

CURRICULUM VITAE

University of Idaho

NAME: Ryu, Jae H. Ph.D., P.E.

DATE: March 8, 2022

RANK OR TITLE: Associate Professor

DEPARTMENT: Soil and Water Systems, College of Agricultural and Life Sciences

OFFICE LOCATION AND CAMPUS ZIP: Idaho Water Center

OFFICE PHONE: 332-4402

FAX: 332-4400

EMAIL: jryu@uidaho.edu

DATE OF FIRST EMPLOYMENT AT UI: January 11, 2010

DATE OF TENURE: Tenured

DATE OF PRESENT RANK OR TITLE: May 10, 2016

EDUCATION BEYOND HIGH SCHOOL:

Degrees:

Ph.D. in Civil and Environmental Engineering from University of Washington, Seattle, Washington, 2006.

M.S. in Civil and Environmental Engineering from University of Washington, Seattle, Washington, 2001.

M.S. in Agricultural Engineering from Konkuk University, Seoul, Korea, 1998.

B.S. in Agricultural Engineering from Konkuk University, Seoul, Korea, 1996.

Certificates and Licenses:

Professional Engineers, The State of Idaho, Registration No. 15009, since 2012.

Professional Engineers, The State of Nebraska, Registration No. E-12894, since 2009.

Professional Engineer, The State of Washington, Registration No. 41416, since 2004.

Engineer-in-Training (EIT), The State of Washington, Registration No. 26221, since 2003.

HONORS AND AWARDS

2017: Vandal Idea Project (VIP) Award, Idaho Drone League (iDrone)

2017: Brain Pool Research Fellow, National Research Foundation

2017: Lawrence Berkeley Lab Research Faculty Fellow/DOE, 2017

2015-2016: US Air Force Summer Faculty Fellow

2015: PAWEES Reviewer Award

2012: UI Young Investigator Award

EXPERIENCE:

Areas of Specialization:

Water resources planning and management, drought, climate change, hydrologic modeling, Unmanned Aerial Systems

Teaching, Extension and Research Appointments:

Associate Professor, Soil and Water Systems, University of Idaho, July 2017-present

Associate Professor, Biological and Agricultural Engineering, University of Idaho, July 2016-July 2017

Research Faculty Fellow, Lawrence Berkeley Laboratory, Department of Energy, Sustainable Research Pathway with Michael Wehner and Christina Patricola, May 2017 – June 2017.

Faculty Fellow, US Air Force Academy, US Air Force Summer Faculty Program. Investigation of Unmanned Aerial System (UAS, aka drones) for drought monitoring with G. York, May 2015-August 2015 and May 2016 - August 2016

Assistant Professor, Biological and Agricultural Engineering, University of Idaho, Jan 2010-July 2016

Adjunct Faculty, School of Natural Resources, University of Nebraska-Lincoln, 2010-14

Postdoctoral Research Associate, School of Natural Resources, University of Nebraska-Lincoln. May 2006 – Dec 2009

Graduate Research Assistant at University of Washington, Seattle, Washington, Aug 2000 – May 2006

TEACHING ACCOMPLISHMENTS:

Courses Taught:

University of Idaho:

Water Resources Seminar, WR501, Fall 2018, 2019, 2020, 2021

Hydrological Modeling and Applications, WR 504, Summer, 2019, 2021

System modeling for water resources management, SOIL 404, Summer 2018, 2020

Interdisciplinary method in water resources (co-teaching), WR 506, Fall 2016, Fall 2017

Hydrological Modeling and Applications, BAE 504, Summer, 2012

Students Advising:

Graduate Students of University of Idaho:

Water Resources Engineering (as major professor)

David Hoekema, Ph.D. Student, since Fall Semester 2011

Riveraine Walters, Ph.D. Student, since Spring Semester 2015

Zarin Subah, Ph.D. student, since Fall Semester 2021

Laura McSherry, M.S. Student, since Fall Semester 2020

Graduate Committees Served (and Serving) on:

Emily Thomsen, Ph.D. Student, Dept of Geography, University of Idaho, since Fall 2019

Students Advised:

Water Resources Engineering

Milad Vahidi, M.S. Student, since Spring Semester 2021, transferred to Virginia Tech

Roxanne Cariadi-Kimble, M.S. Completed in Spring 2017

Jung Jin Kim, Ph.D. Completed in Spring 2017

Logan Miller, M.S. Completed in Spring 2017

Aparna Nayak, M.S. Completed in Spring 2017

Mohammad Sohrabi, Ph.D. Completed in Spring 2017

Jacob Wolf, M.S. Department of Geography, University of Idaho, 2012

Mark Cecchini Beaver, College of Law, University of Idaho, 2010-2011

Post-Doctoral Research Associate:

Anil Acharya, Ph.D., 2011-2012, currently at Alabama A&M University

Jinwon Seo, Ph.D., November 2011- October 2012, National Institute of Environmental Research, Korea

Course Developed:

Hydrological modeling and applications, WR504, 2 credits

System modeling for water resources management, 2 credits

Workshops:

Idaho Drone League (iDrone) Online, April 2-3, 2021. Note that more than 80 people joined this event and UI President Green gave an opening remark.

Interstate Drone League (iDrone) sponsored by KSEA to promote STEM workforce, November 14, 2020 (100 students joined Zoom virtual meeting platform). Based on this experience, I will continue to host another iDrone online camp working with Idaho STEM Action Center and/or KSEA to benefit more American Youth in years to come.

Idaho Drone League (iDrone) for STEM education, online camp, October 10, 2020 (President Green attended and gave an opening remark)

Idaho Drone League (iDrone) for STEM education, 2-day workshops, 2017-19
iDrone-Pocatello (March 19-20, 2019), iDrone-Moscow (March 26-27, 2019), iDrone-Boise (March 29-30, 2019), iDrone-4H, Moscow (June 27-28, 2018). iDrone Summer Camp-Boise (June 6-7, 2019)

SCHOLARSHIP ACCOMPLISHMENTS:**Publications:**

Refereed Journals Published: *# Indicates a graduate student and postdoc co-author, respectively

1. Ryu, J., 2022 “UAS-based Real-Time Water Quality Monitoring, Sampling, and Visualization Platform (UASWQP)”, *Hardware X*, 11, E00277, Impact Factor 3.24
2. Ryu, J., *Walters, R., Ziegler, H. 2021 “Interstate Drone League (iDrone) to promote hands-on remote STEM learning using cloud-based virtual meeting platforms in the global pandemic (COVID-19), *Journal of STEM Education and Innovative Research*, 22(4), 33-39, Impact Factor NA
3. Walters, R., Ryu, J., Torres-Salinas, R., and Ryu, J. 2020. “Beyond the thalweg: Toward a Buddhist framework for hydrosocial research”, *Geoforum* 117: 296-299. Impact Factor: 3.098
4. Kim, J. and Ryu, J.H. 2020 “Decision-Making of LID-BMPs for Adaptive Water Management at the Boise River Watershed in a Changing Global Environment, *Water*, 12, 2436; doi:10.3390/w12092436, Impact Factor 2.544
5. Ryu, J, LaPagalia, K., Walters, R. 2020. “Idaho Drone League (iDrone) to Stimulate STEM Workforce, *Journal of STEM Education: Innovations and Research*, 21 (2), 58-64. Note: Impact Factor is not available at the moment, but it is one of the prestigious journals in STEM fields. My publication (UI iDrone) was featured on the cover page Vol 21 No 2 (2020). Here is the link at <https://www.jstem.org/jstem/index.php/JSTEM>
6. Neufeld, J., Ryu, J. Barbour, J. 2019. “Development of UAV-based insect scouting method”, *Journal of the National Association of County Agricultural Agents (NACAA)*, 12(2), 2019. ISSN 2158-9429. No impact factor is available, but this is one of the most popular journal articles in Ag extensions.
7. Ryu, J. and Kim, JJ. 2019. “A study on climate-driven flash flood risks in the Boise River Watershed, Idaho”, *Water* 11, 1039; doi:10.3390/w11051039, 2019. Impact Factor: 2.250 (this paper was selected for inclusion in a special issue- Extreme Floods and Droughts under Future Climate Scenarios, MDPI Books)
8. Jungjin Kim., Ryu, J. H., 2019. “Quantifying the performances of the semi-distributed hydrologic model in Parallel computing-A Case Study, *Water*, 11 (823). Impact Factor: 2.250
9. Kim, J. and Ryu, J., 2019. “Modeling hydrological and environmental consequences of climate change and urbanization in the Boise River Watershed, Idaho”, *Journal of the American Water Resources Association*, 55(1). Impact Factor: 2.472
10. Ryu, J.H., *Jungjin Kim., Kyungdo Lee., 2019. “Development of hydroclimate drought index (HCIDI) for effective local drought analysis in Korea., *Journal of Korean Society of Agricultural Engineers*, 61(1), 2019. ISSN: 2093-7709. No impact factor is available, but this journal is the representative journal of the Korean Society of Agricultural Engineers.
11. *Hoekema, D., Ryu, J. H., 2016. “Characterizing Drought in Irrigated Agricultural Systems: The Surface Water Delivery Index (SWDI)”, *Journal of the American Water Resources Association*, 52(3), 737-755. Impact Factor: 2.472
12. *Kim, J.J., Ryu, J.H. 2016. “A Heuristic Gap Filling Method for Daily Precipitation Series”, *Water Resources Management*, 30(7), 2275-2294. Impact Factor: 3.404
13. *Sohrabi, M., Ryu, J. H., Abatzoglou, J., Tracy, J., 2016. “Closure to Discussion: Development of Soil Moisture Drought Index (SODI) to Characterize Hydrological Drought by Mohammad M. Sohrabi, Jae H.

- Ryu, John Abatzoglou and John Tracy, DOI:10.1061/(ASCE)HE.1943-5584.0001213, 21(4), 07016002-1. Impact Factor: 2.02
14. *Sohrabi, M., Ryu, J. H., Abatzoglou, J., Tracy, J., 2015. "Development of Soil Moisture Drought Index (SODI) to Characterize Hydrological Drought", *Journal of Hydrological Engineering*, 20(11), 04015025(1-15). Impact Factor: 2.02
 15. *Kim, J.J., Ryu, J. H. 2015. "Quantifying a threshold of missing values for gap filling processes in daily precipitation series", *Water Resources Management*, 29(11), 4173-4184. Impact Factor: 3.404
 16. Ryu, J. H., *Sohrabi, M., #Acharya, A. 2014. "Toward mapping gridded drought indices to evaluate local drought in a rapidly changing global environment", *Water Resources Management*, 28(11), 3859-3869. Impact Factor: 3.404
 17. *Kim, J. J., Ryu, J. H., 2014. "A threshold of basin discretization levels for HSPF simulations with NEXRAD inputs", *Journal of Hydrological Engineering*, 19(7), 1401-1412. Impact Factor: 2.02
 18. #Acharya A., Ryu, J. H. 2014. "Simple method for streamflow disaggregation", *Journal of Hydrological Engineering*, 19(3), 509-519. Impact Factor: 2.02
 19. Ryu, J. H., Kim, J.J.. 2014. "Runoff and nonpoint sources control using LID for the Boise River Watershed, Idaho", *Advances in Flowing Waters*, 12(1), 1-11. Impact Factor: 2.326
 20. *Sohrabi, M., Ryu, J. H., Alijani, B., 2013. "Spatial and temporal analysis of climatic extremes over the mountainous region of Iran", *The International Journal of Climate Change: Impacts and Responses*, 4(4), 19-37. Impact Factor: 0.76
 21. *Hoekema, D., Ryu, J. H., 2013. "Evaluating Economic Impacts of Water Conservation and Hydrological Forecasts in the Salmon Tract, Southern Idaho", *Transaction of the ASABE*, 56(4), 1-12. Impact Factor: 1.595
 22. *Sohrabi, M., Ryu, J.H., Abatzoglou, J., Tracy, J. 2013. "Climate extreme and its linkage to regional drought over Idaho, USA", *Natural Hazards*, 65:653-681. Impact Factor: 2.254
 23. Ryu, J.H., Contor, B., Johnson, G., Allen, R., Tracy, J. 2012. "System Dynamics to Sustainable Water Resources Management in the Eastern Snake Plain Aquifer under Water Supply Uncertainty", *Journal of the American Water Resources Association*, 48(6), 1204-1220. Impact Factor: 2.472
 24. Smith, M.B., Koren, V., Zhang, Z., Zhang, Y., Reed, S.M., Cui, Z., Moreda, F., Cosgrove, B.A., Mizukami, N., Anderson, E.A., DMIP 2 Participants (Ryu, J.H.), 2012. "Results of the DMIP 2 Oklahoma experiments", *Journal of Hydrology*, 418-419, 17-48. Impact Factor: 4.5
 25. Ryu, J.H., Jeong, S., Park, S.K., Lee, J., Han, K., 2011. "The impacts of climate change on the local hydrology and drought (low flow) frequency", *Hydrological Processes*, 25(22), 3437-3447. Impact Factor: 3.39
 26. Ryu, J.H., Svoboda, M.D., Lenters, J.D., Tadesse, T., Knutson, C. 2010. "Finding Potential Extents for ENSO-Driven Hydrologic Drought Forecasts in the United States", *Climatic Change*, 101(3),575-597. Impact Factor: 4.134
 27. Ryu, J.H., 2009. "The application of HSPF to Distributed Model Intercomparison Project (DMIP): Case Study", *ASCE Journal of Hydrologic Engineering*, 14(8), 847-857. Impact Factor: 2.02
 28. Ryu, J.H., Palmer, R.N., Jeong, S., Lee, J., Kim, Y.-O., 2009. "Sustainable Water Resources Management in the Conflict Resolution Framework", *Journal of the American Water Resources Association*, 45(2), 485-499. Impact Factor: 2.472
 29. Ryu, J.H., Palmer, R.N., Wiley, M.W., Jeong, S., 2009. "Mid-Range Streamflow Forecasts Based on Climate

Modeling-Statistical Correction and Evaluation”, Journal of the American Water Resources Association, 45(2),355-368. Impact Factor: 2.472

30. Jeong, S., Lee, J., Ryu, J.H., Palmer, R.N., 2004. “An Application and Development of Drought Management System for Guem River Basin”, Journal of the Korean Society of Civil Engineers, 24(3B), 201-208, 2004. Impact Factor: 1.97
31. Jeong, S., Ryu, J.H., Lee, J., Palmer, R.N., 2003. “Development of Shared Vision Model for Optimal Water Supply for Kum River Basin”, Journal of the Korean Society of Civil Engineers, 23(3B), 191-199, 2003. Impact Factor: 1.97

Refereed Conference Proceedings and Presentations: *,# Indicates a graduate student and postdoc co-author, respectively

A couple of conference presentations have been cancelled due to the global pandemic (COVID-19)

- 1 Ryu, J., Stuzman, E., and Ryu, J. 2021. “Analyzing Boise River Data Collected by a Unmanned Aircraft System”, UKC2021:Pursuing Global Health and Sustainability, US-Korea Conference, Hyatt Regency Orange County, Garden Grove, California, December 15-18, 2021
- 2 Ryu, J., Baek, J, Lee, J, Ziegler, H., and Ryu, J. 2021. “Scalable Food Production in the Space Farming System”, UKC2021:Pursuing Global Health and Sustainability, US-Korea Conference, Hyatt Regency Orange County, Garden Grove, California, December 15-18, 2021
- 3 Heo, J., Baek, J, Yang, O., Kim, B., Shin, H., and Ryu, J. 2021. “A comparison of Seedling Growth Between Aquaponics and Hydroponics System”, UKC2021:Pursuing Global Health and Sustainability, US-Korea Conference, Hyatt Regency Orange County, Garden Grove, California, December 15-18, 2021
- 4 Ryu, J. and Ziegler, H. 2021. “Toward Hands-on Online STEM Education and Workforce Development”, UKC2021:Pursuing Global Health and Sustainability, US-Korea Conference, Hyatt Regency Orange County, Garden Grove, California, December 15-18, 2021
- 5 Ryu, J.H., 2019. “Idaho Drone League (iDrone) and Water Resources Research Applications, AWRA Annual Meeting, American Water Resources Association, Salt Lake City, November 2-5
- 6 Ryu, J.H., 2019. “Development of low-cost autonomous air quality sensing for public health”, UKC 2019 Annual Meeting, Chicago, August 14-17
- 7 Ryu, J.H., 2018. “Promoting K-12 education in water resources using unmanned aerial system: Idaho Drone League (iDrone 2018), AWRA Annual Meeting, American Water Resources Association, Baltimore, November 4-8
- 8 Ryu, J.H., 2018. “UAS applications to advance drought monitoring and water management”, UKC 2018 Annual Meeting, New York City, August 1-4
- 9 Ryu, J.H., 2018. “National research and development initiative to mitigate drought impacts in a changing global environment”, National Assembly, Seoul, Korea, May 11
- 10 Ryu, J. H., Kyungdo Lee., Chanwon Park., Sangil Na., 2017. “Agricultural water management and farmland inundation forecast service using Unmanned Aerial Vehicle (UAV)”, KSEA 2017 Fall Meeting, October 15, Jeju Island, South Korea
- 11 (Invited) Ryu, J. H., and Kyungdo Lee., 2017. “Applications of Unmanned Aircraft System (UAS) for Western Water Research and Environmental Studies”, UKC 2017 Annual Meeting, August 9-13, 2017, Washington DC., USA

- 12 Ryu, J. H., 2017. "Advancing drought monitoring using a small Unmanned Aircraft System (sUAS) for irrigated agriculture: Challenge and Opportunities", 2017 World Environmental and Water Resources Congress, Many 21-25, 2017, Sacramento, California.
- 13 (Invited) Ryu, J. H., Russ Quall, Phil Watson, Jerry Long, Robert Heinse, and John Koudelka., 2017. "Integrated system-wide climate-food-water nexus (ICFEWS) modeling in a changing environment: challenges, alternatives, and policy making", Tri-State INFEWS workshop, April 10, 2017, Coeur d'Alene, Idaho
- 14 Ryu, J. H., 2017. "Advancing drought monitoring using a small Unmanned Aerial System (UAS) for irrigated agriculture", Climate Impacts to Water Skamania Lodge, Northwest Water Conference 2017, January 27, Stevenson, Washington
- 15 Ryu, J. H., 2017. "Advancing drought monitoring and outlook to promote adaptation and community resilience in a changing climate", AMS 2017 Annual Conference, January 23, Seattle, Washington
- 16 Ryu, J. H., 2016 and *Jungjin Kim. "Advancing drought monitoring using a small unmanned aerial system for conjunctive water management in a changing climate", AGU 2016 Fall Meeting, December 12-16, San Francisco, California
- 17 Ryu, J. H., 2016. "Advancing drought monitoring and outlook for sustainable water resources management in a changing climate", AWRA 2016 Annual Conference, November 13-17, 2016, Orlando, Florida
- 18 Ryu, J. H., 2015. "Climate-Driven Drought Outlooks in the Pacific Northwest and Water Resources Management Challenges and Opportunities, Pacific Northwest Clean Water Association (PNCWA), Annual Conference & Exhibition, October 25-28, Boise Centre, Boise, ID
- 19 Ryu, J.H., 2015, "Water Resources Planning and Management to Mitigate Drought in a Changing Climate: Monitoring, Management, and Outlooks", The 1st Climate Change Symposium: Adaptation and Mitigation, Hilton Garden Inn, May 3-5, 2015, Chicago, Illinois
- 20 Ryu, J.H., 2014, "Hydro and Environmental Impact Mitigation for the Boise River Watershed, Idaho: Modeling and Alternatives Using LID" 2014 AWRA Annual Conference, Sheraton Premiere Hotel, November 3-6, Tysons Corner, Virginia
- 21 Ryu, J.H., 2014, "Water Resources Planning and Management to Mitigate Drought in a Changing Climate: Monitoring, Management, and Outlooks" 2014 ASABE/CSBE/SCGAB Annual International Meeting, July 13-16, Montreal, Quebec, Canada
- 22 Ryu, J.H., *Kim, J.J., 2014, "Hydrologic modeling and pollution control using LID to mitigate impacts of urbanization," 2014 AWRA Summer Specialty Conference, John Ascuaga's Nugget, June 30 – July 2, Reno, Nevada
- 23 *Kim, J.J., Ryu, J.H., 2014, "Analysis of runoff characteristic and nonpoint source pollution for land use change at Kyoung-An stream watershed, South Korea," 2014 AWRA Summer Specialty Conference, John Ascuaga's Nugget, June 30 – July 2, Reno, Nevada
- 24 *Hoekema, D., Kim, J.J., Ryu, J.H., 2013, "Evaluating Drought in Managed System: Matters of Water Supply and Demand", 2013 Annual Water Resources Conference, American Water Resources Association, Red Lion Hotel, November 4-7, Portland, Oregon
- 25 Ryu, J.H., 2013, "Toward Visualizing Big Drought Data for Data-Intensive Decision Making", ASCE World Environmental and Water Resources Congress, May 19-23, Cincinnati, Ohio
- 26 Ryu, J.H., 2013, "Decision Support Tools for Conflict resolution and Sustainable Water Resources Planning and Management: After Pete's approach", ASCE World Environmental and Water Resources Congress, May 19-23, Cincinnati, Ohio

- 27 *Kim, Jungjin, M, Ryu, J.H., 2013, "Mapping Drought Vulnerability Driven by Future Climate Change and Variability in South Korea", ASCE World Environmental and Water Resources Congress, May 19-23, Cincinnati, Ohio
- 28 *Sohrabi, M, Ryu, J.H., 2013, "Development of Multi Scalar-Soil Moisture Drought Index", ASCE World Environmental and Water Resources Congress, May 19-23, Cincinnati, Ohio
- 29 *Kim, J.J., Hoekema, D., Ryu, J.H., 2013, "Validating Local Droughts to Enhance Climate-Resilient Agricultural Water Management in Idaho", 2013 NSF EPSCoR Tri-State Meeting, University of Nevada at Las Vegas, March 27-28, Las Vegas, Nevada
- 30 Ryu, J.H., 2012, "Decision Support Tools for Drought Monitoring Management and Forecasting in the State of Idaho", 2012 Annual Water Resources Conference, American Water Resources Association, Hyatt Regency Jacksonville Riverfront, November 12-15, Jacksonville, Florida
- 31 Ryu, J.H., 2012, "Toward Mapping Gridded Drought Indices to Mitigate Drought Impacts in a Rapid Changing Global Environment", 3rd Annual Pacific Northwest Climate Science Conference, October 1-2, Boise Centre, Boise, Idaho
- 32 Ryu, J.H., 2012, "Development of Sustainable Water Resources System Against Uncertain Future Climate and Drought for the Seomjin River System, Korea", 18th Congress of the Asia and Pacific Division of the International Association for Hydro-Environment engineering and Research , August 19-23, Jeju Island, Korea
- 33 *Hoekema, D., Ryu, J.H., 2012, "Using Satellite Imagery to Estimate Aquifer Recharge from Irrigated Agriculture", ESRI International User Conference, July 23-27, San Diego, California
- 34 Ryu, J.H., 2012, "A Decision Support Systems to Mitigate Water Conflicts amongst Agriculture, Hydro, and Municipal Water Users", Universities Council on Water Resources, July 17-19, Santa Fe, New Mexico
- 35 *Sohrabi, M., Ryu, J., 2012, "Spatial and Temporal Analysis of Climatic Extremes in the Mountainous Regions of Iran", International Conference on Climate Change: Impacts and Responses, University of Washington, July 12-13, Seattle, Washington
- 36 *Hoekema, D., Ryu, J.H., 2012, "Calculator: Optimized Surface Water Allocation in Drought (OSWAD)", 93rd Annual Meeting of the AAAS Pacific Division, Boise Convention Center, June 24-27, Boise, Idaho
- 37 #Acharya, A., Ryu, J.H., 2012, "Impacts of Climate Change on Hydrologic Drought in an Agriculture-dominated Watershed in the United States", ASCE World Environmental and Water Resources Congress, May 20-24, Albuquerque, New Mexico
- 38 *Hoekema, D., Ryu, J.H., 2012, "Investigating Economic Impacts of Agricultural Drought Using System Dynamics", ASCE World Environmental and Water Resources Congress, May 20-24, Albuquerque, New Mexico
- 39 Ryu, J.H., 2012, "Drought Monitoring, Forecasting, and Management in the 21st Century: Issues and Challenges", ASCE World Environmental and Water Resources Congress, May 20-24, Albuquerque, New Mexico
- 40 *Sohrabi, M., Ryu, J., 2011, "Investigating drought using extreme climatic indices over Idaho, USA", AGU Fall meeting, Dec 5-9, San Francisco, California
- 41 Ryu, J.H., Contor, B., Johnson, G., Allen, R., Tracy, J., 2011, "Application of System Dynamics to assess climate impacts on the Eastern Snake Plain Aquifer", Pacific Northwest Climate Science conference, September 12-14, Seattle, Washington

- 42 Ryu, J.H., Contor, B., Johnson, G., Allen, R., Tracy, J., 2011, "Application of System Dynamics to Adaptive Management for the Eastern Snake Plain Aquifer", ASCE World Environmental and Water Resources Congress, May 22-26, Palm Springs, California
- 43 Ryu, J.H., Contor, B., Johnson, G., Allen, R., 2011, "System Dynamics for Climate-Driven Socioeconomic Water Issues", AWRA Summer Specialty Conference-Managing Climate Change Impacts on Water Resources: Adaptation Issues, Options, and Strategies, April 18-20, Sheraton Inner Harbor Hotel, Baltimore, Maryland
- 44 Ryu, J.H., Contor, B., Wiley, A., Johnson, G., Allen, R., 2010, "Climate-Driven Water Budget Analysis in the Eastern Snake Plain Aquifer", AGU Fall meeting, Dec 13-17, San Francisco, California
- 45 Ryu, J.H., Park, S.K., Lee, K., 2010, "A Framework of hydroclimate modeling and decision support tools for sustainable water resources planning in a changing climate", 2010 ASCE World Environmental and Water Resources Congress, May 16-20, Providence, Rhode Island
- 46 Jeong, S., *Rubio, C.J., Ryu, J.H., Oh, K., Park, M.J., 2010, "Hydrologic Drought in the Upper Nakdong River Basin", 2010 ASCE World Environmental and Water Resources Congress, May 16-20, Providence, Rhode Island
- 47 Ryu, J.H., 2010, "Challenges and Issues in Collaborative Climate Change Research", the 2nd Annual Tri State Consortium Meeting, April 6-8, Hyatt Regency Lake Tahoe, Incline Village, Nevada
- 48 Ryu, J.H., Di Luzio, M., 2009, "Challenges and lessons learned from hydrologic simulations using HSPF and SWAT with NEXRAD rainfall inputs", 2009 AWRA Annual Conference, November 9-12, Seattle, Washington
- 49 Ryu et al, 2009, "Application of SWAT to climate-driven low flow (drought) frequency analysis", 2009 5th International SWAT Conference, August 3-7, Boulder, Colorado
- 50 Ryu, J.H., Park, S.K., 2009, "A framework of sustainable water resources management in a changing climate", The Commission for Water Sustainability International Geographical Union (IGU), July 27-31, Torino, Italy
- 51 Ryu, J.H., Svoboda, M., Okalebo, J. 2009, "Visualizing hydrologic drought information on the web using state-of-the-art geospatial mapping technology", ASCE World Environmental and Water Resources Congress, May 17-21, Kansas City, Missouri
- 52 Tadesse, T., Wardlow, B., and Ryu, J.H., 2009, "Discovering the spatial and temporal relationships between vegetation condition and climate in monitoring drought", NOAA Climate Prediction Applications Science Workshop, March 23-25, Norman, Oklahoma
- 53 Ryu, J.H., 2008, "Snowmelt and Rainfall-Runoff Modeling Using NEXRAD Precipitation Input", AGU Fall meeting, Dec 15-19, San Francisco, California
- 54 Ryu, J.H., Svoboda, M., Tadesse, T., Knutson, C., 2008. "Climate Impacts on Hydrology in the Central United States: Application to Forecast Capability in the Republican River Basin", Proceeding of World Environmental and Water Resources Congress 2008, ASCE May 12-16, Honolulu, Hawaii
- 55 Ryu, J.H., 2008. "Automatic Calibration of HSPF model with NEXRAD rainfall data for Distributed Model Intercomparison Project (DMIP)"-Abstract Only, EOS Trans. AGU, 89(23), Joint Assembly, May 27-30, Fort Lauderdale, Florida
- 56 Tadesse, T., Wardlow, B., Ryu, J.H., 2008. "Identifying time-lag relationships between vegetation condition and climate to produce Vegetation Outlook maps and monitor drought", Proceeding of the 88th American Meteorological Society Annual Meeting, New Orleans, LA

- 57 Ryu, J.H., Svoboda, M.D., 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, D.C. (<http://www.watermatex2007.org>)
- 58 Ryu, J.H., Svoboda, M.D., 2007. "El Niño-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>)
- 59 Ryu, J.H., Palmer, R.N., Willey, M.W., 2006. "Mid-Range Streamflow Prediction Using A Dynamic Climate Model", AWRA 2006 Summer Specialty Conference, Missoula, MT, USA
- 60 Willey, M.W., Palmer, R.N., Ryu, J.H., 2006. "Climate Based Streamflow Forecasts for Water Resource Managers", AWRA 2006 Summer Specialty Conference, Missoula, MT, USA
- 61 Ryu, J.H., Palmer, R.N., Jeong, S., Lee, J., 2004. "Drought Definitions and Forecasts for Water Resources Management", EWRI Congress 2004, ASCE, Salt Lake City, USA
- 62 Ryu, J.H., Palmer, R.N., Jeong, S., Lee, J., 2003. "An Optimization Model to Mitigate Conflicts", EWRI Congress 2003, ASCE, Philadelphia, USA
- 63 Lee, J., Ryu, J.H., Palmer, R.N., Jeong, S., 2003. "Development of Shared Vision Model for the Optimal Reservoir Operation", International Conference on Hydrology and Water Resources in Asia Pacific Region (APHW), Kyoto, Japan
- 64 Ryu, J.H., Palmer, R.N., Jeong, S., Kim, Y.-O., 2002 An Application of Water Conflict Resolution in the Kum River Basin, Korea, EWRI, 2002 Conference on Water Resources Planning and Management, Roanoke, VA, 2002

Other Publications:

- Humes, K., Walters, R., Ryu, J., Mahler, R., and Woodruff, C. 2022. Idaho Climate-Economy Impacts Assessment, Available at: <https://www.uidaho.edu/president/direct-reports/mcclure-center/iceia>, accessed on February 2, 2022
- Ryu, J. H., 2021. "STEM Workforce Development: Interstate Drone League for KSEA Communities (iDrone KSEA)" February 2021. KSEA Newsletter
- Book chapter, 2019. "Extreme Floods and Droughts under Future Climate Scenarios" by Momcilo Markus, Ximing Cai and Ryan Sriver, Printed Edition of the Special Issue Published in Water, 2019
- Ryu, J.H., 2017. "Applications of drone and its directions", Agriculture and Environment, Rural Research Institute, Ansan City, Korea
- Ryu, J.H., 2013. "Participant post-workshop essays", KSEA Letters,
- Ryu, J.H., 2013. "KSEA Boise Idaho Chapter Inauguration (Nov.9, 2012)", KSEA Letters, February 2013, 41(2)
- Ryu, J.H., 2006. "The Management of Water Resources Using a Mid-Range Climate Forecast Model", Civil and Environmental Engineering, University of Washington (Ph.D Dissertation)
- Palmer, R.N., Brett, M.T., Ryu, J.H., 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)

Media Outlets:

- Magic Valley News (2021). Collars for cows: How technology is changing Magic Valley farming, from https://magicvalley.com/business/agriculture/collars-for-cows-how-technology-is-changing-magic-valley-farming/article_54045053-73d1-5eeb-984c-84b7180030fd.html
- KIVITV. (2019). University of Idaho hosts summer drone camp for kids in Boise, from <https://www.kivity.com/news/university-of-idaho-hosts-summer-drone-camp-for-kids-in-boise>
- Capital Press. (2019). Western Innovator: Drones become flying crop sensors, from https://www.capitalpress.com/ag_sectors/research/western-innovator-drones-become-flying-crop-sensors/article_de36e4c4-d02b-11e9-b5f6-3b9d1ec96e59.html
- Idaho News. (2018). <https://idahonews.com/features/stem-in-idaho/photos-drone-workshops-highlight-possible-stem-careers-for-students>
- KBOI. (2018). Watch: U of I professor teaches drone workshop, from <https://idahonews.com/features/stem-in-idaho/watchuofiprofessorteachesdrone101workshop>

Grants and Contracts Awarded:

University of Idaho

- Kolok, A.S., L. Chen, V. Durgesh, L. Lynch, A. Mirkouei, I. Popova., J. Ryu, D. Tonina, A. Tranmer, E. Winford and S. Wu. 2021. Idaho Water Resources Research Institute, USGS 104b Program. \$118,457, 9/1/2021 – 8/31/2022.
- Rashed, A. Ryu, J., et al. “Soil health and profitability implications of including brown mustard and its products in an integrated wireworm management system”, Western Sustainable Agriculture Research and Education (WSARE), \$349,919, 7/1/2021 – 6/30/2024
- Schroeder, Kurtis Ryu, J., et al. “Exploring the feasibility of using high lime rates on crop performance in northern Idaho and identifying aluminum-tolerant wheat”, \$74,094, Idaho Wheat Commission, 7/1/2020 – 6/30/2023
- Rashed, A. Ryu, J., et al. “An objective assessment of economic loss due to wireworm damage in Idaho wheat”, \$9,991, Idaho Wheat Commission, 7/1/2020 – 6/30/2021
- Rashed, A. Ryu, J., et al. “Development of resistant wheat cultivars for management of Hessian fly in Idaho”, \$19,995, Idaho Wheat Commission, 7/1/2020 – 6/30/2021
- Neufeld, J, Ryu, J., Thornton, M., Clement, J. “Anthropod pest management: scouting of filed and vegetable crops using UAV (drone) technology”, 3/1/21 – 9/30/21, \$10,000
- Woodhall, J., Ryu, J., Neufeld, J. “Drone-assisted disease scouting and spore trapping to combat a re-emerging pathogen of onions”, 3/1/21 – 11/30/21, \$10,000
- Ryu, J. “Digital Twin platform for a pilot-scale aquaponic system”, Rural Research Administration, \$240,000, 9/1/2020 – 8/31/2023
- Humes, K, Coats, E, McDoland, A., Ryu, J. “Idaho Water-Energy-Food Nexus” by Idaho State Board of Education, \$2.1M, 7/1/2018-6/30/2021
- Neufeld, J, Ryu, J, Barbour, J. 2019. “UAS-based insect scouting”, \$7,500, UI CALS, 7/1/2019-6/30/2020
- Ryu, J. 2019. “CALS course development”, \$9,000, UI CALS, 7/1/2018-6/30/2019
- Ryu, J. 2019. “Development of system-wide water management model to mitigate social hydrological issues in a changing climate: case study for the Namgang Dam Watershed”, \$86,000, Ministry of Korea Land and Transportation, 1/1/2019-12/31/2019

- Ryu, J. 2018. "Research Equipment Grant" by University of Idaho, \$28,640, 7/1/2018-6/30/2019
- Ryu, J. 2018. "Improving water quality monitoring using UAS" by Geostory, \$20,000, 7/1/2019 – 6/30/2020
- Ryu, J. 2017. "Vandal Idea Project: Idaho Drone League (iDrone)", University of Idaho, 7/1/2017-6/30/2018, BFY209, \$72,248
- Ryu, J. 2017, "Drought mapping using a small unmanned aerial system (sUAS) for precision agriculture in Idaho", Idaho State Board of Education, 7/1/2016-6/30/2017, BFK595, \$70,000.
- Ryu, J. 2017., "Enhancing drought outlooks for western water management in a changing climate", Sustainable Research Pathways, Department of Energy, Lawrence Berkeley National Lab Summer Faculty Fellowship Program, 5/1/2017-6/25/2017, \$25,000.
- Ryu, J. 2017., "IGERT: Adaptation to change in water resources: Science to inform decision-making across disciplines, cultures, and scales, Collaborators: Jan Boll and many UI faculty, My Role: Faculty Participant, \$3M total, FY2013-FY2017, 80% research, 10% extension, 10% advising
- Ryu, J. 2016., "Toward advancing drought monitoring and water management for western agriculture using Unmanned Aerial System (UAS)" funded by American Society for Engineering Education (ASEE) and Air Force Summer Faculty Fellowship Program (SFFP), \$20,000.
- Ryu, J. 2015., "Toward advancing drought monitoring and water management for western agriculture using Unmanned Aerial System (UAS)" funded by American Society for Engineering Education (ASEE) and Air Force Summer Faculty Fellowship Program (SFFP), \$20,000.
- Ryu, J. "Enhancing water supply monitoring and forecasting using NASA satellite data products" by NASA Idaho NASA EPSCoR, 6/25/2013-6/24/2014, Role: PI, \$50,000
- "IGERT: Adaptation to change in water resources: Science to inform decision-making across disciplines, cultures, and scales, Collaborators: Jan Boll and many UI faculty, My Role: Faculty Participant, \$3M total, FY2013-FY2017
- "Development of a RiverWare Water Management Model to Mitigate Climate Impacts in the Payette River Basin, Idaho" by USGS 104b grant, 3/1/2013-2/28/2014, Collaborators: John Tracy, Role: Co-PI, \$30,000
- "Development of LITeFe Linux Cluster for Big Data Analysis" by NSF Idaho EPSCoR, \$13,000, FY2014, My Role: PI, UI Budget #: KBK869
- "Validating local droughts to enhance climate-resilient agricultural water management in Idaho" by Office of Research and Economic Development, FY2014 Seed Grant Application Page, 7/1/2013-6/30/2014. Role: PI, UI Budget #KDU063: \$11,999
- "Development of integrated management technique and system for non-point source control and reduction" by Korea Rural Research Institute, Seoul, Korea, 5/1/2013-8/31/2014. Role: PI, \$8,912
- "Development of integrated management technique and system for non-point source control and reduction" by Korea Rural Research Institute, Seoul, Korea, 8/31/2013-12/31/2013. Role: PI, \$9,225
- "Application of an ecological health assessment for Reclamation managed reservoirs"– Submitted to BOR/S&T Program, Collaborators: Dmitri Videgar (BOR), Jinwon Seo, 1/1/2013-3/31/2014, My Role: PI, \$30,000
- "Development of integrated management technique and system for non-point source control and reduction" by Korea Rural Research Institute, Seoul, Korea, 3/31/2012-8/31/2013. Role: PI, \$8,707

“Developing a Conjunctive Water Resources Planning and Management Model for the Eastern Snake River Plain” by USGS 104b grant, 3/1/2012-2/28/2013, Collaborators: John Tracy, My Role: Co-PI, \$30,000

“Developing an integrated modeling environment for Idaho’s climate change research” by NSF Idaho EPSCoR, \$42,733, FY2012, Role: PI,

“Developing Seasonal Predictive Capability for Drought Mitigation Decision Support System” by NASA via University of Illinois, 10/1/2010-10/09/2012, Role: PI, \$240,014

“Development of a pilot drought information system for national drought disaster reduction” by the Korea National Emergency Reduction, 10/1/2009-9/30/2011, Role: PI, \$13,524

“Modeling Hydrologic and Socio-Economic Impacts of Alternative Water Management Responses to Climate Change” by USGS WaterSMART, \$169,699, Role: Co-PI (0.5mo for FY2011, 1mo for FY2012 through in-kind service)

University of Nebraska

Knutson, C., Svoboda, M., Ryu, J.H. (Role: Co-PI), “Development of a drought decision support portal for the Republican River Basin of Nebraska, Colorado, and Kansas” by NOAA/SARP, 8/1/2007-7/31/2009, Role: Co-PI, \$223,525

Grants and Contracts Pending:

Ryu, J., Karl, J., Shrestha, D., Wargo, E. Career-ready STEM workforce development for undergraduate education and student success, NSF S-STEM, \$1.5M, Role PI

Ryu, J. and Huh, Suejung. Development of iDrone afterschool and hands-on online workshop (iDrone Online) to augment informal STEM e-learning, NSF AISL, \$299,939, Role, PI, 9/1/2022 – 8/31/2024

SERVICE:

Reviewed several abstracts for 2022 UCOWR/NIWR Annual Water resources Conferences, Greenville, South Carolina, University Council On Water Resources, June 14-16, 2022

iDrone program is now used for class material (e.g., syllabi) for R678 Emerging Learning Technologies course, Indiana University, available at:
http://curtbonk.com/R678_alt_online_syllabus_spring_2022.htm, accessed on February 2, 2022

Contributed to water chapter in Idaho Climate-Economy Impacts Assessment Report, 2021 (Karen Humes, Jae Ryu, Robert Mahler, Riveraine Walters)

Hosted two STEM Educators via Idaho STEM Action Center’s externship program (Recipient: Diane Terhune and Hannah Ziegler at Canyon Ridge High School, Twin Falls, FY21)

Hosted a high school intern (Recipient: Luke Bousfield from Timberline High School, Boise, FY21)

Aerial imagery collections using UAS over the Idaho Center for Agriculture, Food and the Environment (CAFE) for planning purpose (CAD drawings for Keller Associates)-Jim Miller and John Wright, FY20, FY21

Presented and demonstrated iDrone STEM education program at the farmers market in the Boise Metropolitan areas (Boise and Garden City), FY19, FY20

Hosted K-12 Educator via Idaho STEM Action Center’s externship program (Recipient: Maddie Dew, 8th Math Teacher at Lone Star Junior High, Nampa, FY21)

Advised Timberline Highschool STEM team to get the state championship and advanced to the International Science and Engineering Fair (ISEF 2020) held in Anaheim, California 2020

Professional and Scholarly Organizations:

American Society of Agricultural and Biological Engineers, Member, 2010- present
 American Society of Civil Engineers, Committee, 2002-present,
 Environmental Water Resources System, World Environmental & Water Resources Congress
 American Society of Civil Engineers, Committee, 2010-present,
 International Water Council, World Environmental & Water Resources Congress
 American Water Resources Association (2002-Present)
 AWRA Technical Committee, Chair of Flowing Water (2016-present)
 AWRA 2014 Summer Specialty Conference on IWRM Planning Committee
 Chaired, Risk perception and community vulnerability, AWRA 2011 Spring Specialty
 Conference, Baltimore, April 18-19, MD
 American Geophysics Union (2002-Present)
 Korea Institute of Construction Technology (KICT), Technical Advisory Board-Water Resources,
 2010-present
 Korean-American Scientists and Engineers Association (KSEA), President of KSEA Boise Idaho
 Chapter (2011-present, 41-42nd admin); NMSC 2013-2014 local chair; KSEA, Chair of local
 chapters, 41-42nd admin; KSEA Nomination Committee, 41-42nd admin; KSEA Contest
 Committee, 42nd admin, Technical Group J Councilor (2014-2016)
 KSEA-Northwest Regional Conference (NWRC), Seattle, Washington, September 21-22, 2013,
 Technical Program Committee, Session Chair of Energy, Green, and Transportation
 US-Korea Conference (2013-2014), Co-chair of Symposium J, Civil, Environmental, and Architectural
 (CEA) Technical Symposium: Sustainable and Resilient Civil Infrastructure
 Associate Editor, Journal of Civil Engineering, Korean Society of Civil Engineers (2013-present)
 Agriculture, Environment and Society (POD) Program of Distinction (POD), CALS
 Department Promotion and Tenure Committee for Marvin Heimgartner, 2011, BAE, University of
 Idaho
 UAS Ad-Hoc Committee, University of Idaho, 2015-present
 AERS Faculty Search Committee, College of Natural Resources, University of Idaho
 Idaho UAS Working Group, State of Idaho
 Eastern Snake Hydrologic Modeling Committee (ESHMC), Idaho Department of Water Resources
 (2012-present)
 Maquis Who's Who in America 2015 (69th Edition)
 Chair, KSEA 10th NWRC, Boise, Idaho, October 10-11, 2015

Peer-Reviewing:

Advances in Water Resources
 Asia-Pacific Journal of Atmospheric Sciences
 Bioprocess and Biosystems Engineering
 Environmental Modeling & Software
 Geophysical Research Letters, American Geophysics Union (AGU)
 Hydrologic Science Journal
 International Journal of Climatology
 Journal of the American Water Resources Association
 Journal of Applied Meteorology and Climatology, American Meteorological Society (AMS)
 Journal of Environmental Management
 Journal of Hydrology
 Journal of Hydrologic Engineering, American Society of Civil Engineers (ASCE)
 Journal of Hydrometeorology, American Meteorological Society (AMS)
 Journal of Water Resources Planning and Management, ASCE
 Korean Society of Civil Engineers
 Natural Hazards

Water Resources Research, American Geophysics Union (AGU)

Project-Reviewing:

NSF CAREER, FY21, FY22
Clean Tech, FY17
Seoul City Forum, FY16
NOAA/Sea Grant, Mississippi-Alabama, FY16-FY18
Partner University Fund, France, FY16
National Environment Research Council, United Kingdom, FY14
Korea Institute of Construction and Technology (KICT), R&D Program, FY14
Small Business Innovation Research (SBIR), Phase II solicitation, FY10, NOAA
Sector Application Research Program (SARP), FY10, NOAA
Engineer Research and Development Center (ERDC), FY09, The US Army Corps of Engineers
Member, National Integrated Drought Information System (NIDIS), GIS Team, 2006-2010

University Service and Leadership

UI Unmanned Aerial System (UAS) Committee, 2015 - present.
AERS Faculty Search Committee, College of Natural Resources, UI, 2018 - 2019
P&T Committee (Garth Taylor), CALS, 2019 - 2020
P&T 3rd Year Review Committee (Olga Walsh), CALS, 2018 – 2019
USDA Hatch Review (Dev Shrestha), CALS, 2021-2022
USDA Hatch Review (Robert Heinse, Sanaz Shafian), CALS, 2019 – 2020
USDA Hatch Review (Daniele Tonina, Russ Qualls), CALS, 2019 - 2020
Eastern Snake Hydrologic Modeling Committee (ESHMC), Idaho Department of Water Resources (2012-present)
Idaho Climate-Economy Advisory Board, 2019 - present
Idaho's Unmanned Aerial System (UAS) Working Group, 2015 - 2017