

ACTIVITIES REPORT: JANUARY 1 – DECEMBER 31, 2013

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 utilized the following methods of performing its mission:

- Publishing research and development results in technical reports, refereed journal papers, monographs, books, and written accounts of technical national and international meetings, and through the internet.
- Developing and participating in demonstration projects concerning science-based prototype observation and prediction systems in collaboration with universities, government agencies, and private industry.
- Organizing short courses and workshops on hydrologic and meteorological topics for government agencies, graduate and undergraduate university students and teachers of science.
- Providing research training for graduate and undergraduate students of collaborating universities.
- Offering post-doctoral research positions for advanced training of new Ph.D.s.
- Accepting visiting scholars from U.S. institutions and other countries, and establishing collaborative research and exchange programs with research institutions in the U.S. and abroad.

HRC's Board of Directors:

Dr. Konstantine P. Georgakakos

HRC and Scripps Institution of
Oceanography, University of California,
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Department of Mathematical Sciences,
University of Wisconsin - Milwaukee

HRC's Officers of the Board:

Mr. Jason Sperflage, Treasurer

Mr. Robert Jubach, Secretary

Dr. Konstantine P. Georgakakos, President

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, Director and Senior Research Scientist

Mr. Robert Jubach, General Manager

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

Dr. Rochelle C. Graham, Meteorologist II

Ms. Barbara Hansen, Administrative Associate

Dr. Theresa Modrick, Hydrologic Engineer II

Mr. Ari Posner, Postdoctoral Associate

Dr. Eylon Shamir, Hydrologic Engineer III

Mr. Cristopher Spencer, Computer Programmer/Analyst II

Mr. Jason A. Sperflage, Computer Programmer/Analyst II

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

Projects Funded or Ongoing 2013

ACP, Autoridad del Canal de Panama: Panama Maintenance 2013

ACP, Autoridad del Canal de Panama: Panama Maintenance 2014

ACP, Autoridad del Canal de Panama: WRF – Historical Reliability, 2/27/2012 - 9/30/2013

Bermuda Weather Service: Upgrades to the Bermuda Regional Wave Forecast System, 9/11/2013 – 10/31/2013

California Energy Commission: INFORM II, 5/25/2009 – 2/28/2013

JPL: Services to provide JPL with gridded global data of wave steepness and directional wave spectra POP through 3/31/2013, 3/7-31/2013

NASA, 11-DISASTER11-0029: Investigating the Use of NASA Products to Improve the Performance of Regional Operational Flash Flood Guidance Systems Worldwide, 8/27/2012 – 8/26/2013

NOAA: Incorporating Climate Information and Stakeholder Engagement in Groundwater Resources Planning and Management, NOAA AWARD NA12OAR4310099, 8/1/2012 - 7/31/2014

SAWS: Upgrade and Modification of the South African Flash Flood Guidance (SAFFG) System, 2 years

UCAR: BSMEFFG Enhancement for Turkey with Higher Resolution Basins Suitable for use with Radar Data, and FFG Training in Santo Domingo, 18 months

UCAR: Snow Melt Spring Outlook for Southeast Europe and the Black Sea Middle East Regions. Southeast Europe: Croatia, Montenegro, Romania, Moldova, Bosnia – Herzegovina, Albania, Republic of Macedonia, Slovenia, and Serbia. Black Sea Middle East: Turkey, Azerbaijan, Armenia, Georgia, Iraq, Lebanon, and Syria. 3/7/2013 (10 weeks)

UCAR, SE Asia Upgrade, 7/10/2012 - 3/31/2014

U.S. Israel Bi-national Science Foundation: Predicting Flash Floods and their Risk in a Dry Climate, with Hebrew University, Jerusalem, 10/1/2009 – 10/31/2013

University of Arizona, NSF: Late Holocene Hydroclimate Variability, 8/1/2010 – 7/31/2013

WMO: Development and Implementation of a Flash Flood Early Warning System for the State of Chiapas, Mexico, 2010 – 2015

WMO: Development and Implementation of International Regional Flash Flood Guidance and Early Warning Systems – Phase I, 2009 - 2013

WMO: Development and Implementation of International Regional Flash Flood Guidance and Early Warning Systems – Phase II, 2012 - 2017

Publications

Research Papers in Journals

Batelaan, O., Hughes, D.A., Swarzenski, P.W., Willems, P., Bardossy, A., Charlet, L., Georgakakos, K.P., Syme, G., C. Corradini, and P.K. Kitanidis, 2014: Editorial, Journal of Hydrology, Regional Studies. *Journal of Hydrology* (in press)

Elsberry R., Kuo, H-C., Lin, G-F., and E. Shamir, 2013: Special issue of journal of hydrology on typhoon hydrometeorology (Editorial) *Journal of Hydrology*, 506:1-3

Georgakakos, A.P., Yao, H., and K.P. Georgakakos, 2014: Upstream regulation effects on ensemble streamflow prediction. *Journal of Hydrology* (in review)

Georgakakos, K.P., Graham, N.E., Modrick, T.M., Murphy, M.J., Shamir, E.S., Spencer, C.R., and J.A. Sperflage, 2014: Evaluation of real-time hydrometeorological ensemble prediction on hydrologic scales in Northern California. *Journal of Hydrology* (in review)

Graham, N., Cayan, D., Bromirski, P., and R. Flick, 2013: Multi-model projections of 21st century North Pacific winter wave climate under the IPCC A2 scenario. *Climate Dynamics*, 40, 1335-1360

Murphy, M., Georgakakos, K.P., and E. Shamir, 2013: Climatological Analysis of December Rainfall in the Panama Canal Watershed," *International Journal of Climatology*, DOI:10.1002/joc.3694

PAGES 2K Consortium (including Graham N. and R. Graham), 2013: Continental-scale temperature variability during the past two millennia. *Nature Geoscience*, Progress Article and Supplementary Information, DOI:10.1038/NGEO1797

Posner, A.J., Georgakakos, K.P., and E. Shamir, 2014: A method for the assimilation of standing water estimates from satellite earth observations into the flash flood guidance system soil water model. *Remote Sensing of the Environment* (in review)

Posner, A.J., O'Sullivan, K.O., and J. Murphy, 2013: Economic and Environmental Impact Appraisal of Commercial Scale Offshore Renewable Energy Installations on the west coast of Ireland. *Journal of Coastal Research*, Special Issue No. 65: 1639-1644

Sade R., Litaor, I.M., Rimmer, A., Shamir E, and A. Furman (2014): Snow surface energy and mass balance in a warm temperate climate mountain. *Journal of Hydrology* (in review)

Salzer, M., Bunn, A., Graham, N., and M. Hughes, 2013: Five millennia of paleotemperature from tree-rings in the Great Basin, USA. *Climate Dynamics*, DOI:10.1007/s00382-013-1911-9

Shamir, E., Ben-Moshe, L., Ronen, A., Grodek, T., Enzel, Y., Georgakakos, K.P., and E. Morin, 2012: Geomorphology-based index for detecting minimal flood stages in arid alluvial streams. *Hydrology and Earth System Sciences*, DOI:10.5194/hess-17-1021-2013

Shamir, E., and K.P. Georgakakos, 2014: MODIS land surface temperature as an index of surface air temperature for operational snowpack estimation. *Remote Sensing of the Environment* (in review)

Shamir, E., Georgakakos, K.P., Spencer, C.R., Carpenter, T.M., Murphy, M. and R. Jubach, 2013: Flash Flood Forecast for Haiti during the Passage of Hurricane Tomas, 4 -5 November 2010. *National Hazards*, DOI:10.1007/s11069-013-0573-6

Trouet, V., Diaz, H.F., Whal, E.R., Viau, A.E., Graham, R., Graham, N., and E.R. Cook, 2013: A 1500-year reconstruction of annual mean temperature for temperate North America on decadal-to-multidecadal time scales. *Environmental Research Letters*, 8, DOI:10.1088/1748-9326/8/2/024008

Abstracts

Georgakakos, K.P., and T.M. Modrick: Using weather radar precipitation data worldwide in conjunction with operational flash flood warning systems. *ASCE Weather Radar and Hydrology Conference, Washington, D.C.*

Graham, N.: Regional Wave Modeling in the Southern California Bight. *San Diego Chapter of the AMS, San Diego, CA.*

Graham, N.: Regional Wave Modeling in the Southern California Bight. *SGX NWS Marine Partners Meeting, San Diego, CA.*

Graham, N.: Using Wave Action Models to Test Mechanisms for the Generation of Ocean Microseisms. *Caltech symposium, Pasadena, CA.*

Jubach, R., et al: Advances and Challenges in Real-time Flash Flood Warning Worldwide. *American Meteorological Society Annual Meeting, Austin, TX.*

Michelson, D.B., Lockett, J.D., Goldstraw, S., Bai, L., Becker, A., Georgakakos, K.P., Foreman, S., and others: WMO initiative for the global exchange of radar data. *AMS 36th Conference on Radar Meteorology, Brackenridge, CO.* (oral presentation)

Posner, A.J., Georgakakos, K.P., and E. Shamir: NASA MODIS flood mapping product assimilation in operational flash flood warning systems. *26th Annual Arizona Hydrologic Society Symposium, Tucson, AZ.*

Posner, A.J., Georgakakos, K.P., and E. Shamir: NASA MODIS flood mapping product assimilation in operational flash flood warning systems. *AMS 28th Conference on Hydrology, Atlanta, GA.* (oral presentation)

Posner, A.J., Georgakakos, K.P., and E. Shamir: Assimilation of NASA MODIS flood mapping product into operational flash flood warning systems. *AGU Fall Meeting 2013, San Francisco, CA.* (oral presentation)

Ruehl, K., Porter, A., Posner, A., and J. Roberts: Development of SNL-SWAN, a Validated Wave Energy Converter Array Modeling Tool. *European Wave and Tidal Energy Conference, Aalborg, Denmark.*

Shamir, E.: Assessment of Climate Change Impact on Groundwater Reservoirs and Water Resources Management in the Upper Santa Cruz River. *26th Annual Arizona Hydrologic Society Symposium, Tucson, AZ.*

Presentations

Graham, N.: Regional Wave Modeling in the Southern California Bight. *San Diego Chapter of the AMS, San Diego, CA.*

Graham, N.: Regional Wave Modeling in the Southern California Bight. *SGX NWS Marine Partners Meeting, San Diego, CA.*

Graham, N.: Using Wave Action Models to Test Mechanisms for the Generation of Ocean Microseisms. *Caltech symposium, Pasadena, CA.*

Jubach, R., et al: Advances and Challenges in Real-time Flash Flood Warning Worldwide. *American Meteorological Society Annual Meeting, Austin, TX.*

Posner, A.J., Georgakakos, K.P., and E. Shamir: NASA MODIS flood mapping product assimilation in operational flash flood warning systems. *26th Annual Arizona Hydrologic Society Symposium, Tucson, AZ.*

Posner, A.J., Georgakakos, K.P., and E. Shamir: Assimilation of NASA MODIS flood mapping product into operational flash flood warning systems. *AGU Fall Meeting 2013, San Francisco, CA.* (oral presentation)

Shamir, E.: Assessment of Climate Change Impact on Groundwater Reservoirs and Water Resources Management in the Upper Santa Cruz River. *26th Annual Arizona Hydrologic Society Symposium, Tucson, AZ.*

Conference Proceedings

Posner, A.J., Georgakakos, K.P., and E. Shamir: NASA MODIS flood mapping product assimilation in operational flash flood warning systems. *26th Annual Arizona Hydrologic Society Symposium, Tucson, AZ.*

Posner, A.J., Georgakakos, K.P., and E. Shamir: Assimilation of NASA MODIS flood mapping product into operational flash flood warning systems. *AGU Fall Meeting 2013, San Francisco, CA.*

Ruehl, K., Porter, A., Posner, A., and J. Roberts: Development of SNL-SWAN, a Validated Wave Energy Converter Array Modeling Tool. *European Wave and Tidal Energy Conference, Aalborg, Denmark.*

HRC Technical Reports

Limited Distribution Reports

Shamir, E., Modrick, T.M., Graham, N.E., Spencer, C.R., and K.P. Georgakakos, 2013: Snow Assessments for Southeastern Europe and the Black Sea and Middle East Region for the Spring of 2013. *HRC Limited Distribution Report No. 41*. Hydrologic Research Center, San Diego, CA, 66pp.

Technical Notes

Georgakakos, K.P., Bal, A., and J. Espinosa, 2013: Estimation of Panama Canal water imports for achieving ninety nine percent reliability against draft restrictions. *HRC Technical Note No. 63*. Hydrologic Research Center, San Diego, CA, 116pp.

Shamir, E., Spencer, C.R., and K.P. Georgakakos, 2013: Evaluation of the sensitivity of MMFFG products to precipitation input adjustments. *HRC Technical Note No. 62*. Hydrologic Research Center, San Diego, CA, 34pp.

Modrick, T.M., Graham, N.E., and K.P. Georgakakos, 2013: Sensitivity of Central America WRF simulations of precipitation to the assimilation of satellite radiance and GPSRO data. *HRC Technical Note No. 60*. Hydrologic Research Center, San Diego, CA, 32pp.

Modrick, T.M., Posner, A.J., Shamir E., Sperflage, J., and K.P. Georgakakos, 2013: Enhanced-resolution basin delineation for Turkey for the BSMEFFG flash flood guidance system. *HRC Technical Note No. 59*. Hydrologic Research Center, San Diego, CA, 39pp.

Georgakakos, K.P., and C.R. Spencer, 2013: Dynamic bias adjustment of real-time satellite data in Chiapas, Mexico. *HRC Technical Note No. 58*. Hydrologic Research Center, San Diego, CA, 23pp.

Georgakakos, K.P., Spencer, C.R., and J.A. Sperflage, 2013: Radar mask and dynamic bias adjustment for the Mozotal Radar in Chiapas, Mexico. *HRC Technical Note No. 57*. Hydrologic Research Center, San Diego, CA, 30pp.

Georgakakos, K.P., and C.R. Spencer, 2013: Dynamic bias adjustment of satellite precipitation estimates for the SARFFG system. *HRC Technical Note No. 56*. Hydrologic Research Center, San Diego, CA, 54pp.

Georgakakos, K.P., and E. Shamir, 2013: Incorporate MODIS land surface temperature in an operational snow accumulation and ablation model. *HRC Technical Note No. 55*. Hydrologic Research Center, San Diego, CA, 48pp.

Georgakakos, K.P., Shamir, E., Holly, F.M. Jr., Bal A., and J. Espinosa, 2013: Panama Canal reliability against draft restrictions for historical demand. *HRC Technical Note No. 54*. Hydrologic Research Center, San Diego, CA, 26pp.

Posner, A., Georgakakos, K.P., and E. Shamir, 2013: A method for the assimilation of standing water estimates from satellite earth observations into the flash flood guidance system soil water mode. *HRC Technical Note No. 53*, Hydrologic Research Center, San Diego, CA, 32pp.

Georgakakos, K.P., and J.A. Sperflage, 2013: Spatial interpolation of precipitation from on-site gauges within the Panama Canal Watershed. *HRC Technical Report No. 52*. Hydrologic Research Center, San Diego, CA, 16pp.

Georgakakos, K.P., and C.R. Spencer, 2013: Dynamic bias adjustment of satellite precipitation using on-site gauge precipitation for the BSMEFFG. *HRC Technical Report No. 51*. Hydrologic Research Center, San Diego, CA, 28pp.

Georgakakos, K.P., 2013: Development of two-year return period relationships with upstream drainage area for bias regions in Turkey. *HRC Technical Report No. 50*. Hydrologic Research Center, San Diego, CA, 15pp.

Georgakakos, K.P. and C.R. Spencer, 2013: Development of initial radar masks for the Turkey radars of BSMEFFG. *HRC Technical Report No. 49*. Hydrologic Research Center, San Diego, CA, 23pp.

Technical Reports

Georgakakos, K.P., Graham, N.E., Modrick, T.M., Shamir, E., Spencer, C.R., and J.A. Sperflage, in collaboration with Georgakakos, A.P., Kistenmacher, M., Yao, H., and D. Kim (Georgia Water Resources Institute, Georgia Tech, Atlanta, GA), 2013: Integrated Forecast and Reservoir Management (INFORM) enhancements and demonstration results for Northern California (2009-2012). *HRC Technical Report No. 10*. Hydrologic Research Center, CA, 376pp.

Georgakakos, K.P., Graham, R., Jubach, R., Modrick, T.M., Shamir, E., Spencer, C.R., and J.A. Sperflage, 2013: Global flash flood guidance system, phase I. *HRC Technical Report No. 9*. Hydrologic Research Center, San Diego, CA, 134pp.

Modrick, T.M. and K.P. Georgakakos, 2012: An interdisciplinary approach to characterize flash flood frequency for mountainous Southern California. *HRC Technical Report No. 8*. Hydrologic Research Center, San Diego, CA, 247pp.

Other Reports

Hydrologic Research Center – Georgia Water Resources Institute, 2014: Integrated Forecast and Reservoir Management (INFORM), Enhancements and Demonstration Results for Northern California (2008 – 2012). California Energy Commission. *Publication number: CEC-500-2013-XXX*, 502pp. (in press).

Technical Communications

Georgakakos, K., 2013: Estimated median reliabilities for draft restriction lake levels, demands, and rule curves for the Panama Canal. *HRC Technical Communication PAN20130422*. Hydrologic Research Center, San Diego, CA, 1pp.

Graham, R., 2013: Report of advanced training operations for South Africa region flash flood guidance (SARFFG) system. *HRC Technical Communication SARFFG20130328*. Hydrologic Research Center, San Diego, CA, 4pp.

Shamir, E. and K.P. Georgakakos, 2013: Assessment of the Frequency of Snow Cover for South-East Europe and Black-Sea Middle-East Regions. *HRC Technical Communication 20130305*. Hydrologic Research Center, San Diego, CA, 4pp.

Educational, Science Cooperation, and Technology Transfer Activities

January

- E. Shamir attended a meeting at the Department of Water Resources in Phoenix, AZ, 1/1/2013 regarding the NOAA CPO Groundwater Resources Planning/Mgmt. project.
- R. Jubach was an invited participant to the National Weather Service, International Activities Office, International Session on the Future of Climate Services, Austin, TX, 1/8-11/2013.
- R. Jubach and K.P. Georgakakos traveled to Ankara, Turkey for the initial planning meeting for the Southeast Europe Flash Flood Guidance regional implementation, 1/20-26/2013.
- E. Shamir met with the Advisory Committee of the NOAA CPO Groundwater Resources Planning/Mgmt. project in Tucson, AZ, 1/28-29/2013.
- R. Graham is leading a team of researchers from Regents Inc., Laboratory of Tree-Ring Research, Tucson and WSL in Switzerland in the development of a new calibration technique for blue intensity method. The development of this new calibration target advances the technique further. This work will lead to a future technical paper.

February

- K.P. Georgakakos attended meetings with NWS and DWR regarding the next phase of INFORM in Sacramento, CA, 2/13/2013.
- SARFFG Training at HRC, 2/19/2013 – 3/15/2013.
- K.P. Georgakakos and N.E. Graham attended the INFORM II Project Advisory Committee Meeting in Sacramento, CA, 2/25/2013.

March

- E. Shamir, T.M. Modrick, and K.P. Georgakakos presented a Regional Workshop on Snow Accumulation and Melt in Southeastern Europe (SEE) and the Black Sea Middle East (BSME), via GoToMeeting, 3/22/2013.

April

- BSMEFFG Training at HRC, 4/8 – 5/3/2013.
- E. Shamir attended a Milestone Workshop in Nogales, AZ, regarding the NOAA CPO Groundwater Resources Planning/Management project, 4/10-12/2013.
- K.P. Georgakakos attended a Water Resources Meeting (DWR) at Folsom, CA, 4/23/2013.

June

- Pakistan Training at HRC, 6/3-28/2013.

- E. Shamir traveled to Tucson and Nogales, AZ, regarding the NOAA CPO Groundwater Resources Planning/Management project, 6/20-21/2013.
- C.R. Spencer traveled to Ankara, Turkey, for the deployment of the operational BSMEFFG System and training of TMS staff on the administration and maintenance of the system software, 6/23-28/2013.
- K.P. Georgakakos attended the City of San Diego Water Policy Implementation Task Force Meeting, 6/24/2013.

July

- A. Posner and E. Shamir visited NASA Goddard Space Flight Center (re: NASA Disasters FFG 2012 project and other meetings). They gave a presentation at the Hydrological Sciences Laboratory, "Assessment of MODIS derived inundation extent and land surface temperature for incorporation in regional flash flood guidance system." They also visited the NOAA Office of Hydrology (re: NASA Disasters FFG 2012 project and other meetings), the NSF Water Sustainability and Climate (re: future proposal/project funding priorities and availability), and the NOAA Sectoral Applications Research Program (re: future proposal/project funding priorities and availability), 7/1-3/2013.
- R. Jubach finalized negotiations on an agreement and initial work plans with the WMO for the Global FFG program, Phase II.
- T.M. Modrick conducted a 2 week training session at ACP in Panama City on the PANWRF system and output product interpretation for three ACP operational forecasters (M. Hart, G. Arrocha, and A. Smith), 7/15-26/2013. Training reviewed WRF model and PANWRF implementation.

August

- E. Shamir traveled to Tucson and Phoenix, AZ, regarding the NOAA CPO Groundwater Resources Planning/Management project, 8/26-27/2013.
- T.M. Modrick and R. Graham conducted a 3-day training workshop on the HDRFFG System for Dominican Republic Met Office (ONAMET), 8/27-29/2013.

September

- K.P. Georgakakos traveled to ACP in Panama in support of the Panama WRF project, 9/11-12/2013.
- K.P. Georgakakos traveled to Oman, to coordinate a potential project for HRC with the Oman Department of Meteorology, 9/13-20/2013.

November

- T.M. Modrick traveled to San Jose, Costa Rica to participate in the CAFFG operational workshop, 11/3-6/2013. She coordinated with Rosario Alfaro Ocanipo of NOAA and she answered technical questions on the CAFFG System. She also made short presentations on the CAWRF Model and on insitu-data collection.
- HRC and the Jet Propulsion Laboratory scientists collaborated in matters pertaining to the use of satellite data for land surface hydrologic prediction.
- E. Shamir traveled to Tucson, AZ, to attend a workshop regarding the NOAA CPO Groundwater Resources Planning/Management project, 11/19-21/2013. He also presented a webinar with Sharon Megdal as part of the NOAA-SARP, NIDIS, WRF, WEF, WERF, and AWWA monthly webinar series on Climate Information for Managing

Risks in Water Resources. It was titled “Incorporating Climate Information and Stakeholder Engagement in Goundwater Resources Planning and Management.”

December

- T.M. Modrick and E. Shamir traveled to Alanya, Turkey to attend the BSMEFFG operational workshop, 12/3-5/2013. They made technical presentations on the BSMEFFG system development and parameterization. They also helped guide discussion on operational use of the system.
- HRC (K.P. Georgakakos, PI) was accepted as an Early Adopter of the Soil Moisture Active Passive (SMAP) NASA satellite mission scheduled for launch in October 2014.
- K.P. Georgakakos serves on the Disaster Risk Management (DRM) Flood Thematic Team of the international Committee on Earth Observing Satellites (CEOS) and HRC is a partner for the CEOS Flood Pilot Project.
- J.A. Sperflage and K.P. Georgakakos provided training for a short-term trainee (A. Carpenter of Idaho State University) on the use of Microsoft ACCESS 2010 database management software

Community Outreach Activity

- K.P. Georgakakos continues to serve as a member on the Climate Change Technical Advisory Group (CCTAG) organized by the California Department of Water resources
- K.P. Georgakakos continues to serve as the Chief Editor for the Journal of Hydrology (Technical area: Surface Hydrology and Hydrometeorology; Impact factor 2013 – 2.964)
- K.P. Georgakakos continues to advise a UCSD Ph.D. Candidate (Mr. Rodrigo Osuna-Orozco) in the area of landslide diagnosis and prediction.
- K.P. Georgakakos served in the San Diego Water Policy Implementation Task Force.
- R. Jubach arranged for an American Meteorological Society Local Chapter Meeting to be held at HRC, 5/2/2013.
- A. Posner reviewed three articles for the Journal of Hydrology and one article for the journal Geomorphology
- E. Shamir was a guest editor, Journal of Hydrology, special issue on Typhoon Hydrology.
- E. Shamir reviewed 10 journal manuscripts.
- E. Shamir participated in the Technical Advisory Committee meetings for the upcoming revision of the San Diego Country Hydrology Manual.
- Mann Middle School in City Heights has requested T. Modrick and R. Graham contribute technical assistance in the development of hydrologic science curriculum and training for teachers and students.
- The Superintendent of the San Diego Unified School District has requested R. Graham’s involvement with water education for the school district.
- EJE Elementary Academy has requested R. Graham’s assistance in developing hydrology- related curriculum for grades 6 to 8 under the new common core standards.
- R. Graham is acting as advisor to the staff of the College Career and Technology Education for the San Diego Unified School District in the development of project-based learning for grades 7 – 12.

Visitors

January 2013

- Jerry Hoffmeister
- Brandt Maxwell, National Weather Service
- Ayhan Sayin, Turkey
- Anastasios Tsonis

February

- Mr. Victor Bupe, Zambia, attended the SARFFG Training
- Mr. Charles Vanya, Malawi, attended the SARFFG Training
- Mrs. Dipuo Tawana, South Africa, attended the SARFFG Training

March

- Mark O'Donnell, Project Concern Int'l Global
- Snezhanka Balabanova, Ph.D, Bulgaria, attended BSME FFG Training
- Marina Kordzakhia, Ph.D., Georgia, attended BSME FFG Training
- Mr. Ayhan Sayin, Turkey, attended BSME FFG Training
- Mr. Yusuf Ulupinar, Turkey, attended BSME FFG Training
- Mr. Ertan Turgu, Turkey, attended BSME FFG Training

June

- Dr. Ghulam Rasul, Pakistan, attended Pakistan FFG Training
- Dr. Muhammad Hanif, Pakistan, attended Pakistan FFG Training
- Mr. Muhammad Farooq, Pakistan, attended Pakistan FFG Training
- Mr. Syeed Zeeshan Haider, Pakistan, attended Pakistan FFG Training

September

- Mr. Burachat Buasuwan and Mr. Pornsak Jevasuwan, Thailand

October

- Dr. Narendra Das, JPL
- Dr. Seungbum Kim, JPL

November

- Mr. Edwin Welles, Executive Director, Deltares USA
- JPL Scientists