

Activities Report: 1 July 2006 - 30 June 2007

General Description of HRC

The Hydrologic Research Center (HRC) is a publicly-supported non-profit research corporation. HRC was established in July of 1993 in San Diego, California. In October 1998, the Internal Revenue Service affirmed the non-profit status of HRC beyond the advanced ruling period of 5 years. HRC's purpose is to advance the science and engineering of hydrology through research and science cooperation, and to provide technology transfer and hydrologic training services. The National Science Foundation and the National Oceanic and Atmospheric Administration have served as HRC's Oversight Agencies.

HRC realizes its purposes:

By performing basic and applied research in areas of hydrology, water resources, hydrometeorology and hydroclimatology.

By designing and implementing prototype hydrologic projects for technology transfer and science cooperation and by offering hands-on training for field personnel.

By publishing research and development results in technical reports, refereed journal papers, monographs, books, and written accounts of technical national and international meetings.

By organizing short courses, workshops, and summer schools on hydrologic topics for Government Agencies, graduate and undergraduate University students, and teachers of Science.

By providing research training for graduate and undergraduate students of collaborating Universities.

By offering post-doctoral research positions for advanced training of new Ph.D.'s.

By accepting visiting scholars, and establishing collaborative research and exchange programs with hydrologic research organizations in the U.S. and abroad.

HRC's Board of Directors consists of:

Dr. Konstantine P. Georgakakos

HRC and Scripps Institution of Oceanography, University of California, San Diego

Professor Witold F. Krajewski

Department of Civil and Environmental Engineering and IIHR-Hydroscience and Engineering, The University of Iowa.

Professor Anastasios A. Tsonis

Department of Mathematical Sciences, University of Wisconsin - Milwaukee

Areas of research, development, and technology transfer include:

Hydrologic Science and Engineering

- (a) Floods, Flood Warning and Flood Control
- (b) Droughts
- (c) Processes of the Global Hydrologic Cycle
- (d) Remote Sensing of Hydrologic State Variables and Fluxes
- (e) Hydrology of Environmental Pollution and Restoration
- (f) Energy Production by Hydrologic Systems
- (g) Hydrologic Applications of Artificial Intelligence

Hydrometeorology

- (h) Precipitation and Surface-Runoff Processes

Hydroclimatology

- (i) Land-Surface/Atmospheric Interactions
- (j) Hydrology of the Interaction of Land and Ocean
- (k) Hydrologic and Water Resources Impacts of Climate Variability and Change

Disaster Management Protocols

Ocean Wave Modeling and Prediction Systems

Personnel

Dr. Konstantine P. Georgakakos, Managing Director and Senior Research Scientist

Mr. Robert Jubach, General Manager

Dr. Nicholas E. Graham, Climate Applications Manager, and Senior Research Scientist

Dr. Eylon Shamir, Research Specialist, Engineer, Hydrologic Modeling and Prediction

Dr. Jianzhong Wang, Research Specialist, Atmospheric Modeling

Ms. Theresa Carpenter, Ph.D. Candidate and Hydrologic Engineer

Mr. Jason A. Sperflage, Systems Administrator and Software Engineer

Mr. Eric Meins, Software Engineer through 12/31/06.

Ms. Barbara Hansen, Administrative Associate

Mr. Cristopher Spencer, Computer Programmer/Analyst I

Mr. Steven Taylor, Ph.D. Candidate and Hydrologic Scientist thru 12/31/06, Visiting Post-Doctoral Scientist 1/1/07 – 4/15/07, and Contractor 4/16/07 to present.

Ms. Debra Champagne, HRC Senior Accountant (contractor) through 9/30/06.

Ms. Sheila Ragan, Ocean Point Financial Systems, HRC Senior Accountant (contractor) beginning 10/3/06.

Projects Funded

ACP, Autoridad del Canal de Panama: *Maintenance 2007*, 1/22/07 – 9/30/07.

ACP, Autoridad del Canal de Panama: *Analysis of Extreme Precipitation over the Panama Canal Watershed*, 3/5/07 – 7/31/07.

ACP, Autoridad del Canal de Panama: *Water Resources Advisory Committee Oversight of the Flood Frequency Estimation*, 5/10/07 – 5/30/07.

Barons Advanced Meteorological Services (subcontract from Lockheed Martin Corporation): *Support to the Romania DESWAT Project, Flash Flood Guidance Task, Revised FFP*, 5/05 – 11/08.

Barons Advanced Meteorological Systems, LLC (BAMS) / Lockheed Martin: *Destructive Waters (DESWAT) – Hydrological Model Calibration and Validation for Romania*, 05/01/05 – 11/08.

Bermuda Weather Service: *Regional Wave Model for Bermuda*, 10/30/06 – 4/30/07.

California Energy Commission (w/GWRI): *Integrated Forecast and Reservoir Management Demonstration for Northern California Water Resources*, 11/1/02 – 8/31/06.

CALFED (w/GWRI): *Integrated Forecast and Reservoir Management Demonstration for Northern California Water Resources*, 6/1/03 – 5/31/06.

CALTECH, Jet Propulsion Laboratory: *Wave Modeling*, 4/5/07 – 8/31/07.

Ministry of Water Resources (China): *Theory and Practice of Flash Flood Guidance Training*, Oct-Nov 2007.

NASA: *Seasonal Climate Predictions and Water Resources Management Theoretical and Numerical Research*, 4/15/04 – 04/14/08.

South African Weather Service: *Development and Implementation of a Flash Flood Warning System for the Republic of South Africa*, 5/1/07 – 7/31/07.

U.S. National Oceanic and Atmospheric Administration, Climate Program Office, *Constraining the Tropical Pacific's Role in Low-Frequency Climate Change of the Last Millennium*, 5/31/06 – 5/31/09.

U.S. National Oceanic and Atmospheric Administration, Office of Global Programs: *INFORM: Integrated Forecast and Reservoir Management Demonstration for Northern California Water Resources*, 9/1/02 – 8/31/07.

U.S. National Weather Service (subcontract through Riverside Technology, inc.): *Asia Flood Net Flash Flood Warning System for the Mekong River Basin*, 9/15/06 – 12/31/07.

U.S. National Weather Service (subcontract through Riverside Technology, inc.): *CAFFG Upgrade*, 9/15/06 – 2/28/07.

U.S. National Weather Service: *Global Flash Flood Guidance System Implementation Plan*, 9/30/06 – 5/31/07.

University of California San Diego: *Evaluation of an Operational Regional Wave Model for the Southern California Bight*, 10/1/06 – 9/30/07.

University of California San Diego – NOAA/JIMO, California Applications Project (CAP): *Northern California Regional Water Resource Prediction Management*, 6/1/03 – 12/31/07.

University of Cantabria (Spain): General Consulting (N. Graham) 5/2/07 – 6/5/07.

Waterway Research Institute, Sejong University, *Development and Application of a State Estimator for a Distributed Storage Function Hydrologic Model of the Nakdong River Basin*, 6/15/07 – 9/30/08.

Proposals Pending

California Department of Water Resources/California Energy Commission/PIER: *Integrated Forecast and Reservoir Management for Northern California (INFORM) II: Operational Assessments, Adjustments and Applications*, 3.25 years

California Energy Commission: *Implications of Climatic Changes for Northern California Water Resources Management for the Later Part of the 21st Century*, 2 years (8/15/07 – 6/30/09).

San Diego Unified Port District, Environmental District: *Hydrometeorological Study of the San Diego Bay Watershed Management Area*, 6/1/07 – 1/31/09

South African Weather Service: *South Africa Flash Flood Guidance Implementation*.

U.S. National Oceanic and Atmospheric Administration: *Operational Multiscale Forecast and Reservoir Management in Northern California*, 9/1/07 – 8/31/10.

U.S. National Oceanic and Atmospheric Administration/ National Weather Service: *Broad Area Announcement, Developing Precipitation Estimates for Flash Flood Guidance in Remote Areas*.

U.S. National Oceanic and Atmospheric Administration/National Weather Service/BAA:
*Characterizing Uncertainty in Upstream Regulation Actions for Operational Ensemble
Streamflow Prediction, 9/1/07 – 8/31/09.*

U.S. National Oceanic and Atmospheric Administration/National Weather Service/OHD:
*Characterizing Uncertainties in Mountainous Basin Distributed Flow Modeling and
Forecasting, 4/1/07 – 3/31/10.*

U.S. National Weather Service (subcontract to Riverside Technology, inc.): *Asia Flood Net
Flash Flood Program, Phase 3 – FFG Implementation for the Mekong River Basin.*

Publications and Presentations

Contributions to Books and Special Issues

Georgakakos, K.P., 2006, “Issues in the forecast and management of floods and flash floods.”
Proceedings 7th International Conference on Hydroinformatics, September 2006, Nice,
France, 11pp.

Georgakakos, K.P., N.E. Graham, A.P. Georgakakos, and H. Yao, 2007: “Demonstrating
Integrated Forecast and Reservoir Management (INFORM) for Northern California in an
Operational Environment.” IAHS Publication 313, IAHS Press, Institute of Hydrology,
Wallingford, United Kingdom, 1-6.

Research Papers in Journals

Published and in Press

Adams, P., D. Inman, and N. E. Graham, 2007: “Southern California Deep-Water Wave Climate:
Characterization and Application to Coastal Processes,” *J. Coastal Research*, in press.

Bae, D.-H., K.P. Georgakakos, and W-T Kwon, 2007: “Climatological Screening of Climate
Model Output with Observations for Korean Water Resources Applications,”
International Journal of Climatology, (in press; DOI: 10.1002/joc.1497).

Bae, D.-H., K.P. Georgakakos, and W-T. Kwon, 2007: “Screening the Utility of Climate
Information for Watershed Applications in Korea,” Journal of Hydrology, Vol. 336, 38-
47.

Carpenter, T.M., J. Wang, S.V. Taylor, E. Shamir, J.A. Sperflage, and K.P. Georgakakos, 2007:
“Surveying Flash Flood Response in Mountain Streams,” EOS Transactions, American
Geophysical Union, Vol. 88, No. 45, 69-70.

Georgakakos, K.P., 2007: “Issues in the Forecast and Management of Natural Floods and Flash
Floods,” La Huille Blanche, Vol. 03-2007, 1-6.

- Georgakakos, K.P. and N. Graham, 2007: "Potential Benefits of Seasonal Inflow Prediction Uncertainty for Reservoir Release Decisions," J. Applied Meteorology and Climatology, AMS, accepted 21 August 2007.
- Georgakakos, K.P., N.E. Graham, A.P. Georgakakos, and H. Yao, 2007: "Demonstrating Integrated Forecast and Reservoir Management (INFORM) for Northern California in an Operational Environment," IAHS Publication 313, 1-6.
- Graham, N. E. and M. K. Hughes, 2007: "Reconstructing the Mono Lake Low Stands," Holocene, in press.
- Graham, N.E., M.K. Hughes, C.M. Ammann, K.M. Cobb, M.P. Hoerling, D.J. Kennett, J.P. Kennett, B. Rein, L. Stott, P.E. Wigand, and T. Xu, 2007: "Tropical Pacific - Mid-latitude Teleconnections in Medieval Times," Climatic Change, Vol. 83, 241-285 doi 10.1007/s10584-007-9239-2.
- Koutsoyiannis, D., A. Efstratiadis, and K.P. Georgakakos, 2007: "Uncertainty Assessment of Future Hydroclimatic Predictions: A Comparison of Probabilistic and Scenario-Based Approaches," Journal of Hydrometeorology, Vol. 8, 261-281.
- Seager, R., N.E. Graham, C. Herweijer, A.L. Gordon, Y. Kushnir, and E. Cook, 2007: "Blueprints for Medieval Hydroclimate," Quat.Sci. Rev., doi: 10.1016/j.quascierev.2007.04.020.
- Shamir, E., and K.P. Georgakakos, 2007: "Estimating Snow Depletion Curves for American River Basins using Distributed Snow Modeling," Journal of Hydrology, Vol. 334, 162-173.
- Shamir, E., N. Graham, D. Meko, and K.P. Georgakakos, 2007: "Hydrologic model framework for water resources planning in Santa-Cruz River, Southern Arizona," Journal of American Water Resources Association (in press).
- Shamir, E., J. Wang, and K.P. Georgakakos, 2007: "Probabilistic streamflow generation model for data sparse arid watersheds," Journal of American Water Resources Association (in press)
- Taylor, S.V., D.R. Cayan, N.E. Graham, and K.P. Georgakakos, 2007: "Northwesterly Surface Winds over the Eastern North Pacific Ocean ST1 during Spring and Summer," Journal of Geophysical Research - Atmospheres, accepted.
- Wang, J., and K.P. Georgakakos, 2007: "Estimation of Potential Evapotranspiration in the Mountainous Panama Canal Watershed," Hydrological Processes, Vol. 24(14), 1901-1917.

In Review

- Georgakakos, K.P., 2007: "Analytical evaluation of the performance of threshold-based flash flood warning systems," Journal of Hydrometeorology, *in revision*.

O'Hara, J. K., and K. P. Georgakakos, 2007: "Quantifying the Urban Water Supply Impacts of Climate Change," Water Resources Management, *in review*.

Wang, J., and K.P. Georgakakos, 2007: "Cold Microphysical Influences on Sierra Nevada Winter Storm Precipitation," Journal of Geophysical Research - Atmospheres, *in revision*.

Abstracts, Presentations and Conference Proceedings

Carpenter, T.M., and K.P. Georgakakos, 2006: "Modeling of Flash Flood Occurrence Frequency over the Southern California Mountainous Region." Abstract and Poster Presentation at the AGU Fall Meeting 2006, Hydrology Session Poster # H21B-1371, December 14, 2006

Carpenter, T.M., and K.P. Georgakakos, 2007: "Occurrence of Heavy Precipitation and Streamflow in Southern California." Abstract and Presentation at the AMS Forum Climate Change and Changes in Weather, 87th AMS Annual Meeting, January 16, 2007.

Carpenter, T.M., and K.P. Georgakakos, 2007: "Modeling of Flash Flood Occurrence Frequency over Southern California." Abstract and Presentation at the 87th AMS Annual Meeting, January 17, 2007.

Georgakakos, K.P., 2006: "Integrated Climate-Hydrology Forecasts for Northern California Reservoirs, New Operational Approaches as Part of the Project INFORM." Abstract and Presentation at the National Technical University of Athens, Athens, Greece, September 20, 2006.

Georgakakos, K.P., 2006: "Integrated Climate-Hydrology Forecasts and Reservoir Management for Northern California, The INFORM Project." Workshop Organized by the National Centers of Environmental Prediction (NCEP), Laurel, Maryland, November 2, 2006. (Invited)

Georgakakos, K.P., 2007: "Flash Flood Guidance System with Global Coverage." Abstract and Presentation at the World Meteorological Organization XV General Congress, Session of Subcommittee on Hydrology, Geneva, Switzerland, May 11, 2007. (Invited)

Georgakakos, K.P., 2007: "INFORM Demonstration Project." Abstract and Presentation at the Australian Bureau of Meteorology, Melbourne, Australia, February 15, 2007. (Invited)

Georgakakos, K.P., 2007: "Regional and Global Flash Flood Warning." Abstract and Presentation at the Australian Bureau of Meteorology, Melbourne, Australia, February 15, 2007. (Invited)

Georgakakos, K.P., and T.M. Carpenter, 2006: "Log-Linear Scaling of Ensemble Flow Range with Catchment Area for Distributed Parameter and Input Hydrologic Models." Abstract and Invited Presentation, AGU Fall Meeting 2006, December 15, 2006.

Georgakakos, K.P., T.M. Carpenter, and J.A. Sperflage, 2007: "Satellite Rainfall Estimates for Real Time Flash Flood Guidance Estimation." Abstract and Presentation at the American

Meteorological Society Annual Meeting, 21st Conference on Hydrology, Hydrologic Remote Sensing, January 15, 2007. (Invited)

Georgakakos, K.P., and N.E. Graham, 2007: "Use of Seasonal-Forecast Uncertainty for Improved Reservoir Release Decisions." Abstract and Poster Presentation at the 2007 General Assembly of the European Geosciences Union, Vienna, Austria, April 15-20, 2007.

Georgakakos, K.P., N.E. Graham, A.P. Georgakakos, and H. Yao, 2007: "Demonstrating Integrated Forecast and Reservoir Management (INFORM) for Northern California in an Operational Environment." Abstract for the Meeting of the International Union of Geodesy and Geophysics, Perugia, Italy. (Invited)

Georgakakos, K.P., and R. Jubach, 2007: "Coping with Forecast Uncertainty for Water Management and Public Warning." Abstract and Presentation at the American Meteorological Society Annual Meeting, International Session, San Antonio, Texas, 12 January 2007. (Invited)

Georgakakos, K.P., and R. Jubach, 2007: "A Global Perspective on Flash Flood Life Loss Prevention through Operational Systems." Abstract and Presentation at the 2007 General Assembly of the European Geosciences Union, Vienna, Austria, April 15-20, 2007. (Invited)

Graham, N.E., 2006: "Tropical-Mid-latitude Teleconnections in Medieval time: Evidence and Curiosities from Proxy Records and Models." University of Bern, November 2006.

Graham, N.E. and M. K. Hughes, 2006: "The Great Medieval Droughts in the Sierra Nevada: Centennial Climate Variability and the Tropical Pacific." AGU Fall Meeting, December 15, 2006.

Graham, N.E., J. Luterbacher, and E. Xoplaki, 2007: "Annual time-scale teleconnections between European and North American cool season climate over the past millennium." European Geophysical Union 2007 General Assembly.

Jubach, R.W., and T.M. Carpenter, 2007: "Proposed Lower Mekong River Basin (LMRB) Regional Flash Flood Early Warning System – A Project Funded by the U.S. Agency for International Development/Office of Foreign Disaster Assistance." Abstract and Presentation at the 5th Annual Mekong River Flood Forum, May 16, 2007.

Koutsoyiannis, D., A. Efstratiadis, and K.P. Georgakakos, 2007: "A Stochastic Methodological Framework for Uncertainty Assessment of Hydroclimatic Predictions." Abstract and Presentation at the 2007 General Assembly of the European Geosciences Union, Vienna, Austria, April 15-20, 2007.

Menendez, M., N.E. Graham, F.J. Mendez, and I.J. Losada, 2007: "Long-term trends in extreme significant wave height in the Northeast Pacific Ocean – an application of extreme value theory." European Geophysical Union 2007 General Assembly.

Shamir, E., "A comparison of precipitation depth-duration-frequency curves from stochastic precipitation model and extreme value distribution." Poster at the American Geophysical Union, San Francisco, December 2006.

Shamir, E., "A model framework for water resources planning in the upper Santa Cruz River, Southern Arizona." Poster at the Arizona Hydrological Society/Southwest Hydrology Regional Water Symposium, Tucson, August 29 – September 1, 2007.

Taylor, S.V., "Understanding the Greenhouse Effect Using Clear vs. Cloudy Sky Diurnal Temperature Observations." American Geophysical Union Fall Meeting, San Francisco, California, USA, December 11-15, 2006.

Taylor, S.V., N.E. Graham, D.R. Cayan, J. Wang, and K.P. Georgakakos, "Large-scale Atmospheric Circulation Associated With Northwesterly Surface Wind Events Along the US West Coast." American Geophysical Union Fall Meeting, San Francisco, California, USA, December 11-15, 2006.

Wang, J., 2006: "Cold Microphysical Influences on Sierra Nevada Winter Storm Precipitation." Abstract and Poster, American Geophysics Union, AGU Fall Meeting, San Francisco, California, December 11-15, 2006.

Wang, J., and K.P. Georgakakos, 2006: "Cold Microphysical Influences on Sierra Nevada Winter Storm Precipitation." Abstract and Poster, American Meteorological Society 12th Conference on Cloud Physics, Madison, Wisconsin, July 10-14, 2006.

HRC Technical Reports

Georgakakos, K.P.: "Expert's Opinion on the Proposed Implementation of Kuban and Ussuri Rivers Hydrological Station Network for Flood and Flash Flood Prediction." *HRC Limited Distribution Report No. 27*, Final Report on Contract No RHM/3/B6a.7, Hydrologic Research Center, San Diego, CA, 5 May 2007, 67pp.

Georgakakos, K.P., N.E. Graham, T.M. Carpenter, E. Shamir, J. Wang, J.A. Sperflage, and S.V. Taylor: "Integrated Forecast and Reservoir Management (INFORM) for Northern California: System Development and Initial Demonstration," *HRC Technical Report No. 5*, Hydrologic Research Center, San Diego, CA, August 2006, 268 pp. + 9 Appendices. Also *on line* at: http://www.hrc-lab.org/projects/dsp_projectSubPage.php?subpage=inform

Georgakakos, KP, N.E. Graham, J. Wang and T. Carpenter: "Integrated Forecast and Reservoir Management (INFORM) Demonstration Project: Winter 06-07 Operations," *HRC Technical Note No. 29*, Hydrologic Research Center, San Diego, CA, July 2007, 37pp.

Georgakakos, K.P., Jubach. R.W., Sperflage, J.A., Carpenter, T.M., and S.V. Taylor: "Flash Flood Guidance System (FFGS) with Global Coverage, System Implementation Plan," *HRC Limited Distribution Report No. 28*, NOAA-2007-FFGS01, Hydrologic Research Center, San Diego, CA, May 29, 2007, 41pp.

Graham, N.E. and K.P. Georgakakos: "Projections of Panama Canal Performance Through 2025 using an Uncertainty-based Optimized Planning Model," *HRC Limited Distribution Report No. 26*, Hydrologic Research Center, San Diego, CA, October 2006.

Sperflage, Jason: "Central America Flash Flood Guidance (CAFFG) Administrator's Guide," *HRC Technical Note No. 28*, Hydrologic Research Center, San Diego, CA, June 2007.

Others

HRC and Partner Agencies: "Prospectus for the Implementation of a Flash Flood Guidance System with Global Coverage." White Paper, Hydrologic Research Center, San Diego, CA, April 2007, 12pp. (Partner Agencies: World Meteorological Organization, U.S. National Oceanic and Atmospheric Administration, U.S. Agency for International Development/Office of Foreign Disaster Assistance.)

HRC TC SEASIA-2006-01: "High Level Design of a Regional Flash Flood Guidance and Early Warning System with Addendum Implementation approach for the Lower Mekong River Basin," R. Jubach J. Sperflage K. Georgakakos, November 2006.

HRC TC SEASIA-2007-01: "Regional Training Plan for a Flash Flood Guidance and Early Warning System," R. Jubach, K. Georgakakos, February 2007.

Educational, Science Cooperation and Technology Transfer Activities

- As part of its educational program, HRC supported two Ph.D. candidates at UCSD: Ms. Theresa Carpenter and Mr. Stephen Taylor. Ms. Carpenter's dissertation proposal on flash floods was accepted by her Ph.D. Thesis Committee. Mr. Taylor successfully defended his dissertation and completed all requirements to receive doctorate in Oceanography, "Northerly surface wind events over the eastern North Pacific Ocean: Spatial distribution, seasonality, atmospheric circulation, and forcing" at Scripps Institution of Oceanography, University of California at San Diego, 2006.
- In July 2006, Dr. Georgakakos visited the Russian Hydrometeorological Institute in Moscow, Russia, to present seminars and provide science cooperation and technology transfer activities for upgrading the Russia streamflow measurement network.
- Dr. Georgakakos contributed to the meeting of the North American THORPEX Societal and Economic Research and Applications (NAT SERA) Workshop held at the National Center of Atmospheric Research (NCAR) in Boulder, Colorado, during the period: August 14-16, 2006.
- Dr. Georgakakos contributed to the Water Utility Climate Change Summit, held in San Francisco during the period: January 31- February 1, 2007, and discussed assessments pertaining to urban climate change studies that HRC has been involved in.
- Dr. Georgakakos traveled to NOAA NESDIS and NOAA Office of Hydrologic Development (OHD) to present seminars and to discuss collaboration in the context of flash flood guidance system implementation in remote areas.
- Dr. Graham visited the University of Cantabria for wave modeling work and ocean wave extreme value study.

- Dr. Graham serves on the Steering Committee for the Coping with Drought on the Colorado Project – a cross-RISA project involving UCSD/Scripps, NOAA CDC Boulder, U. Washington, U. Arizona, and HRC. The project is designed to improve the understanding of why different modeling approaches give such different projections of present and future Colorado River flow.
- Dr. Graham serves on the Steering Committee for the Workshop on Climatic Changes in the Last 1500 Years: Their Impact on Pacific Islands, to be held at the University of Hawaii, Honolulu, November 13–15, 2007 (NOAA, IPRC sponsors).
- Mr. Jubach traveled to New Delhi, India for a project review meeting in support of USAID and NOAA for the USAID Disaster Management Support Project for the Government of India. Mr. Jubach made a presentation at the meeting regarding NOAA’s support activities on mitigating impacts of extreme hydrometeorological events.
- Mr. Jubach traveled to the American Meteorological Society annual meeting for discussions on the global Flash Flood Guidance System (FFGS) with NOAA management.
- Mr. Jubach and Dr. Georgakakos attended a meeting in Geneva, Switzerland with the World Meteorological Organization (WMO), U.S. National Weather Service, and USAID/Office of Foreign Disaster Assistance (USAID/OFDA) to discuss the concept of the FFGS and to solicit the support of these organizations for the implementation of the FFGS globally.
- Mr. Jubach attended the Fifth Annual Flood Forum for the Mekong River held in Ho Chi Minh City, Vietnam in support of USAID/OFDA and NOAA. Mr. Jubach made presentation regarding the implementation of the FFG system for the Mekong River basin area and supported a poster session on this topic.
- Dr. Shamir attended a meeting at the Southern California Coastal Water Resources Project, Costa Mesa CA. together with Robert Jubach, to develop a prospectus for collaborative research.
- Dr. Shamir organized a session titled “Observations and Modeling of Snow Processes at the River Basin Scale” together with Hamid Moradchani and Jessica Lundquist at the American Geophysical Union, December 2006.
- Dr. Taylor Represented HRC on Graduate Study Panel for Earth and Environmental Sciences for the professional and graduate studies program at the UCSD career services center as part of Earth Week at UCSD.
- Dr. Wang visited the Bureau of Hydrology (Information Center of Water resources), Ministry of Water Resources of China. Jianzhong Wang also visited Fujian Province Meteorological Bureau of China and gave a presentation of HRC Flash Flood Guidance System.

Visitors

Workshop – NWS – RFS Parameter Estimation:

Marius Matreata, Romania National Institute of Hydrology and Water Management

Dali Amelia Pirvulescu, Romania National Institute of Hydrology and Water Management

Dan Ciobotaru, Romania National Institute of Hydrology and Water Management

Carmen Nedelcu, Romania National Institute of Hydrology and Water Management

Tom Burnet, BAMS

Jeff Vukovich, BAMS

A. Sezin Tokar, USAID/OFOA

Dick Paulson, NOAA/U.S. National Weather Service

Dr. Michael Butts, DHI, Denmark

Mr. Patrick Conroy, Water Resources Consultant, Canada

Michael Hart, ACP Panama

Nina Minka, USAID, New Delhi

Curt Barrett, U.S. National Weather Service

Dr. Philip Arkin, University of Maryland

Megan O'Connor, Producer/Director UCSD Media Teaching Lab

Lorraine Stiehl, volunteer fundraising consultant

Sharon Megdal, Director, Water Resources Research Center, The University of Arizona, Tucson