Jae H. Ryu

PERSONAL

Work Address: National Drought Mitigation Center
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EDUCATION

2006 Ph.D., Civil and Environmental Engineering, University of Washington, Seattle, WA
Dissertation: The management of water resources using a mid-range climate forecast model
Validation at http://sdb.admin.washington.edu/graduatedir/public/graduatedir.asp
2001 M.S., Civil and Environmental Engineering, University of Washington, Seattle, WA
1998 M.S., Agricultural Engineering, Konkuk University, Seoul, Korea
1996 B.S., Agricultural Engineering, Konkuk University, Seoul, Korea

PROFESSIONAL LICENSES

Registered Professional Engineer (Water Resources Engineer/Hydrology) in the State of Washington, Registration No. 41416
Validation at https://fortress.wa.gov/dol/dolprod/bpdLicenseQuery/

PRESENT POSITION

5/2006 – present, Research Associate, National Drought Mitigation Center, Lincoln, Nebraska
Current appointment: 70% research, and 30% scholarly service. Develop computer based decision-support systems for drought management, including a U.S. Drought Atlas. These systems include hydrologic modeling, the incorporation of climate forecast information, GIS technology, and the development of web-based user interfaces. Also, write grant proposals and supervise graduate and undergraduate students.

RELATED EXPERIENCES (RESEARCH//TEACHING)

Ph.D. Research, Department of Civil and Environmental Engineering, University of Washington Seattle, WA (August 2004 – May 2006). Identified regional drought using climate forecast system; Illustrated climatologic facts to stakeholders for better making decision based on scientific foundations; Concluded that a mid-range of forecast would give significant insight to a water resource manager in terms of increasing annual revenue, supplying affordable water, and sustaining the continuum of system reliability

Teaching Assistant, Department of Civil and Environmental Engineering, University of Washington Seattle, WA (Winter 2004 – Spring 2005). Advised undergraduate students during office hours; Graded exams and assignments

Pre-Doctoral Research Fellow, Department of Civil and Environmental Engineering, University of Washington, Seattle, WA (August 2002 – July 2004). Developed water conflicts resolution model;

Visualized system behavior associated with water conflicts; Evaluated management alternatives based on different perspectives including economic, feasibility, and sustainability

Research Assistant, Department of Civil Environmental Engineering, University of Washington, Seattle, WA (June 2001 – July 2002). Developed water quality simulation model using QUAL2E and MIKE 11; Identified the causes of eutrophication and evaluated management options; Provided a total of twenty-six management options to meet water quality standards; Analyzed engineering feasibility as a function of economic benefit

Research Technician, Department of Agricultural Engineering, Konkuk University, Seoul, Korea (Mar 1995 – Mar 1999). Developed and monitored an artificial wetland for rural wastewater treatment; Applied it to real size scale in rural area; Enhanced water quality to meet the standard, and recommended a series of alternatives; laboratory and field research experience

RESEARCH INTERESTS

Hydrologic Forecast (Drought/Streamflow), Drought Management, Water Resources Planning and management, Water Quality Modeling, Soil Moisture Modeling

PROFESSIONAL MEMBERSHIPS

American Society of Civil Engineers, American Water Resources Association, American Geophysics Union

PROFESSIONAL SERVICE ACTIVITIES

Committee, 2002-Present, World Environmental & Water Resources Congress, ASCE
Member, 2006-Present, National Integrated Drought Information System (NIDIS), GIS Team
Peer Journal Proposal Reviews for: AMS's Journal of Applied Meteorology and Climatology, Journal of the American Water Resources Association, AGU's Geophysical Research Letters, AMS's Journal of Hydrometeorology, and as a proposal reviewer for NOAA's Office of Global Programs Sectors Application Research Program (SARP-Water)

GRANTS

Development of a Drought Decision Support Portal for the Republican River Basin of Nebraska, Colorado, and Kansas, PI: C. Knutson, Co-PIs: M. Svoboda, **J. Ryu**, Sponsor: NOAA, $223, 525, 9/1/2007-8/30/2009, Funded

Sustainable Water Management in Agriculture-Dominated Watersheds: A Stakeholder-Driven Approach Integrating Hydrology, Economics, and Policy, PI: **J. Ryu**, Co-PIs: C. Knutson, Y. Ding, D. Wilhite, Sponsor: USDA-CSREES, $388,536, 9/1/2007-8/30/2010, Not Funded

Developing a Predictive Capability Decision Support System for Drought Mitigation, PI: X. Cai, Co-PIs: **J. Ryu**, M. Svoboda, C. Knutson, M. Sittler, Sponsor: NASA-ROSES, $968,155, 10/1/2007-9/30/2010, Pending

A Methodology for Improving Hydrologic Drought Prediction, PI: **J. Ryu**, Co-PIs: M. Svoboda, D. LeComte, C. Knutson, T. Tadesse, M. Sittler, S. Scott, C. Carlson, Sponsor: NOAA CDEP-CTB, $467,653, 5/1/2008-4/30/2011, Pending

A Temporal and Spatial Climate Analysis Tool for ACIS, PI: K. Hubbard, Co-PIs: C. Carlson, W. Sorenson, S. Korner, J. Li, **J. Ryu**, Sponsor: NOAA-TRACS, $284,593, 5/1/2008-4/30/2011, Pending

Nebraska Climate Variability, Co-PIs: C. Knutson and M. Hayes, Co-Investigators: **J. Ryu** and Y. Ding, Advisors: D. Wilhite, C. Rowe, B. Oglesby, and T. Tadesse, Sponsor: Nebraska Water Center, $182,680, 1/1/2008-12/31/2009, Pending

PUBLICATION, REPORTS, PRESENTATION (reverse chronological order: 2002-current)

Jae H. Ryu, Automatic Calibration of HSPF model with NEXRAD rainfall data for DMIP, National Weather Service, NOAA, Silver Spring, Maryland, September 10-12, 2007, (Invited)

Jae H. Ryu, Richard N. Palmer, Sangman Jeong, Jooheon Lee, and Young-Oh Kim, 2007 Creating Sustainable Water Resources Management in the Conflict Resolution Framework, *Journal of the American Water Resources Association*, (submitted)

Jae H. Ryu, Richard N. Palmer, Matthew W. Wiley, 2007 Climate Model Based Streamflow Forecasts for East Asia, *Journal of the American Water Resources Association,* (in review)

Jae H. Ryu, 2007 Automatic Calibration of HSPF model with NEXRAD rainfall data for Distributed Model Intercomparison Project, *Water Resources Research,* (in review)

Jae H. Ryu, Mark D. Svoboda, John D. Lenters, 2007 Finding Potential Extents for ENSO-Driven Hydrologic Drought Forecasts in the United States, *Journal of Hydrometeorology,* (in review)

Jae H. Ryu, Mark D. Svoboda, 2007 A GIS framework for Climate Change studies in Nebraska, *Proceedings of the 7th International IWA Symposium on Systems Analysis and Integrated Assessment in Water Management, IWA, May 7-9, Washington DC (http://www.watermatex2007.org)*

Jae H. Ryu, Mark D. Svoboda, 2007 El Nino-Southern Oscillation (ENSO) and Hydrologic Drought in the United States, *2007 Nebraska GIS Symposium, April 3-5, Qwest Center, Omaha, Nebraska (http://www.symposium2007.org)*

Jae H. Ryu, Richard N. Palmer, 2006 System Optimization using Streamflow Forecasts during Droughts, *ASCE Journal of Water Resources Planning and Management,* (in review)

Jae H. Ryu, The Management of Water Resources Using a Mid-Range Climate Forecast Model, University of Washington, 2006 (Ph.D Dissertation)

Jae H. Ryu, Richard N. Palmer, Matthew W. Willey, Mid-Range Streamflow Prediction Using A Dynamic Climate Model, AWRA 2006 Summer Specialty Conference, Missoula, MT, USA

Matthew W. Willey, Richard N. Palmer, **Jae H. Ryu**, Climate Based Streamflow Forecasts for

Water Resource Managers, AWRA 2006 Summer Specialty Conference, Missoula, MT, USA

Jae H. Ryu, The Use of Mid-Range Climate Forecasts for Drought Management, The National Drought Mitigation Center, University of Nebraska-Lincoln, January 27, 2006 (Invited)

Jae H. Ryu, Richard N Palmer, Sangman Jeong, JooHeon Lee, Drought Definitions and Forecasts for Water Resources Management, EWRI Congress 2004, ASCE, Salt Lake City, USA

Jeong, S. M., Lee, **J. H., Ryu**, J. H., Palmer, R. N., An application and Development of Drought Management System for Guem River Basin, J. of KSCE, 24(3B), 201-208, 2004

Jae H. Ryu, Richard N Palmer, Sangman Jeong, JooHeon Lee, An Optimization Model to Mitigate Conflicts, EWRI Congress 2003, ASCE, Philadelphia, USA

Jeong, S. M., **Ryu, J. H**., Lee, J. H., Palmer, R. N., Development of Shared Vision Model for Optimal Water Supply for Kum River Basin, J. of KSCE, 23(3B),191-199, 2003

JooHeon Lee, **Jay Hyun Ryu**, Richard N Palmer, Sangman Jeong, Development of Shared Vision Model for the Optimal Reservoir Operation, International Conference on Hydrology and Water Resources in Asia Pacific Region(APHW),2003, Kyoto, Japan

Richard N. Palmer, Michael T. Brett, **Jae H. Ryu**, 2002 Water Quality Simulation Model for the King Abdullah Canal in Jordan, Prepared for the Center for Environmental Studies and Resource Management (CESAR), Norway (Project final report)

Jaehyun Ryu, Richard N Palmer, Sangman Jeong, and Young-Oh Kim, An Application of Water Conflict Resolution in the Kum River Basin, Korea, EWRI, 2002 Conference on Water Resources Planning and Management, Roanoke, VA, 2002

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