

## Shih-Chieh Kao, Ph.D.

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### Education

Ph.D., Civil Engineering, Purdue University, May 2008

- Major: Hydraulic and Hydrologic Engineering
- Dissertation: Multivariate Statistical Analysis of Indiana Hydrologic Data
- Advisor: Dr. Rao S. Govindaraju

M.S., Civil Engineering, National Taiwan University, June 2001

- Major: Hydraulic Engineering
- Thesis: A Study in Development of Regional Design Hyetographs
- Advisor: Dr. Gwo-Fong Lin

B.S., Civil Engineering, National Taiwan University, June 1999

*Other:*

- NAFTA Student Exchange Program, Lakehead University (Canada), June–July 2006

### Appointments

Dec 2013–present	Team Leader, Hydrologic Systems Analysis Team, Oak Ridge National Laboratory, Oak Ridge, TN
Dec 2010–present	Research Scientist, Oak Ridge National Laboratory, Oak Ridge, TN
Feb 2009–Nov 2010	Post-doctoral Research Associate, Oak Ridge National Laboratory, Oak Ridge, TN
May 2008–Jan 2009	Post-doctoral Research Associate, Purdue University, West Lafayette, IN
Aug 2004–May 2008	Graduate Research/Teaching Assistant, Purdue University, West Lafayette, IN
March 2003–July 2004	Full-time Teaching Assistant, National Taiwan University, Taipei, Taiwan

### Honors / Certificates

April 2014	Significant Event Award – “National Hydropower Asset Assessment Program (NHAAP)”, Oak Ridge National Laboratory
Oct 2013	Statistical Hydrology Best Paper Award, International Commission on Statistical Hydrology, International Association of Hydrological Sciences
Jan 2010	Outstanding Reviewer Award, Journal of Hydrologic Engineering, American Society of Civil Engineers
Oct 2008	Civil Engineering Best Dissertation Award, Purdue University
Apr 2008	Gerrit H. Toebe Memorial Award, Purdue University
Oct 2007	Jacques W. Delleur Traveling Award, Purdue University
April 2006	Estus H. and Vashti L. Magoon Outstanding Teaching Assistant Award, Purdue University
Oct 2005	Passed the NCEES Fundamentals of Engineering Examinations
June 2001	Honorary member of the Phi Tau Phi Scholastic Society, Taiwan

**List of Publications****Peer-reviewed Journal Articles**

- [22] Pasha, M. F. K., M. Yang, D. Yeasmin, S. Saetern, S.-C. Kao, and B. T. Smith (2015), Identifying High-Power-Density Stream-Reaches through Refined Geospatial Resolution in Hydropower Resource Assessment, *J. Water Res. Pl.*, in press.
- [21] Touma, D., M. Ashfaq, M. A. Nayak, S.-C. Kao, and N. S. Diffenbaugh (2015), A Multi-model and Multi-index Evaluation of Drought Characteristics in the 21st Century, *J. Hydrol.*, 526, 196–207, doi:10.1016/j.jhydrol.2014.12.011.
- [20] Kao, S.-C., M. J. Sale, M. Ashfaq, R. Uria Martinez, D. P. Kaiser, Y. Wei, and N. S. Diffenbaugh (2015), Projecting Changes in Annual Hydropower Generation Using Regional Runoff Data: An Assessment of the United States Federal Hydropower Plants, *Energy*, 80, 239–250, doi:10.1016/j.energy.2014.11.066.
- [19] McManamay, R. A., N. Samu, S.-C. Kao, M. S. Bevelhimer, and S. C. Hetrick (2015), A Multi-scale Spatial Approach to Address Environmental Effects of Small Hydropower Development, *Environ. Manage.*, 55(1), 217–243, doi:10.1007/s00267-014-0371-2.
- [18] Pasha, M. F. K., D. Yeasmin, S.-C. Kao, B. Hadjerioua, Y. Wei, and B. T. Smith (2014), Stream-reach Identification for New Run-of-River Hydropower Development through a Merit Matrix-Based Geospatial Algorithm, *J. Water Res. Pl.*, 140(8), 04014016, doi: 10.1061/(ASCE)WR.1943-5452.0000429.
- [17] McManamay, R. A., M. S. Bevelhimer, and S.-C. Kao (2014), Updating the US Hydrologic Classification: An Approach to Clustering and Stratifying Ecohydrologic Data, *Ecohydrology*, 7(3), 903–926, doi:10.1002/eco.1410.
- [16] Oubeidillah, A. A., S.-C. Kao, M. Ashfaq, B. S. Naz, and G. Tootle (2014), A Large-Scale, High-Resolution Hydrological Model Parameter Data Set for Climate Change Impact Assessment for the Conterminous US, *Hydrol. Earth Syst. Sci.*, 18, 67–84, doi:10.5194/hess-18-67-2014.
- [15] Ashfaq, M., S. Ghosh, S.-C. Kao, L. C. Bowling, P. Mote, D. Touma, S. A. Rauscher, and N. S. Diffenbaugh (2013), Near-term Acceleration of Hydroclimatic Change in the Western U.S., *J. Geophys. Res.-Atmos.*, 118, 10,676–10,693, doi:10.1002/jgrd.50816.
- [14] Kao, S.-C., H. K. Kim, C. Liu, X. Cui, and B. L. Bhaduri (2012), Dependence-Preserving Approach to Synthesizing Household Characteristics, *Transport. Res. Record*, 2302, 192–200, doi:10.3141/2302-21.
- [13] Cui, X., H. K. Kim, C. Liu, S.-C. Kao, and B. L. Bhaduri (2012), Simulating the Household Plug-in Hybrid Electric Vehicle Distribution and Its Electric Distribution Network Impacts, *Transport. Res. D-TR. E.*, 17, 548–554, doi:10.1016/j.trd.2012.05.011.
- [12] Kao, S.-C., and N.-B. Chang (2012), Copula-Based Flood Frequency Analysis at Ungauged Basin Confluences: Nashville, Tennessee, *J. Hydrol. Eng.*, 17(7), 790–799, doi: 10.1061/(ASCE)HE.1943-5584.0000477.
- [11] Ghosh, S., D. Das, S.-C. Kao, and A. R. Ganguly (2012), Lack of Uniform Trends but Increasing Spatial Variability in Observed Indian Rainfall Extremes, *Nature Climate Change*, 2, 86–91, doi:10.1038/nclimate1327.
- [10] Kao, S.-C., and A. R. Ganguly (2011), Intensity, Duration, and Frequency of Precipitation Extremes under 21st-century Warming Scenarios, *J. Geophys. Res.-Atmos.*, 116, D16119, doi:10.1029/2010JD015529.
- [9] Kao, S.-C., and R. S. Govindaraju (2010), Reply to Comment by T. P. Hutchinson on “Trivariate Statistical Analysis of Extreme Rainfall Events via the Plackett Family of Copulas”, *Water Resour. Res.*, 46, W04802, doi:10.1029/2009WR008774.

- [8] Kao, S.-C., and R. S. Govindaraju (2010), A Copula-based Joint Deficit Index for Droughts, *J. Hydrol.*, 380, 121–134, doi:10.1016/j.jhydrol.2009.10.029.
- [7] Kao, S.-C., T. P. Chan, R. Sultana, T. Konopka, T. Cooper, B. Partridge, and R. S. Govindaraju (2009), Hydrologic and Environmental Performance of a Subsurface Constructed Wetland at a Highway Rest Area: A Case Study, *Water Qual. Expo. Health*, 1, 35–48, doi:10.1007/s12403-009-0004-9.
- [6] Kao, S.-C., and R. S. Govindaraju (2008), Trivariate Statistical Analysis of Extreme Rainfall Events via Plackett Family of Copulas, *Water Resour. Res.*, 44, W02415, doi:10.1029/2007WR006261.
- [5] Kao, S.-C., and A. R. Rao (2008), At-Site Based Evaluation of Rainfall Estimates for Indiana, *J. Hydrol. Eng.*, 13(3), 184–188, doi:10.1061/(ASCE)1084-0699(2008)13:3(184).
- [4] Kao, S.-C., and R. S. Govindaraju (2007), A Bivariate Frequency Analysis of Extreme Rainfall with Implications for Design, *J. Geophys. Res.–Atmos.*, 112, D13119, doi:10.1029/2007JD008522.
- [3] Kao, S.-C., and R. S. Govindaraju (2007), Probabilistic Structure of Storm Surface Runoff Considering the Dependence between Average Intensity and Storm Duration of Rainfall Events, *Water Resour. Res.*, 43, W06410, doi:10.1029/2006WR005564.
- [2] Rao, A. R., and S.-C. Kao (2007), Discussion of "Updated Precipitation Frequency Estimates for Kansas City: Comparison with TP-40 and HYDRO-35" by C. Bryan Young and Bruce M. McEnroe, *J. Hydrol. Eng.*, 12(6), 694–699, doi:10.1061/(ASCE)1084-0699(2007)12:6(694).
- [1] Lin, G.-F., L.-H. Chen, and S.-C. Kao (2005), Development of Regional Design Hyetographs, *Hydrol. Process*, 19, 937–946, doi:10.1002/hyp.5550.

### **Technical Reports**

- [8] Kao, S.-C., M. Ashfaq, B. S. Naz, R. Uría Martínez, D. Rastogi, R. Mei, Y. Jager, N. M. Samu, and M. J. Sale (2016), *The Second Assessment of the Effects of Climate Change on Federal Hydropower*, ORNL/TM-2015/357, Oak Ridge National Laboratory, Oak Ridge, TN.
- [7] Kao, S.-C., R. A. McManamay, K. M. Stewart, N. Samu, B. Hadjerioua, S. T. DeNeale, D. Yeasmin, M. F. K. Pasha, A. A. Oubeidillah, and B. T. Smith (2014), *New Stream-reach Development: A Comprehensive Assessment of Hydropower Energy Potential in the United States*, GPO DOE/EE-1063, Wind and Water Power Program, Department of Energy, Washington, DC.
- [6] Hadjerioua, B., S.-C. Kao, R. A. McManamay, M. F. K. Pasha, D. Yeasmin, A. A. Oubeidillah, N. Samu, K. M. Stewart, M. S. Bevelhimer, S. C. Hetrick, Y. Wei, and B. T. Smith (2013), *An Assessment of Energy Potential from New Stream-reach Development in the United States: Initial Report on Methodology*, ORNL/TM-2012/298, Oak Ridge National Laboratory, Oak Ridge, TN.
- [5] Sale, M. J., S.-C. Kao, M. Ashfaq, D. P. Kaiser, R. Uria Martinez, C. Webb, and Y. Wei (2012), *Assessment of the Effects of Climate Change on Federal Hydropower*, ORNL/TM-2011/251, Oak Ridge National Laboratory, Oak Ridge, TN.
- [4] Hadjerioua, B., Y. Wei, and S.-C. Kao (2012), *An Assessment of Energy Potential at Non-powered Dams in the United States*, GPO DOE/EE-0711, Wind and Water Power Program, Department of Energy, Washington, DC.
- [3] Hadjerioua, B., S.-C. Kao, M. J. Sale, Y. Wei, S. K. SanthanaVannan, H. A. Shanafield III, D. P. Kaiser, R. Devarakonda, C. Odeh, G. Palanisamy, and B. T. Smith (2010), *National Hydropower Asset Assessment Project (NHAAP) 2010 Final Annual Report*, ORNL/TM-2010/260, Oak Ridge National Laboratory, Oak Ridge, TN.
- [2] Kao, S.-C., S. Tripathi, T. J. Cooper, T. P. Chan, J. E. Alleman, and R. S. Govindaraju (2008), *The I-70 Greenfield Rest Area Wetland Projects: Final Report*, Joint Transportation Research Program Report, Purdue University, West Lafayette, IN.
- [1] Rao, A. R., and S.-C. Kao (2006), *Statistical Analysis of Indiana Rainfall Data*, Joint Transportation Research Program Report, C-36-62R, Purdue University, West Lafayette, IN.

### ***Dissertation / Thesis***

- [2] Kao, S.-C. (2008), *Multivariate Statistical Analysis of Indiana Hydrologic Data*, Ph.D. Dissertation, School of Civil Engineering, Purdue University, West Lafayette, IN.
- [1] Kao, S.-C. (2001), *A Study in Development of Regional Design Hyetographs*, Master Thesis, Department of Civil Engineering, National Taiwan University, Taipei, Taiwan.

### ***Book Chapter***

- [2] Grimaldi, S., S.-C. Kao, A. Castellarin, S.-M. Papalexiou, A. Viglione, F. Laio, H. Aksoy, and A. Gedikli (2011), Statistical Hydrology, *Treatise on Water Science*, 479, doi:10.1016/B978-0-444-53199-5.00046-4.
- [1] Kao, S.-C., and R. S. Govindaraju (2008), Probabilistic Structure of Rainfall Events over Indiana, USA, in *Hydraulics and Hydrology* (ed. V. P. Singh), Water Resources Publications, LLC, pp. 505-532.

### ***Other Publication***

- [1] Hadjerioua, B., S.-C. Kao, Y. Wei, B. T. Smith, and H. Battey (2012), Non-powered Dams: An Uptapped Source of Renewable Electricity in the USA, *The International Journal on Hydropower and Dams*, 19(4), 45–48.

### ***Selected Conference Paper / Presentation***

- [34] Chalise, D. R., P. O'Connor, S. DeNeale, R. Uría Martínez, and S.-C. Kao (2015), LCOE Uncertainty Analysis for Hydropower using Monte Carlo Simulations, HydroVision International 2015, July 14–17, Portland, OR.
- [33] Pasha, M. F. K., L. Rowan, D. Yeasmin, S.-C. Kao, and B. T. Smith (2015), Development of a Geospatial Diversion Model for Hydropower Resource Assessment, HydroVision International 2015, July 14–17, Portland, OR.
- [32] Gangrade, S., B. S. Naz, S.-C. Kao, M. Ashfaq, R. Mei, D. Rastogi, B. L. Preston, E. D. Kabela, N. Singh, and V. Anantharaj (2015), High Resolution Distributed Hydrological Modeling for Extreme Flood Events, World Environmental & Water Resources Congress 2015, May 17–21, Austin, TX.
- [31] Zhao, G., H. Gao, B. S. Naz, and S.-C. Kao (2015), Integrating Reservoir Flow Regulation Rules into a Spatially Distributed Hydrological Model, World Environmental & Water Resources Congress 2015, May 17–21, Austin, TX.
- [30] Dullo, T., A. Kalyanapu, S. Ghafoor, V. Anantharaj, R. Marshall, J. Tatarczuk, and S.-C. Kao (2015), Computational Performance of a Two-dimensional Flood Model in Single and Multiple GPU Frameworks, European Geosciences Union General Assembly 2015, April 12–17, Vienna, Austria.
- [29] Kao, S.-C., B. S. Naz, S. Gangrade, M. Ashfaq, R. Mei, and D. Rastogi (2014), Projection of Climate Change Impacts on Watershed Storage and Hydropower Generation, American Geophysical Union 2014 Fall Meeting, Dec. 14–19, San Francisco, CA.
- [28] Naz, B. S., S.-C. Kao, M. Ashfaq, S. Gangrade, R. Mei, and D. Rastogi (2014), Climate Change Impacts on Reservoir Inflow in the United States, American Geophysical Union 2014 Fall Meeting, Dec. 14–19, San Francisco, CA.
- [27] Ashfaq, M., D. Rastogi, R. Mei, S.-C. Kao, B. S. Naz, and S. Gangrade (2014), Ultra High-resolution Ensemble Projections of the Near-term Climate Change over the U.S., American Geophysical Union 2014 Fall Meeting, Dec. 14–19, San Francisco, CA.
- [26] Naz, B. S., S.-C. Kao, M. Ashfaq, R. Mei, D. Rastogi, and L. C. Bowling (2014), Historical and Future Hydrologic Change in the Conterminous United States, American Water Resources Association 2014 Annual Water Resources Conference, November 3–6, Vienna, VA.

- [25] DeNeale, S. T., Q. F. Zhang, P. W. O'Connor, and S.-C. Kao (2014), Statistical Characteristics of US Hydropower Plant Capacity Factors, HydroVision International 2014, July 22–25, Nashville, TN.
- [24] Pasha, M. F. K., M. Yang, D. Yeasmin, F. Amin, S.-C. Kao, and B. T. Smith (2014), Sensitivity of Spatial Resolution in Hydropower Resource Assessment, HydroVision International 2014, July 22–25, Nashville, TN.
- [23] Kao, S.-C., D. Rastogi, B. S. Naz, M. Ashfaq, B. L. Preston, E. D. Kabela, Rui Mei and N. Singh (2014), Towards the Development of an Integrated Energy-Water Risk Assessment Tool for Probable Maximum Precipitation and Flood, World Environmental & Water Resources Congress 2014, June 1–5, Portland, OR.
- [22] Naz, B. S., S.-C. Kao, M. Ashfaq and R. Mei (2014), Projecting the potential impacts of climate change on water resources for the Conterminous United States through high resolution hydro-meteorological simulation, the 94<sup>th</sup> American Meteorological Society Annual Meeting, February 2–6, Atlanta, GA.
- [21] Ashfaq, M., S.-C. Kao, R. Mei, D. Touma, D. Rastogi, S. M. Absar and B. S. Naz (2014), Ultra High-resolution Near-term Hydro-meteorological Projections and Impact Assessments over the United States and South Asia, the 94<sup>th</sup> American Meteorological Society Annual Meeting, February 2–6, Atlanta, GA.
- [20] Ostro, S., D. Huber, J. H. Casola, D. P. Kaiser, T. P. Karnowski, V. C. Paquit, S.-C. Kao, J. Francis and J. Gullede (2014), Characterizing Anomalous Mid-tropospheric Ridges and Their Trends, the 94<sup>th</sup> American Meteorological Society Annual Meeting, February 2–6, Atlanta, GA.
- [19] Kao, S.-C., B. S. Naz, M. Ashfaq, and R. Mei (2013), Refining the Resolution of Future Energy-Water Projection through High Performance Computing, American Geophysical Union 2013 Fall Meeting, Dec. 9–13, San Francisco, CA.
- [18] Kao, S.-C., A. A. Oubeidillah, and M. F. K. Pasha (2013), Performance Evaluation of Monthly Streamflow Time Series Synthesized through USGS WaterWatch Runoff and NHDPlus River Network, World Environmental & Water Resources Congress 2013, May 19–23, Cincinnati, OH.
- [17] Oubeidillah, A. A., S.-C. Kao, and M. Ashfaq (2012), A Hydrologic Model Calibration Exercise for Regional Climate Change Impact Assessment of the Conterminous U.S., American Geophysical Union 2012 Fall Meeting, Dec. 3–7, San Francisco, CA.
- [16] Kao, S.-C., M. Ashfaq, M. J. Sale, A. A. Oubeidillah, and N. Duffenbaugh (2012), A Quantitative Assessment Framework for Potential Climate Change Impacts on Regional Hydropower Generation, World Environmental & Water Resources Congress 2012, May 20–24, Albuquerque, NM.
- [15] Kao, S.-C., and N.-B. Chang (2012), Multivariate Flood Frequency Analysis through Copulas in a Partially Gauged Watershed, World Environmental & Water Resources Congress 2012, May 20–24, Albuquerque, NM.
- [14] Kao, S.-C., H. K. Kim, C. Liu, X. Cui, and B. L. Bhaduri (2012), A Dependence-preserving Approach in Synthesizing Household Characteristics, Transpiration Research Board 91<sup>st</sup> Annual Meeting, July 22–26, Washington, D.C.
- [13] Sale, M. J., S.-C. Kao, R. Uria Martinez, and Y. Wei (2011), Estimating the Effects of Climate Change on Federal Hydropower and Power Marketing, HydroVision International 2011, July 19–22, Sacramento, CA.
- [12] Kao, S.-C., B. Hadjerioua, and Y. Wei (2011), Streamflow Variability and its Potential Impact on Energy Production, World Environmental & Water Resources Congress 2011, May 22–26, Palm Springs, CA.
- [11] Hadjerioua, B., S.-C. Kao, M. J. Sale, Y. Wei, H. A. Shanafield III, D. P. Kaiser, S. K. SanthanaVannan, R. Devarakonda, G. Palanisamy, and B. T. Smith (2011), National Hydropower Asset Assessment Project: An Integrated Water-Infrastructure Research Platform, World

- Environmental & Water Resources Congress 2011, May 22–26, Palm Springs, CA.
- [10] Kim, H. K., S.-C. Kao, C. Liu, X. Cui, and B. L. Bhaduri (2011), Reconstruction of Spatial Distribution of Travelers for Activity-Based Traffic Demand Model Using LandScan USA Data Set, the 2011 Association of American Geographers Annual Meeting, April 12–16, Seattle, WA.
- [9] Kao, S.-C., and A. R. Ganguly (2010), Quantifying and Comparing the Intensification of Extreme Rainfall Frequency from NCEP and ERA40 Reanalysis Data, the 90<sup>th</sup> American Meteorological Society Annual Meeting, January 17–21, Atlanta, GA.
- [8] Kao, S.-C., and A. R. Ganguly (2009), Intensification of Droughts in a Warming Environment: Trends, Uncertainties and Possible Impacts, American Geophysical Union 2009 Fall Meeting, Dec. 14–18, San Francisco, CA.
- [7] Kao, S.-C., A. R. Ganguly, and K. Steinhaeuser (2009), Motivating Complex Dependence Structures in Data Mining: A Case Study with Anomaly Detection in Climate, IEEE ICDM Workshop on Knowledge Discovery from Climate Data: Prediction, Extremes, and Impacts, December 6, Miami, FL (peer-reviewed).
- [6] Kao, S.-C., R. S. Govindaraju, and D. Niyogi (2009), A Spatio-Temporal Drought Analysis for the Midwestern US, World Environmental & Water Resources Congress 2009, May 18–21, Kansas City, MO.
- [5] Govindaraju, R. S., and S.-C. Kao (2008), Multivariate Precipitation Analyses Using Copulas, American Geophysical Union 2008 Joint Assembly, May 27–30, Fort Lauderdale, FL.
- [4] Kao, S.-C., and R. S. Govindaraju (2007), Constructing Design Rainfall Hyetographs Using Trivariate Plackett Family of Copulas, American Geophysical Union 2007 Fall Meeting, Dec. 10–14, San Francisco, CA.
- [3] Kao, S.-C., and R. S. Govindaraju (2007), Statistical Analysis of Extreme Rainfall Events over Indiana, USA, World Environmental & Water Resources Congress 2007, May 15–19, Tampa, FL.
- [2] Kao, S.-C., and R. S. Govindaraju (2006), Evaluating the Probabilistic Structure of Storm Surface Runoff over Indiana, USA, An International Perspective on Environmental and Water Resources, ASCE, Dec. 18–20, New Delhi, India.
- [1] Lin, G.-F., and S.-C. Kao (2001), Establishment of the Regional Design Hyetographs in Taiwan, Proceedings of the 11th Hydraulics Engineering Conference, C180–C187, in July 2001, Taipei, Taiwan.

### Participated Research Projects

#### *Current / Past*

Sept 2015–present	Scoping Analytical Tools and Methods for Vulnerability Analysis of Linked Electricity Generation and River Basin Systems. Sponsor: Office of Energy Policy and Systems Analysis, US Department of Energy. Role: Principal Investigator.
Oct 2010–present	Effects of Climate Change on Federal Hydropower. Sponsor: Office of Energy Efficiency and Renewable Energy, US Department of Energy. Role: Principal Investigator.
Feb 2010–present	National Hydropower Asset Assessment Program. Sponsor: Office of Energy Efficiency and Renewable Energy, US Department of Energy. Role: Principal Investigator.
Oct 2014–present	National Extreme Events Data and Research Center (NEED) – Transforming the National Capability for Resilience to Extreme Weather and Climate Events. Sponsor: Oak Ridge National Laboratory, US Department of Energy. Role: Co-investigator (Principal Investigator: Dale Patrick Kaiser, ORNL).
Oct 2014–present	Fine-resolution Modeling of Urban-Energy Systems' Water Footprint in River Networks. Sponsor: Oak Ridge National Laboratory, US Department of

	Energy. Role: Co-investigator (Principal Investigator: Ryan A. McManamay, ORNL).
Oct 2013–Sept 2015	Toward the Development of an Integrated Energy-Water Risk Assessment Tool for Probable Maximum Precipitation and Flood. Sponsor: Oak Ridge National Laboratory, US Department of Energy. Role: Principal Investigator.
Oct 2011–Sept 2013	A Hierarchical Regional Modeling Framework for Decadal-scale Hydro-climatic Predictions and Impact Assessments. Sponsor: Oak Ridge National Laboratory, US Department of Energy. Role: Co-investigator (Principal Investigator: Moetasim Ashfaq, ORNL).
Feb 2010–Jan 2011	Enhancing Climate Impact Integrated Assessment for Water through Climate Informatics. Sponsor: Oak Ridge National Laboratory, US Department of Energy. Role: Co- investigator (Principal Investigator: W. Christopher Lenhardt, ORNL).
Feb 2009–Jan 2010	Uncertainty Assessment and Reduction for Climate Extremes and Climate Change Impacts. Sponsor: Oak Ridge National Laboratory, US Department of Energy. Role: Co-investigator (Principal Investigator: Auroop R. Ganguly, ORNL).
Jan 2006–Jan 2009	The I-70 Greenfield Rest Area Wetland Projects. Sponsor: Indiana Department of Transportation. Role: Participant (Principal Investigator: Rao S. Govindaraju, Purdue University).
Aug 2004–July 2005	Statistical Analysis of Indiana Rainfall Data. Sponsor: Indiana Department of Transportation. Role: Participant (Principal Investigator: A. R. Rao, Purdue University).

## Service

### **Reviewer – Scientific and Engineering Journals**

- *Advances in Water Resources*
- *British Journal of Environmental and Climate Change*
- *Climate Change*
- *Geophysical Research Letters*
- *Hydrological Processes*
- *Hydrological Sciences Journal*
- *Hydrology and Earth System Sciences Discussions*
- *International Journal of Climatology*
- *Irrigation and Drainage*
- *Journal of the American Water Resources Association*
- *Journal of Computing in Civil Engineering*
- *Journal of Geophysical Research*
- *Journal of Hydrologic Engineering*
- *Journal of Hydrology*
- *Journal of Hydrometeorology*
- *Meteorological Applications*
- *Natural Hazards*
- *Physics and Chemistry of the Earth*
- *Scientia Agricola*
- *Stochastic Environmental Research and Risk Assessment*
- *Theoretical and Applied Climatology*
- *Water Resources Research*

**Reviewer – Proposals**

- *National Science Foundation*
- *Louisiana Board of Regents*
- *CEATI International*

**Student Advising and Committees**

- Ph. D. Examination Committee – Ehsan Beigi, Louisiana State University, Department of Civil and Environmental Engineering, 2015

**Technical Association and Committee Services**

- U.S. Federal Climate Change and Water Working Group (<http://www.ccawwg.us/>)
- International Commission on Statistical Hydrology, International Association of Hydrological Sciences
- “Hydroclimate” Technical Committee, Environmental and Water Resources Institute, American Society of Civil Engineers
- "Use of Atmospheric Numerical Models for Estimating Probable Maximum Precipitation" Task Committee, Environmental and Water Resources Institute, American Society of Civil Engineers

**Conference/Workshop Organizing**

- Session Prosper and Moderator – “Modeling Energy-Water Systems in a Changing Climate” in the Hydro-Climate Symposium of World Environmental and Water Resources Congress 2015 and 2016
- Program Committee – 2010 IEEE ICDM International Workshop on Spatial and Spatiotemporal Data Mining, December 14, Sydney, Australia.
- Program Committee – 2010 IEEE ICDM Workshop on Knowledge Discovery from Climate Data: Prediction, Extremes, and Impacts, December 14, Sydney, Australia.
- Scientific Committee – 2010 IAHS-STAHY International Workshop on Advances in Statistical Hydrology, May 23-25, Taormina, Italy.
- Program Committee – 2009 IEEE ICDM Workshop on Knowledge Discovery from Climate Data: Prediction, Extremes, and Impacts, December 6, Miami, FL.