

CURRICULUM VITAE
University of Idaho – Faculty Senate Format

NAME: Karen S. Humes

DATE: December 19, 2018

RANK: Full Professor

DEPARTMENT: Geography

OFFICE LOCATION AND CAMPUS ZIP:
McClure 323/Campus Zip 3021

OFFICE PHONE: 885-6506

EMAIL: khumes@uidaho.edu

WEB:

DATE OF FIRST EMPLOYMENT AT UI: August 1999

DATE OF TENURE: July 2002

DATE OF PRESENT RANK OR TITLE: July 2008

EDUCATION BEYOND HIGH SCHOOL:

Ph.D. Hydrology, 1992, Department of Hydrology and Water Resources, University of Arizona, with minor in Remote Sensing.

M. S. Soil Science, 1986, Department of Soil and Water Science, University of Arizona

B. S. Geophysics, 1979 (*magna cum laude*), New Mexico Institute of Mining and Technology

PROFESSIONAL EXPERIENCE:

2011 – 2016 **Chair**, Department of Geography, University of Idaho
2013 – present **Coordinator**, Idaho Geographic Alliance, K-12 Outreach
2008- Present **Full Professor**, Department of Geography, University of Idaho
2008 **Acting Chair**, Department of Geography, University of Idaho (August – November)
2007- 2011 **Graduate Program Coordinator**, Department of Geography, University of Idaho
2002 – Present **Associate Professor (tenured)**, Department of Geography, University of Idaho
2002- 2005 **Core Faculty Member**, Environmental Science Program (one of 5 faculty serving to advise and assist director of university-wide program)
1999-2002 **Associate Professor (untenured)**, Department of Geography, University of Idaho
1995-1999 **Assistant Professor**, Department of Geography, University of Oklahoma
1992-1995 **Postdoctoral Research Associate and Research Hydrologist**, USDA Agricultural Research Service, Beltsville, Maryland.
1988-1991 **NASA Graduate Student Research Fellow**, Dept. of Hydrology and Water Resources, University of Arizona and NASA Goddard Space Flight Center.
1984-1987 Teaching and Research Assistant, **Dept. of Soil and Water Science, University of Arizona**
1979-1984 **Engineer and Technical Group Leader**, NASA Jet Propulsion Laboratory,

California Institute of Technology, 1979 - 1984. Analysis of space-based geodetic measurements from Very Long Baseline Interferometric systems for application in geophysics and spacecraft tracking; duties included role as Technical Group Leader (1983-84) and Technical Project Manager (1982-1984), including the supervision of 8 employees and project budgets of \$1.7 M/yr.

TEACHING/ADVISING:

Students Mentored:

Undergraduate Students:

Students hired on grants and mentored as undergraduate research assistants (all of whom went on to graduate school at the University of Idaho or elsewhere):

Ryan Hruska (2000), Riley Tschida (2005-06); Grant Fraley (2007-08); Rachael Bianchetti (2007-2009)

Graduate Students:

Advised to completion of degree – University of Oklahoma:

John Mahlke, M.A. Geography, 1996
Tim Leininger, M.A. Geography, 1997
Susan Langley, M.A. Geography, 1998
Ray Hardy, M.A. Geography, 1998

Advised to completion of degree – University of Idaho:

Shane Cherry, M.S. Geography – Thesis option, 2001
Ryan Hruska, M.S. Envs Science – Thesis option, 2002
Tamara Conner, M.S. Geography – Thesis option, 2003
Jennifer Rooker Jensen, M.S. Geography – Thesis option, 2004
Dennon Hildreth, M.S. Geography – Thesis option, 2004
Yao Tang, M.S. Geography – Thesis option, 2005
Joli Hill, M.S. Geography – Thesis option, 2005
Troy Blandford, M.S. Geography - Thesis option, 2006
Meghan Monahan Lonneker, M.S. Geography – Thesis option, 2007
Eileen Perry – Ph.D. Geography, 2008
Richard Lovel – M.S. Non-thesis option, Geography, 2008
Jennifer Rooker Jensen, Ph.D. Environmental Sciences, 2009*
* *Winner of award for Outstanding Graduate Student, 2009, College of Science*
Brian Harshburger, Ph.D. Geography, 2009 (co-advised with Von Walden)
Michelle Howard, M.S. Geography - Thesis option, 2010
Stephan Gmur, M.S. Geography – Non-thesis option, 2010
Raechel Bianchetti, M.S. Geography – Thesis option, 2010
Riley Tschida, M.S. Geography – Thesis option, May 2012
Stephen Fricke, M.S. Geography – Non-thesis option, May 2012
Jeff Izo, M.S. Geography – Non-thesis option, 2013
Andrea Villarroel, M.S. Geography, non-thesis option, 2014
Collette Gantenbein, M.S. Geography non-thesis option, 2015
Pamela Young, M.S. Geography, non-thesis option, 2015
Kelly Purnell, M.S. Geography, non-thesis option, 2015
Jenna Putnam, M.S. Geography, non-thesis option, 2015
Daniel Matsche, M.S. Environmental Science, non-thesis option, 2016

Daniel Matsche, MS Geography, thesis option, 2017
Joseph Layton, MS Environmental Science, non-thesis option, 2018
Andrew Schnabl, MS Environmental Science, non-thesis option, 2018
Alycia Bean, Ph.D. candidate, Geography, 2018

Students in progress – major advisor:

Emily Thompson, Ph.D. Geography, anticipated completion, Spring 2020
Aparna Kumari, Ph.D. candidate, Geography, anticipated completion Dec 2018
Heather Rice, Ph.D., Water Resources

Service on graduate committees – University of Oklahoma –degrees completed:

Approximately twelve graduate committees in Geography, Meteorology, Civil Engineering

Service on graduate committees – University of Idaho – completed (all M.S. degrees were thesis-based unless otherwise noted):

Jeffrey Cronce , M.S. Forest Resources, 2000
Amarveer Singh, M.S. Biosystems and Agricultural Engineering, 2002
Casey Teske, M.S. Forest Resources, 2002
Sarah Crocker Heide, M.S. Range Science, 2002
Vicki Edwards, M.S. Resource Recreation and Tourism, 2002
Masahiro Tasumi, M.S., Biosystems and Agricultural Engineering, 2003
Eric Ewert, Ph.D., Geography, 2003
Amy Owen, Ph.D. Geography, 2003
Steve Robischon, M.S. Geography, 2003
David Hinkle, M.S. Geography, 2003
Jodie Salz, M.S., Environmental Science, 2004
Anna Pidgorna, M.S., Environmental Science, 2004
Katetegeilwe Rwiza, Ph.D. Geography, 2005
Kimberly Sager, M.S. Wildlife Resources, 2005
Xinxin Zhang, Ph.D. Geography, 2005
Brian Shirley, M.S. Forest Resources, 2005
Brandon Moore, M.S. Geography, 2006
Sharon Harvey, Ph.D., Environmental Science, 2006
Stacey Douglas, M.S. Geology, 2006
Anna Pidgorna, Ph.D. Environmental Science, 2007
Brent Orton, M.S. Civil Engineering, 2007
Lawrence Van Daele, Ph.D., Natural Resources, 2007
Nicholas Whitaker, M.S., Environmental Science, 2007
Alessandra Falcucci, Ph.D., Natural Resources, 2007
Maria Paulina Viteri, M.S., Environmental Sciences, 2007
Arzhan Surazakov, Ph.D. Geography, 2007
Aimee Shipman, Ph.D. Geography 2007
David Rupp, M.S. Environmental Science, 2008
Jonathan Brent Slone, M.S. Geography, 2007
Ayodeji Arogundade, M.S. Bio and Ag Engineering, 2008
Barbara Anderson, Ph.D. Environmental Science, 2009
Christopher Cox, M.S. Geography, 2009
Corey Kallstrom, M.S. Wildlife Resources, 2009

Paul Reyes, M.S. Geography, 2010
 Christina Brewer, M.S. Geography, 2010 (non-thesis)
 Enhao Du, Ph.D. Environmental Science, 2010
 Holly Diehl, M.S. Geography, 2010
 Julie Finzel, M.S. Range Ecology and Management, January 2011
 Jeremy Greth, M.S., Biosystems and Ag Engineering. 2011
 Bruce Brockett, Ph.D. Natural Resources, 2012
 Forrest Bowlick, M.S. Geography, 2012
 Ramesh Dhungel, Ph.D., BioSystems and Ag Engineering, 2013
 Joy Campbell, M.S., Geography, 2013
 June Cleve, Ph.D. Geosciences, 2014
 Samuel Ndegeah, Ph.D. Geography, 2015
 Ensheng Dong, M.S. Geography, 2015
 Kyle Parker, M.S. Geography, non-thesis, 2015
 Hang Zhou, Ph.D., Geography, 2016
 Lauren Parker, Ph.D. Geography, 2017
 Courtney Thompson, Ph.D., Geography, 2017
 Brandon Staab, MS Biological Engineering, 2018
 Craig Woodruff, MS Biological Engineering, 2018
 Heather Rice, M.S., Water Resources, 2018

Graduate student committee service (not as major advisor) – in progress:

William Leacock, Ph.D., Natural Resources
 Travis Cowles, Ph.D., Geography
 Dalyn McCauley, MS, Water Resources

Theses supervised as major advisor – completed:

- *Characterization of Oklahoma Reservoir Wetlands for Multi-Data Visualization Change Detections Mapping Using IRS I-B Satellite Data*, John Mahlke, M.A. Geography, University of Oklahoma, 1996.
- *Comparison of Techniques for Aggregation of Land Cover Data to Support water and Energy Balance Studies*, Tim Leininger, M.A. Geography, University of Oklahoma, 1997.
- *A Phenological Classification of a Semiarid Grassland Using Remotely Sensed Data*, Susan Langley, M.A. Geography, University of Oklahoma, 1998.
- *Quantifying Surface Energy Fluxes over the Little Washita Watershed Through the Use of Remotely Sensed Data*, Ray Hardy, M.A., 1998.
- *Hazard Rating of Forest Stands for Southern Pine Beetle using Landsat and DEM Data*, Shane Cherry, M.S. Geography, University of Idaho, 2001.
- *Pre-visual detection of balsam woolly adelgid in sub-alpine fir*, Ryan Hruska, M.S. Environmental Science, University of Idaho, 2002.
- *Using Multi-Return Lidar Data to Measure Forest Stand Characteristics in Mixed Coniferous Forests of Central Idaho*, Tamara Conner, M.S. Geography, University of Idaho, 2003.
- *Predicting Biophysical Properties of Mixed-conifer Forest Stands in Northern Idaho with Small Footprint Lidar*, Jennifer Rooker, M.S. Geography, University of Idaho, 2004.
- *The Analysis and Classification of Remotely Sensed Data to Provide Support for Weed Management on Rangeland in North Central Idaho*, Dennon Hildreth, M.S. Geography, University of Idaho, 2004.
- *Identification and Classification of Forest Tree Species Composition in Mixed Coniferous Forests of Northern Idaho Using SPOT-5*, Yao Tang, M.S. Geography, University of Idaho, 2005.
- *Mapping Alternate Host Species for the Apple Maggot using High Resolution Multispectral*

Imagery, Joli Hill, M.S. Geography, University of Idaho, 2005.

- *Evaluation of Lapse Rates and Spatial Interpolation of Air Temperature in Mountainous Basin*, Troy Blandford, M.S. Geography, University of Idaho, 2006.
- *Integration of Small Footprint Lidar and Multispectral Data to Estimate Canopy Fuel Parameters*, Meghan Monahan, M.S. Geography, May 2008.
- *Evaluation of MODIS Data for Mapping Surface Water Turbidity in Puget Sound*, Michelle Howard, May 2010.
- *Species Classification in Mixed Conifer Forests with Multispectral Remote Sensing*, Raechel Bianchetti, July 2010
- *Integration of Small Footprint Lidar and Multispectral Data to Map Canopy Fuel Models*, Riley Tschida, Dec 2012
- *Regulatory Floodplain Revisions, the National Flood Insurance Program and Future Implications: A Case Study of Ada County, Idaho*, Elizabeth Boyden, M.S. Geography, Dec 2015
- *A Geographically Weighted Regression Approach to Landslide Susceptibility Modeling*, Daniel Matsche, M.S. Geography, Jan 2017

Dissertations supervised as major advisor – completed:

- *Integration of Ground and Remote Sensing Data to Quantify the Spatial Variability in Orchards and Row Crops*, Eileen Perry, Ph.D., December 2008.
- *Integration of Lidar and Multispectral Data to Estimate Forest Leaf Area Index at Various Spatial Scales*, Jennifer Rooker Jensen, Ph.D. Environmental Science, May 2009.
- *Improved Streamflow Forecasting in Snowmelt-Dominated Basins*, Brian Harshburger, Ph.D. Geography, December 2009 (co-advised with Von Walden)
- *Understanding Idaho's Adaptive Capacity to Future Water Resource Change: A Legal and Political Analysis of Climate Informed Drought Planning in Idaho*, Alycia Bean, Ph.D. Geography, 2018

Teaching Materials Developed:

- Physical Geography Lab Manual: M. Micozzi, F. Cox, K. Humes, B Hoagland and T. Leninger, 1997, Physical Geography Laboratory Exercises: Viewing the Earth as a System, First Edition, Kendall-Hunt Publishers
- Contributor to University of Idaho Physical Geography Lab Manual
- All-day field trip exercise for Introductory Physical Geography course at Univ of Oklahoma (continued to be used after I left the University); on-campus field trip for Intro Physical Geography course at University of Idaho, 2001
- Web-based notes and interactive on-line weekly quizzes, in-class note series for Introductory Physical Geography (GEOG 100); University of Idaho; Fall 2000 – Spring 2010
- Series of computer lab exercises for two remote sensing and GIS integration courses:
 - GEOG 483/583 GIS/Remote Sensing Integration – 12 ERDAS/Imagine-based exercises and 3 Arc-GIS based exercises, updated annually
 - GEOG 424/524 – Hydrologic Applications of GIS and Remote Sensing – 8 Arc-GIS based exercises, updated annually
- Partial Development of 400/500 level course on Water/Energy Systems

Courses Developed:

- Introductory Physical Geography (OU and UI: large freshman-level class, primarily non-majors)
- Hydrologic Science (OU: upper division undergraduate slash-listed graduate)
- Graduate Seminars in Physical Geography and Geospatial Techniques (3 credits)
 - OU: Advanced Remote Sensing

- OU: Research Methods in Physical Geography
- OU: Land/Atmosphere Interactions
- UI: Lidar Remote Sensing
- Remote Sensing/GIS Integration (UI: upper division undergraduate/cross-listed graduate)
- Intermediate Digital Processing (UI: upper division undergraduate)
- Graduate/Upper Division Undergraduate Special Topics courses (3 credits):
 - UI: Applications in GIS-based Decision-Making (2004)
 - UI: Spatial Analysis of Public Services (2006)
 - UI: Sustainable Energy Future (2007)
- Hydrologic Applications of GIS and Remote Sensing (UI: upper division undergrad/graduate)
 - Taught once with live distance delivery then developed as web-based
- Contributions to team-taught field courses:
 - 3 credit course for Geography majors (unit on handheld spectral techniques), taught four times between 1999-2006
 - 1 credit course in Hydrologic Field Techniques (Unit on soil moisture measurements; taught three times between 2004-2007)
- Climate Change Mitigation (UI: joint-listed upper division undergraduate and graduate levels, offered for first time in Fall 2010, then a hiatus until Fall 2016 as a substantially different course)

Honors and Awards:

- Donald Crawford Graduate Student Mentoring Award, University of Idaho, 2011 (University-wide award)
- Nominated for Who's Who in American Teachers (2007). Alumni nominate faculty members for this national listing.
- National Oceanic and Atmospheric Association, Distinguished Service award for efforts in soil moisture modeling, 2002.
- Outstanding Faculty Award, Student Disability Services, University of Idaho, 2002

SCHOLARSHIP ACCOMPLISHMENTS:

Publications:

Refereed (i.e., strict standards of peer review):

(* indicates first author was a student advisee of Humes or recent grad at the time manuscript was submitted and the research presented was supported by a grant on which Humes was PI or Co-I)

Compton, M., S. Willis, B. Rezaie, K. S. Humes, 2018. *Food processing industry energy and water consumption in the Pacific Northwest*, Innovative Food Science and Emerging Technologies, Volume 47, p. 371-383.

Bean, A.*, J. Abatzoglou and K. S. Humes, Drought occurrences in a semi-arid irrigated system: Social and physical consideration. In prep. for submittal to Journal of American Water Resources Association, Feb 2019.

Matsche, D*., R. Dezzani and K. S. Humes, A geographically weighted regression approach to landslide susceptibility modeling, in prep.

Harshburger, B. J*., Walden, V. P., Humes, K. S., Moore, B. C., Blandford, T. R., & Rango, A. (2012). Generation of Ensemble Streamflow Forecasts Using an Enhanced Version of the Snowmelt Runoff Model. *JAWRA Journal of the American Water Resources Association*, 48(4), 643–655.

- Jensen, J.R.*, Humes, K.S., Hudak, A.T. and L.A. Vierling, 2011. Evaluation of the MODIS LAI product using independent lidar-derived LAI: a case study in mixed conifer forest, *Remote Sensing of Environment*, 115 (12), 3625-3639. DOI: 10.1016/j.rse.2011.08.023
- Harshburger, B. J.*, Humes, K. S., Walden, V. P., Blandford, T. R., Moore, B. C. and Dezzani, R. J. (2010). Spatial interpolation of snow water equivalency using surface observations and remotely sensed images of snow-covered area. *Hydrological Processes*, Volume 24, Pages 1285–1295.
- Harshburger, B. J.*, Humes, K. S., Walden, V. P., Moore, B. C., Blandford, T. R. and Rango, A. (2010), Evaluation of Short-to-Medium Range Streamflow Forecasts Obtained Using an Enhanced Version of SRM. *JAWRA Journal of the American Water Resources Association*, 46: 603–617.
- Cook, S.P., K.S. Humes, R. Hruska, G. Fraley & C.J. Williams. 2010. Identifying subalpine fir (*Abies lasiocarpa*) attacked by the balsam woolly adelgid (*Adelges piceae*) using spectral measurements of the foliage. *International J. For. Res. In Press*
- Jensen, J.R.*, Humes, K.S., Vierling, L.A., & Hudak, A.T. (2008). Discrete return lidar-based prediction of leaf area index in two conifer forests. *Remote Sensing of Environment*, 112, 3947-3957.
- Blandford, T.R.*, K.S. Humes, B.J. Harshburger, B.C. Moore, V.P. Walden, and H. Ye, 2008: Seasonal and Synoptic Variations in Near-Surface Air Temperature Lapse Rates in a Mountainous Basin. *J. Appl. Meteor. Climatol.*, **47**, 249–261
- Cook, S., K. Humes, R. Hruska, C. Williams & G. Fraley. 2008. Pre-visual detection of two conifer-infesting adelgids in North American Forests. *In: Lee, D.C.; Beatty, J.; Shaw, C.G.; Pye, J.M.; Sands, Y. Forest Environmental Threats.* <<http://www.threats.forestencyclopedia.net/p/pxxx>>
- Illston, B.G., J.B. Basara, D.K. Fisher, R. Elliott, C.A. Fiebrich, K.C. Crawford, K. Humes, and E. Hunt, 2008: Mesoscale Monitoring of Soil Moisture across a Statewide Network. *J. Atmos. Oceanic Technol.*, **25**, 167–182.
- Cook, S.P., S. Cherry, K.S. Humes, J. Guldin and C.J. Williams, 2007, Development of a satellite-based hazard rating system for dendroctonus frontalis (Coleoptera: Scolytidae) Zimmermann in the Quachita Mountains, *J. of Econ. Entomol.* 100 (2): 381-388.
- Jensen, J.R*., K.S. Humes, T. Conner, C.J. Williams, 2006, Estimation of biophysical characteristics for highly-variable mixed-conifer stands using small footprint LiDAR, *Canadian Journal of Forest Research*, 36:1129-1138
- M.S. Seyfried., L.E. Grant, E. Du and K.S. Humes, 2005, Dielectric loss and calibration of the HydraProbe water sensor, *Vadose Zone Journal* 4:1070-1079.
- Humes, K.S., Hardy, Ray, Kustas, W.P., Prueger, J., Starks, P., 2004, High spatial resolution mapping of surface energy balance components with remotely sensed data, *"Thermal Remote Sensing in Land Surface Processes"*, D.Quattrochi and J. Luval, editors.
- Humes, K.S., R. Hardy, and W.P. Kustas, 2001, Spatial patterns in surface energy balance components derived from remotely sensed data, *Professional Geographer* 52 (2), 272-288.
- Langley, S.K*., H.M. Cheshire, and K.S. Humes, 2001, A comparison of single date and multitemporal satellite image classifications in a semiarid grassland, *Journal of Arid Environments*.

- Schmugge, T.J., W.P. Kustas and K.S. Humes, 1998, Monitoring land surface fluxes using ASTER observations, in press, *IEEE Trans in Geoscience and Remote Sensing*, 72:341-355.
- Humes, K.S., W.P. Kustas, and D.C. Goodrich, 1997, Spatially-distributed sensible heat flux over a semiarid watershed. Part I: Use of radiometric surface temperature and a spatially-uniform resistance, *Journal of Applied Meteorology*, 36:281-292.
- Kustas, W.P. and K.S. Humes, 1997, Spatially distributed sensible heat flux over a semiarid watershed. Part II: Use of spatially variable resistance, *Journal of Applied Meteorology*, 36:293-306.
- Moran, M.S., K.S. Humes and P.J. Pinter, 1997, The scaling characteristics of remotely sensed variables for sparsely-vegetated heterogeneous landscapes, *Journal of Hydrology*, 42: 364-392.
- Gillies, R.R., T.N. Carlson, J.Cui, W. P. Kustas and K.S. Humes, 1997, A verification of the 'triangle method for obtaining surface soil water content and energy fluxes from remote measurements of the Normalized Difference Vegetation Index (NDVI) and surface radiant temperature, *Int. J. Remote Sensing*, Vol 18, 15:3145-3166.
- Kustas, W. P., J.R. Prueger, K.S. Humes and P.J. Starks, 1997, Estimation of surface energy fluxes at field scale using local versus mixed layer atmospheric variables with radiometric surface temperature observations, *Boundary Layer Meteorology*, 52: 356-372.
- Zhan, X., W.P. Kustas and K.S. Humes, 1996, An intercomparison study on models of sensible heat flux over partial canopy surfaces with remotely sensed surface temperature, *Remote Sensing of Environment*, 58:242-256, 1996.
- Kustas, W.P. and K.S. Humes, 1996, Sensible heat flux from remotely-sensed data at different resolutions, in *Scaling up in hydrology Using remote sensing*, John Wiley and Sons.
- Schmugge, T.J. and K.S. Humes, ASTER Observations for the monitoring of land surface fluxes, 1995, *Journal of Remote Sensing of Japan*.
- Norman, J.M., W.P. Kustas, and K.S. Humes, 1995, A simple two-layer model for computing turbulent fluxes with radiometric surface temperature, *Agricultural and Forest Meteorology*, 77:263-293.
- Ritchie, J.C., K.S. Humes, and M.A. Weltz. 1995, Laser altimeter measurements at Walnut Gulch watershed, Arizona: *Journal of Soil and Water Conservation*. 50 440–442.
- Kustas, W. P., M. S. Moran, K. S. Humes, D. I. Stannard, P. J. Pinter, Jr., L. E. Hipps, E. Swiatek and D. C. Goodrich, Surface energy balance estimates at local and regional scales using optical remote sensing from an aircraft platform and atmospheric data collected over semiarid rangelands, *Water Resources Research*, 30:1241-1259, 1994.
- Stewart, J.B., W.P. Kustas, K.S. Humes, W.D. Nichols, M.S. Moran and H.A.R. deBruin, 1994, Sensible heat flux-radiometric surface temperature relationship for eight semiarid areas, *Journal of Applied Meteorology*, 33, 9:1110-1117.
- Humes, K. S., W. P. Kustas, M. S. Moran, W. D. Nichols and M. A. Weltz, 1994, Variability in emissivity and surface temperature over a sparsely vegetated surface, *Water Resources Research*, 30:1299-1310.
- Humes, K. S., W. P. Kustas and M. S. Moran, Use of remote sensing data and reference site measurements to estimate instantaneous surface energy balance components over a semi-arid

rangeland watershed, *Water Resources Research*, 30:1363-1373, 1994.

Reviewed Reports and Proceedings (evaluated by small panel of peers – not as rigorous review as the category above) – post 2004

(* indicates first author was a student advisee of Humes at the time manuscript was written)

Cook, S.P., K.S. Humes, R. Hruska, C. Williams & G. Fraley. 2010. Pre-visual detection of two conifer-infesting adelgid species in North American forests. pp. 551-558 In Lee, D.C., J. Beatty, C.G. Shaw, J.M. Pye & Y. Sands [eds.]. *Advances in Threats Assessment and Their Application to Forest and Rangeland Management*. USDA-For. Serv. Gen. Tech. Rep. PNW-GTR-802.

Harshburger, B.J.*, B.C. Moore, T.R. Blandford, K.S. Humes, and V.P. Walden. 2007. Evaluation of streamflow forecasts for multiple basins in the Pacific Northwest using an enhanced version of the Snowmelt Runoff Model. In *Proceedings of the 75th Annual meeting of the Western Snow Conference*, Kailua-Kona, Hawaii.

Moore, B.C., B.J. Harshburger, T.R. Blandford, K.S. Humes, and V.P. Walden. 2007. The Implementation of the Snowmelt Runoff Model in ArcGIS. In *Proceedings of the 75th Annual meeting of the Western Snow Conference*, Kailua-Kona, Hawaii.

Blandford, T.R.*, K.S. Humes, B.J. Harshburger, B.C. Moore, and V.P. Walden. 2006. Spatial, seasonal, and synoptic variations in air temperature lapse rates. In *Proceedings of the 74th Annual meeting of the Western Snow Conference*, Las Cruces, New Mexico.

Harshburger, B.J.*, B.C. Moore, T.R. Blandford, K.S. Humes, and V.P. Walden, and R. Hruska. 2006. Evaluation of model enhancements and probabilistic forecasting techniques for the Snowmelt Runoff Model. In *Proceedings of the 74th Annual meeting of the Western Snow Conference*, Las Cruces, New Mexico.

Moore, B.C., V.P. Walden, T.R. Blandford, B.J. Harshburger, and K.S. Humes. 2006. Evaluation of NDFD and downscaled NCEP forecasts in the Intermountain West. 18th Conference on Probability and Statistics in the Atmospheric Sciences, Atlanta, Georgia. American Meteorological Society. CD-ROM 2.2.

Blandford, T.R.*, B.J. Harshburger, B.C. Moore, K.S. Humes and V.P. Walden. 2005. Interpolating surface air temperature for use in a semi-distributed snowmelt runoff model. In *Proceedings of the 73rd Annual meeting of the Western Snow Conference*, Great Falls, Montana.

Harshburger, B.J.*, T.R. Blandford, K.S. Humes, V.P. Walden, and B.C. Moore. 2005. Evaluation of Enhancements to the Snowmelt Runoff Model. In *Proceedings of the 73rd Annual meeting of the Western Snow Conference*, Great Falls, Montana.

Prior to 2004: Over 15 proceedings papers, list available upon request.

Other Publications (not refereed or reviewed):

Blandford, T.R., B.J. Harshburger, R.C. Hruska, and B.C. Moore, K.S. Humes, V.P. Walden. 2005. ArcGIS 9.0 manual: Data Preparation for Input into the Snowmelt Runoff Model.

Moore, B.C., B.J. Harshburger, and T.R. Blandford, K.S. Humes, V.P. Walden. 2007. Application of the Snowmelt Runoff Model in ArcGIS 9.2: A Users Manual. Version 1.1.

Humes, K.S., W.J. Fisher, J. Basara, K.C. Crawford, R.E. Elliot, 2001, Mesonet Soil Moisture User's Manual, Oklahoma Climate Survey, University of Oklahoma.

Recent Invited Presentations:

The Water/Energy Nexus and Food Systems in Idaho and the Northwest, Malcolm M. Renfrew Interdisciplinary Colloquium, University of Idaho, November 27, 2018.

Professional Meeting Papers and Presentations:

Over 90 presentations, titles and dates available upon request

Grants and Contracts Awarded:

Current Research Support:

As P.I. or Team Leader:

- *Sustaining the Competitiveness of the Food Industry in Southern Idaho: Integrated Water, Energy, and Waste Management*, \$2,100,000. Idaho State Board of Education Higher Education Research Consortium, July 2018- June 2021.
- *Pre-disaster mitigation planning for 6 Idaho counties*, Idaho Office of Emergency Management, \$330,000, Oct 2016 - Oct 2018
- *Pre-disaster mitigation planning for 10 Idaho counties*, Idaho Bureau of Homeland Security (now Idaho Office of Emergency Management), \$283,000, August 2015-July 2018
- *Idaho Geographic Alliance*, National Geographic Society, \$23,000/yr. K-12 outreach in geographic education. Oct 2014-present

Prior Research Support

As P.I.:

- *Water and Energy Efficiency in Food Processing*, \$94K, Avista Corp, Sept 2016-Aug 2017, Co-PI with R. Christiansen (Mech Engineering)
- *Lower Boise Watershed Risk*, Federal Emergency Management Agency, (with T. Frazier), August 2015 – August 2016
- *Use of Integrated Lidar/Multispectral Data to Evaluate LAI Estimates over Conifer Forest Ecosystems from Operational Sensors*, Idaho Space Grant Consortium, Research Initiation Grant, \$30K, August 2008-July 2009.
- *Measurements and Modeling of Coupled Water/Carbon Fluxes and Storage in Complex Terrain*, NSF Research Infrastructure Improvement Grant, 2005-08. Team Leader, for one of five research teams that formed the statewide Idaho EPSCoR initiative. Our team consisted of seven faculty from three colleges within the UI and our budget was \$1.3M over three years. (total of \$8M statewide).

- *Improving Streamflow Forecasts in Snowmelt Dominated Basins*, Pacific Northwest Regional Collaboratory (Geospatial Consortium led by Pacific Northwest National Lab), funding from NASA to Pacific Northwest National Lab, \$550K, 7/03-8/07
- *Calibration and Validation of Soil Moisture Measurements from the NRCS/SCAN Network*, National Oceanic and Atmospheric Administration (NOAA)/Office of Global Programs, \$262K, 9/01–8/06
- *Use of Remote Sensing for Natural Resource Management on the Nez Perce Reservation*, NASA/Broad Agency Agreement , Jan 2002 – Dec 2004 (Per grant guidelines, Nez Perce Tribe serves as PI and University of Idaho is a subcontractor) – \$177,000 for UI, total \$775K to UI and Nez Perce Tribe.
- *Use of Hyperspectral Remote Sensing Data to Quantify Forest Stress and Nutrient Cycling*, Idaho Space Grant Consortium seed grant, \$10K, March 2000 – Feb 2001, Co-PI with Paul Gessler, Department of Forest Resources.
- *Soil Moisture from the Oklahoma “Moistnet*, NOAA Climate and Global Change Program, GCIP (GEWEX Continental Scale International Project) Element, \$120K /yr for two years, Oct 1, 1998 – Sept, 2000.
- *Quantifying Stress in Forest Ecosystems with Remote Sensing*, NASA Idaho/EPSCoR Research Initiation Grant, July 2000-June 2001. (Co-Is., S. Cook, V. Walden, R. Qualls)
- *Oklahoma Center for Applications of Remote Sensing*, P.I. on NASA/Mission to Planet Earth Centers of Excellence in Applications of Remote Sensing to Regional and Global Integrated Environmental Assessments, 1997 (interdisciplinary equipment grant, \$339,000 total).
- *Water and Energy Fluxes from Remotely Sensed Data*, USDA/Agricultural Research Service. This cooperative agreement supports field data acquisition and analysis of remotely sensed data for the use in monitoring and understanding desertification processes in semi-arid grasslands, \$42K, 1996-1999.

As Co-I.:

- *Collaborative Development of a Climate Change Curriculum for Classrooms in the Intermountain West*, NASA Global Climate Education Program, \$320,000, Jan 2011- Dec 2013, Stephen Mulkey, P.I.
- *Preliminary Steps towards Understanding the Effects of Global Climate Change on Long-term Trends in Water Resources in Idaho*, joint funding from Idaho Department of Water Resources, Idaho Water Resources Research Institute and Pacific Northwest Regional Collaboratory, \$50,000, July 2007-June 2008; V Walden, K.Humes, J. Boll and V. Sridhar.
- *Comparing Three Candidate Technologies for Detecting Mountain Pine Beetle Infestation*, U.S. Forest Service, \$120K, 6/03-6/06 (P.I. Stephen Cook, Dept. of Forest Resources)
- *Improved risk rating, detection and impact assessment of balsam woolly adelgid and hemlock woolly adelgid using remote sensing*. USDA-Forest Service: Special Technology Development Program. Sept 2001 – Sept. 2004 Total . \$105,000. P.I.: S.P. Cook (P.I.).
- *NASA EPSCoR Program: Co-P.I. on Oklahoma NASA/EPSCoR cluster of proposals focused*

around the merging of remote sensing and Mesonet data for water and energy balance studies. Total support from NASA and State Regent's matching funds for Humes portion of work, \$82,000 per year for three years (November 1996 - October 1999),.

Other funded grants (non-research):

As P.I.:

- Teaching and Learning Grant from UI Vice-Provost's office (approx. \$2800; 2000-2001 academic year) for the development of comparative and small group exercises in GEOG 483 and field trip for GEOG 100.

As Co-I:

- Idaho State Board of Education, Development of Distance Education capabilities in Environmental Science, 2000, P.I., Karl Chang
- Idaho State Board of Education, Distance Education Capabilities in Environmental Science, 2001, P.I., Margrit vonBraun.
- Water of the West (WoW), 2006-2011, University of Idaho Presidential Strategic Initiative (P.I. Jan Boll) – \$1.5 M to provide support for a new interdisciplinary degree program in Water Resources (M.S and Ph.D.), a new faculty line in water resource law, and several water education initiatives.
- Sustainable Idaho: Learning Together, Leading the Way, 2006-2011, University of Idaho Presidential Strategic Initiative (P.I.s Christine Dixon, Environmental Science Program), \$350,000 for curriculum development and small research initiatives in sustainability.

Grants recently submitted – pending:

- *Toward Understanding Current and Future Pressures on Water Supply/Use in the Eastern Snake Plain: Spatial Patterns of Drought, Sectorial Competition, Excess Nutrients and Water-Energy Interconnections*, \$15,0000, submitted in Dec 2017 to Idaho Water Resources Research Institute, selected to be part of proposal to USGS in Jan 2018

SERVICE:

Professional and Scholarly service:

- USDA/Agricultural Research Service Science Quality Review Panel, 2006, 2011, 2017
- Judge, Student Paper Competition, Annual Conference of the Association of Pacific Coast Geographers, September, 2011.
- Assisted Project Scientist (Von Walden) and Idaho EPSCoR office in scoping phase of proposal for 2008 Idaho EPSCoR NSF Research Infrastructure Improvement Grant (Theme: Climate Change Impacts, Integrated Hydrologic, Ecologic and Social/Economic Approach), 2007 (funded in 2008 for \$12M over 5 years)
- Western Snow Conference, 2005 and 2007: Supervised (with Von Walden) the implementation and development of a training workshop on the use of the Snowmelt Runoff Model and MODIS snow cover images
- Major proposal review panels for NASA (1999, 2002, 2007); NOAA Office of Global Programs (2002)
- U.S. National Representative to the IUGG for the International Association of Hydrologic Science, 1997-1999
- American Geophysical Union, Deputy Chair, Large-Scale Field Experiments Committee; 1993-1997
- American Meteorological Society, Hydrology Committee; 1995-1997

- Session chair for sessions at annual meetings of the American Association of Geographers, 1997; the American Geophysical Union; 1994, 1995; the American Meteorological Society; 1999.
- Member of organizing committee and panel session leader, Hydrology Section, International Union of Geodesy and Geophysics, June 1995.
- National Academy of Science/National Research Council Panel on GEWEX (Global Water and Energy Experiment), January 1994-December 1996

University

- Member, Search Committee for Hydrogeologist hires, Idaho Water Resources Research Institute, 2018
- Environmental Science Program Curriculum Committee, 2010-present
- Member, Executive Council, Water Resources Task Force (Barbara Cosen, Interim Director), 2016-2017.
- Search Committee Member, Director of Environmental Science and Water Resources Programs, 2011.
- Steering Committee, Focus the Nation Annual Teach-In on Climate Change, 2009
- Search Committee Member, Director of the Environmental Sciences Program, 2007-08 (national search)
- University Committee on General Education, 2007 - 2009
- University Committee on Promotion and Tenure, 2006-07
- Chair, Search Committee for Director of the Environmental Sciences Program (internal search), 2003
- Core Faculty Member, Environmental Science Program, 2001-2005 (one of 3-5 faculty members across campus assisting the program director in administration)
- Graduate Council, 2001-2003
- Search Committee for Vice President of Research, 2000-2001

Other University service (i.e., service to other colleges):

External member of faculty mentoring committees for Assistant Profs in CNR (2014-2015) and College of Engineering (2017-present), and College of Agriculture and Life Sciences (2018)

College-level:

- COS Promotion and Tenure Committee, 2016-present
- COS Strategic Planning Committee, 2011-2012
- Search Committee, Dean of the College of Science, 2007
- Dean's Strategic Advisory Panel, 2005 – 2006
- Computer Committee, College of Science, 2004-5
- Search Committee, Dean of the College of Science, 2003-4

Departmental

- Leader, ad-hoc committee for GIS Certificate and Curriculum, 2011-present
- Member, department committee to revise by-laws on promotion and tenure guidelines
- Chair, Faculty Search Committee for GIS Position, 2016-2017
- Chair, Faculty Search Committee for Quantitative Social Scientist, 2013-2014
- Chair, Faculty Search Committee for Landscape Biogeochemical Modeling position, 2005-06
- Member, 12 other search committees for faculty members (2002-2017)
- Graduate Program Coordinator, 2007-2011
- Scholarship Committee, 2007-2015
- Ad-hoc curriculum committee chair, 2006-2008

- Frequent service on Vandal Friday and Transfer Student Days, 2002-2015

Outreach:

- Coordinator, Idaho Geographic Alliance, organization for K-12 outreach in Geographic Education, 2014-present
- Organizer, Workshop on Geo-Inquiry Process, a problem-based teaching approach with emphasis on geographic perspectives, targeted at middle school teachers. Rexburg, Idaho, June 2018
- Visits to North Idaho GIS Users Group and Northern Idaho College (2012-2014)
- Presenting participant, Workshop on Climate Change Education for High School and Community College teachers, 2013 (sponsored by NASA grant on which Humes was Co-I, Crystal Kolden, workshop organizer)
- Supervised (with Von Walden) the development and implementation of two workshops for operational agency personnel on the use of the Snowmelt-Runoff model and MODIS snowcover images, 2005
- Host for high-school teacher in a summer program to involve teachers in research (ISTARS), Summer 2000.
- Host for student in the UI/HOIST program for Native American high school students, Summer 2000.

Outreach – Public service related to professional duties:

- Overview of IPCC findings on climate change and observed impacts in Idaho, delivered to:
 - Climate Action Network (citizen’s group), Sandpoint, Idaho, September 2007
 - Association of Idaho Cities, Idaho Conference on Energy and Green Building, October, 2007
 - Idaho Council on Industry and the Environment, October, 2007

PROFESSIONAL DEVELOPMENT:

Teaching: Teaching workshops on test-writing, small group work in the classroom (Univ of Oklahoma; 1997); Advising Workshop; University of Idaho (Fall 1999); UI Center for Teaching Innovation, personal visits for consultation (Spring 2000); Workshop on WebCT (Summer 2001), Workshop on delivering distance education classes (Summer 2001).

Scholarship:

- Workshop on Science Communication to General Audiences, sponsored by Idaho EPSCoR office, March 2016
- Grant-writing workshop, sponsored by Idaho EPSCoR office, June 2006
- Proposal Development Workshop (UI/VPR office), October 2000

Leadership/Administration:

- American Association of Geographers Summer Workshop for Department Chairs and Leaders, June 2011, Boulder, Colorado
- Joint WSU/UI Leadership Workshop – October 2009