-lin Hsu, Xiaogang Gao, University of Arizona; and Hartmut Grassl, WCRP

On Wednesday afternoon the scientific sessions begin and continue to Saturday afternoon, 19 June 1999. The session topics are:

The Variability and Predictability of the Asian/Australian and African Monsoons, and Associated Flood and Drought Predictions

Heavy Precipitation and Cloud Systems in the Tropics and Subtropics

Radiation Processes within the Atmosphere and at the Surface Considering Clouds, Water Vapor and Aerosols

Water and Carbon Cycle Connection and Its Role in Global and Regional Hydrological Cycles

High Latitude and High Altitude Hydrology Ocean-Atmosphere-Ice/Snow Exchange

Climate Change and Its Impact on Water Resources and on Recycling Rate of the Hydrological Cycle and Global and Regional Scales

Observations, Data Analysis and Modeling Studies Related to GAME-IOP

Satellite Remote Sensing and TRMM Related Studies

Global Soil Wetness Project and Related Studies

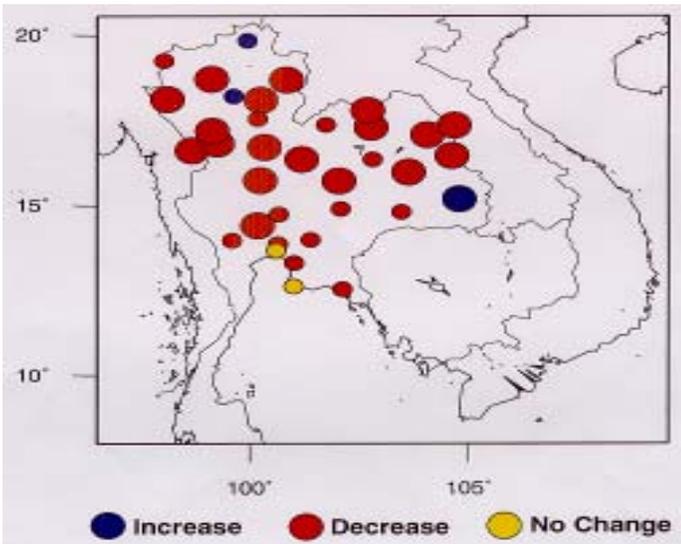


Figure 1: Observed rainfall trend in September (1951–1994) over Thailand. Red indicates decreasing trend, blue indicates increasing trend and yellow indicates the rest.

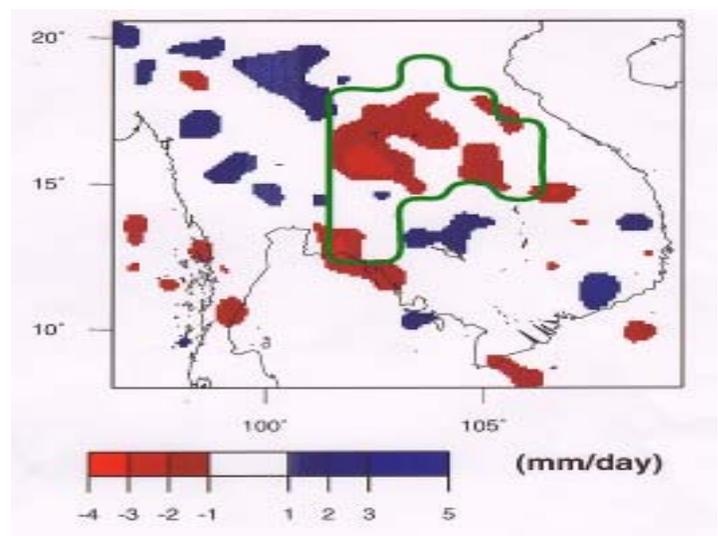


Figure 2: Simulated rainfall difference (deforested run – forested run) in September with a regional climate model. Deforested area in the numerical experiment is inside the green line.

WCRP/GEWEX MEETINGS CALENDAR

*For calendar updates and listing of GEWEX reports, see the GEWEX Web Site:
<http://www.cais.com/gewex/>*

1–4 June 1999—AMERICAN GEOPHYSICAL SOCIETY SPRING MEETING, Boston, Massachusetts, USA. Sessions include Radiative Transfer in Cloudy Atmosphere, South China Sea Monsoon, TRMM Results, Air-Sea and GCMs.

16–19 June 1999—THE THIRD INTERNATIONAL SCIENTIFIC CONFERENCE ON THE GLOBAL ENERGY AND WATER CYCLE, Beijing, China. This conference will be held in conjunction with the 4th Study Conference on the GEWEX Asian Monsoon Conference. See preliminary program page 11.

28 June – 2 July 1999—AMERICAN METEOROLOGICAL SOCIETY CONFERENCE ON ATMOSPHERE RADIATION, Madison, Wisconsin, USA. For registration and hotel information contact AMS Meetings Department, Tel: 617-227-2426; Fax: 617-742-8718; E-mail: amsmtgs@meteosoc.org.

19–30 July 1999—GHP-RELATED SYMPOSIA AND WORKSHOPS AT THE 22ND GENERAL ASSEMBLY OF THE INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS (IUGG), Birmingham, UK. For further information contact School of Earth Sciences, Univ. of Birmingham, Edgbaston, Birmingham B15 2TT, UK; Fax: 44 121 414 4942; E-mail: IUGG99@bham.ac.uk.

16–18 August 1999—GEWEX RADIATION PANEL AND JSC/SCOR WORKING GROUP ON AIR/SEA FLUXES, Boulder, Colorado.

23–27 August 1999—2ND INTERNATIONAL REANALYSIS CONFERENCE, Wokefield Park, Mortimer, Reading, U.K. For further information see <http://www.ecmwf.int/conf/index.html>.

14–17 September—GEWEX HYDROMETEOROLOGY PANEL MEETING, GKSS, Geesthacht, Germany.

29 September – 1 October 1999—GEWEX AEROSOL CLIMATOLOGY PROJECT - SECOND SCIENCE TEAM MEETING, NASA/GISS, New York City, New York.

4–8 October 1999—GEWEX/INSU INTERNATIONAL WORKSHOP ON MODELLING LAND-SURFACE ATMOSPHERE INTERACTIONS AND CLIMATE VARIABILITY, Gif-sur-Yvette, France.

*For complete listing of GEWEX reports and documents, consult the GEWEX Web Site:
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