

## John S. Kimball

Professor of Systems Ecology  
Flathead Lake Biological Station, The University of Montana  
32125 Bio Station Lane  
Polson MT 59860-6815  
Phone: 406-982-3301 (ext. 248)  
FAX: 406-982-3201  
Email: johnk@ntsg.umt.edu

### Professional experience:

**Professor**, Flathead Lake Biological Station, Division of Biological Sciences, The University of Montana (2009-present);  
**Project Scientist**, Numerical Terradynamic Simulation Group (NTSG), Department of Ecosystem and Conservation Sciences, College of Forestry and Conservation, The University of Montana (1997 - Present);  
**Research Assistant, Associate Professor**, Flathead Lake Biological Station, Division of Biological Sciences, The University of Montana (1999-04, 2004-09);  
**Adjunct Associate Professor**, Department of Ecosystem and Conservation Sciences, College of Forestry and Conservation, The University of Montana (2004-present);  
**Post-Doctoral Researcher**, School of Forestry / NTSG, University of Montana (1995-97);  
**Graduate Research Assistant**, Bioresource Engineering Department, Oregon State University, and US EPA Environmental Research Lab., Corvallis OR (1990-95);  
**Graduate Research Assistant**, Geography Department, San Diego State University (1988-90).

### Education:

Ph.D, Bioresource Engineering and Geosciences, 1995, Oregon State University  
Dissertation: *Temporal scale, cover type and climate effects on land surface energy and mass exchange.*

M.A., Physical Geography, 1990, San Diego State University  
Thesis: *Estimating compositional characteristics of vegetation on the North Slope of Alaska using remotely sensed spectral reflectance data.*

B.A., Physical Geography, 1987, San Diego State University

### Expertise and research interests:

Climate change impacts to water resources and ecosystems; soil-plant-atmosphere water, energy and carbon relations; remote sensing; hydrological and ecosystem process modeling. My research activities integrate biophysical theory, field measurements and emerging technologies including optical and microwave remote sensing, geographic information systems, computer simulation and

visualization models to describe the function, distribution and condition of vegetation and associated processes across the landscape. My interests emphasize an ecosystem perspective for understanding physical and biological processes and their interactions, integrating across disciplines and various scales.

### **Research Projects (last 5 years):**

- Development of a satellite-based terrestrial carbon flux model in support of SMAP carbon cycle science, Principal Investigator, sponsoring agency: NASA Terrestrial Ecology program.
- Freeze/thaw and carbon cycle science contributions to the SMAP Science Definition Team (SDT), Principal Investigator, sponsoring agency: NASA SMAP mission.
- An Earth system data record for land surface freeze/thaw state: Quantifying terrestrial water mobility constraints to global ecosystem processes, Principal Investigator, sponsoring agency: NASA MEaSUREs program.
- An inundated wetlands Earth system data record: Global monitoring of wetland extent and dynamics, Co-Investigator, sponsoring agency: NASA MEaSUREs program.
- Vegetation phenology assessment using satellite radar remote sensing: Global monitoring of daily and seasonal changes in canopy structure and water status, Co-Investigator, sponsoring agency: NASA Terrestrial Ecology program.
- Pan-Arctic assessment of terrestrial freeze-thaw state and associated biophysical constraints to northern vegetation productivity, Co-investigator, sponsoring agency: NASA Earth System Science Research (ESSR) program.
- Satellite monitoring of landscape freeze-thaw state and associated constraints to the North American carbon budget, Co-Investigator, sponsoring agency: NASA North American Carbon Program (NACP).
- Vulnerability and resiliency of arctic and sub-arctic landscapes (VuRSAL) – the role of interactions between climate, permafrost, hydrology, and disturbance in driving ecosystem processes, Co-Investigator, sponsoring agency: NASA Terrestrial Ecology program.
- A satellite-based landscape surface resistance measurement for improved assessment of land-atmosphere water and energy transfer, Co-investigator, sponsoring agency: NASA Hydrology program.
- The Salmonid Rivers Observatory Network (SaRON): Relating habitat quantity and quality to salmon productivity for Pacific rim rivers, Co-investigator, sponsoring agency: Gordon and Betty Moore Foundation.
- SMAP freeze/thaw science and product development, Principal Investigator, sponsoring agency: NASA Soil Moisture Active Passive Mission (SMAP) Science Transition Team (STT).
- Pan-Arctic terrestrial ecosystem responses to recent climate variability, Principal Investigator, Sponsoring agency: NASA Earth System Science Fellowship program.
- Hydros: The Hydrosphere States Mission, Principal Investigator, sponsoring agency: NASA Earth System Science Pathfinder (ESSP) program.
- Regional assessment of arctic vegetation productivity and soil respiration environmental controls using MODIS and AMSR-E: A new approach for satellite monitoring of pan-Arctic

terrestrial net CO<sub>2</sub> exchange, Principal Investigator, sponsoring agency: NASA Terrestrial Ecology program.

- Assessment of recent hydrological change over the Arctic terrestrial drainage system, Co-Investigator, sponsoring agency: NASA.
- Warming and drying of the Arctic: Surface moisture as an integrator of the interactions of biological, geochemical, geological, physical and anthropogenic processes at diverse temporal and spatial scales, Principal Investigator, sponsoring agency: NSF Biocomplexity program.
- Developing an understanding and predictive capability of the interconnections among Arctic terrestrial, atmospheric, and marine systems, Principal Investigator, sponsoring agency: NSF Office of Polar Programs (SNACS).
- Dynamic controls on emergent properties of river floodplains, Co-Investigator, sponsoring agency: NSF Biocomplexity program.

### **Synergistic activities (last 5 years):**

- NASA Soil Moisture Active Passive (SMAP) Mission Science Transition and Definition Teams (2008-present);
- NASA EOS MODIS and AMSR-E instrument science teams (2004-present);
- Associate Editor, *Canadian Journal of Remote Sensing* (2007-present);
- NSF SEARCH Cooperative Data and Information Service (AON-CADIS) data advisory group (2009-present);
- NASA ESD Senior Science Review (2009);
- NASA Terrestrial Ecology Program Organizing Committee (2009);
- NASA SMAP Calibration & Validation Working Group (2009 to present);
- NASA SMAP Applications Working Group (2009 to present);
- University of Montana NSF EPSCoR Steering Committee (2009 to present);
- ORNL DAAC User working group for Regional and Global Data (2008-present);
- University of Montana CyberInfrastructure committee (2008 to present);
- NASA SMAP Science Data System (SDS) Review Board (2008);
- NASA Earth Science Data System Working Group (DSWG; 2007-present);
- Technical Committee of the 30<sup>th</sup> Canadian Symposium on Remote Sensing (2009);
- NASA North American Carbon Program (NACP) Principal Investigator (2006-present);
- Technical Committee for ESA/AIMES Workshop on Coupling Earth System Models and Earth Observation for the Northern High Latitudes (2007);
- NASA ESSP Hydros mission science team (2000-2006);
- Associate member, ICARP-II Working Group on the Arctic terrestrial and freshwater biosphere and biodiversity (WG8, 2006).

### **Peer-reviewed publications:**

Luck, M., N. Maumenee, D. Whited, J. Lucotch, S. Chilcote, M. Lorang, D. Goodman, K. McDonald, **J. Kimball** and J. Stanford, 2009. Remote sensing analysis of physical complexity

- of North Pacific Rim rivers to assist wild salmon conservation. *Earth Surface Processes and Landforms* (In-press).
- Zhang, K., **J.S. Kimball**, Q. Mu, L.A. Jones, S.J. Goetz and S.W. Running, 2009. Satellite based analysis of northern ET trends and associated changes in the regional water balance from 1983 to 2005. *Journal of Hydrology* 379, 92-110.
- Mu, Q., L.A. Jones, **J.S. Kimball**, K.C. McDonald, and S.W. Running, 2009. Satellite assessment of land surface evapotranspiration for the pan-Arctic domain. *Water Resources Research* 45, W09420, doi:10.1029/2008WR007189.
- White, M.A., K.M. de Beurs, K. Didan, D.W. Inouye, A.D. Richardson, O.P. Jensen, J. O'Keefe, G. Zhang, R.R. Nemani, W.J.D. van Leewen, J.F. Brown, A. de Wit, M. Schaepman, Z. Lin, M. Dettinger, A.S. Bailey, **J. Kimball**, M.D. Schwartz, D.D. Baldocchi, J.T. Lee, and W.K. Lauenroth, 2009. Intercomparison, interpretation and assessment of spring phenology in North America estimated from remote sensing for 1982 to 2006. *Global Change Biology*, doi: 10.1111/j.1365-2486.2009.01910.x.
- Kimball, J.S.**, L.A. Jones, K. Zhang, F.A. Heinsch, K.C. McDonald, and W.C. Oechel, 2009. A satellite approach to estimate land-atmosphere CO<sub>2</sub> exchange for Boreal and Arctic biomes using MODIS and AMSR-E. *IEEE Transactions on Geoscience and Remote Sensing*, 47(2), 569-587, 10.1109/TGRS.2008.2003248.
- Zhang, K., **J.S. Kimball**, E.H. Hogg, M. Zhao, W.C. Oechel, J.J. Cassano and S.W. Running, 2008. Satellite-based model detection of recent climate driven changes in northern high latitude vegetation productivity. *J. Geophys. Res.* 113, G03033, doi:10.1029/2007JG000621.
- McGuire, A.D., J.E. Walsh, **J.S. Kimball**, J.S. Clein, S.E. Euskirchen, S. Drobot, U.C. Herzfeld, J. Maslanik, R.B. Lammers, M.A. Rawlins, C.J. Vörösmarty, T.S. Rupp, W. Wu, and M. Calef, 2008. The Western Arctic Linkage Experiment (WALE): Overview and synthesis. *Earth Interactions* 12(7), 1-13.
- Zhang, K., **J.S. Kimball**, K.C. McDonald, J.J. Cassano, and S.W. Running, 2007. Impacts of large-scale oscillations on pan-Arctic terrestrial net primary production. *Geophysical Research Letters* 34, L21403, doi:10.1029/2007GL031605.
- Bunn, A. G., S. J. Goetz, **J. S. Kimball**, and K. Zhang, 2007. Northern high latitude ecosystems respond to recent climate change. *Eos* 88 (34), 333-335.
- Jones, L.A., **J.S. Kimball**, K.C. McDonald, S.K. Chan, E.G. Njoku, and W.C. Oechel, 2007. Satellite microwave remote sensing of boreal and arctic soil temperatures from AMSR-E. *IEEE Transactions on Geoscience and Remote Sensing* 45(7), 2004-2018.
- Kimball, J.S.**, M. Zhao, A.D. McGuire, F.A. Heinsch, J. Clein, M. Calef, W.M. Jolly, S. Kang, S.E. Euskirchen, K.C. McDonald, and S.W. Running, 2007. Recent climate driven increases in vegetation productivity for the Western Arctic: Evidence of an acceleration of the northern terrestrial carbon cycle. *Earth Interactions* 11, 4, 1-23.
- Sitch, S., A.D. McGuire, **J.S. Kimball**, N. Gedney, J. Gamon, R. Engstrom, A. Wolf, Q. Zhuang, and J. Clein, and K.C. McDonald, 2007. Assessing the carbon balance of circumpolar arctic tundra using remote sensing and process modeling. *Ecological applications* 17(1), 213-234.
- Whited, D.C., M.S. Lorang, M.J. Harner, F.R. Hauer, **J.S. Kimball** and J.A. Stanford, 2007. Climate, Hydrologic disturbance, and succession: Drivers of floodplain pattern. *Ecology* 88 (4), 940-953.
- Zhang, K., **J.S. Kimball**, M. Zhao, W.C. Oechel, J. Cassano, and S.W. Running, 2007. Sensitivity of pan-Arctic terrestrial net primary productivity simulations to daily surface meteorology from

- NCEP/NCAR and ERA-40 Reanalyses. *J. Geophys. Res. - Biogeosciences* 112, G01011, 1-14, doi:10.1029/2006JG000249.
- Euskirchen, E.S., A.D. McGuire, D.W. Kicklighter, Q. Zhuang, J.S. Clein, R.J. Dargaville, D.G. Dye, **J.S. Kimball**, K.C. McDonald, J.M. Melillo, V.E. Romanovsky, and N.V. Smith, 2006. Importance of recent shifts in soil thermal dynamics on growing season length, productivity, and carbon sequestration in terrestrial high-latitude ecosystems. *Global Change Biology* 12, 731-750.
- Frolking, S., T. Milliman, K. McDonald, **J. Kimball**, M. Zhao, and M. Fahnestock, 2006. Evaluation of the SeaWinds scatterometer for regional monitoring of vegetation phenology. *Journal of Geophysical Research* 111, D17302, doi:10.1029/2005JD006588.
- Heinsch, F.A., M. Zhao, S.W. Running, **J.S. Kimball**, R.R. Nemani, et al., 2006. Evaluation of remote sensing based terrestrial productivity from MODIS using regional tower eddy flux network observations. *IEEE Transactions in Geoscience and Remote Sensing* 44(7), 1908-1925.
- Kang, S., **J.S. Kimball**, and S.W. Running, 2006. Simulating effects of fire disturbance and climate change on boreal forest productivity and evapotranspiration. *Science of the Total Environment* 362, 85-102.
- Kimball, J.S.**, K.C. McDonald, and M. Zhao, 2006. Spring thaw and its effect on terrestrial vegetation productivity in the western Arctic observed from satellite microwave and optical remote sensing. *Earth Interactions* 10(21), 1-22.
- Kimball, J.S.**, M. Zhao, K.C. McDonald, and S.W. Running, 2006. Satellite remote sensing of terrestrial net primary production for the pan-Arctic basin and Alaska. *Mitigation and Adaptation Strategies for Global Change* 11, 783-804, DOI: 10.1007/s11027-005-9014-5.
- Frolking S., M. Fahnestock, T. Milliman, K. McDonald, and **J.S. Kimball**, 2005. Interannual variability in North American grassland biomass/productivity detected by SeaWinds scatterometer backscatter. *Geophysical Research Letters*, 32(21), L21409, 10.1029/2005GL024230.
- Kang, S., S.W. Running, M. Zhao, **J.S. Kimball**, and J. Glassy, 2005. Improving continuity of MODIS terrestrial photosynthesis products using an interpolation scheme for cloudy pixels. *International Journal of Remote Sensing* 26(6), 1659-1676.
- Lorang, M.S., D.C. Whited, F.R. Hauer, **J.S. Kimball**, and J.A. Stanford, 2005. Using airborne multispectral imagery to evaluate geomorphic work across floodplains of gravel-bed rivers. *Ecological Applications* 15(4), 1209-1222.
- Rawlins, M.A., K.C. McDonald, S. Frolking, R.B. Lammers, M. Fahnestock, **J.S. Kimball**, and C.J. Vorosmarty, 2005. Remote sensing of snow at the pan-Arctic scale using the SeaWinds scatterometer. *Journal of Hydrology*, 312, 294-311.
- Rodell, M., B.F. Chao, A.Y. Au, **J.S. Kimball**, and K.C. McDonald, 2005. Global biomass variation and its geodynamic effects, 1982-1998. *Earth Interactions*, 9(2), 1-19.
- Entekhabi, D., E. Njoku, P. Houser, M. Spencer, T. Doiron, J. Smith, R. Girard, S. Belair, W. Crow, T. Jackson, Y. Kerr, **J. Kimball**, R. Koster, K. McDonald, P. O'Neill, T. Pultz, S. Running, J.C. Shi, E. Wood, and J. Van Zyl, 2004. The Hydrosphere State (HYDROS) mission concept: An Earth System Pathfinder for global mapping of soil moisture and land freeze/thaw. *Transactions in Geoscience and Remote Sensing* 42, 10, 2184-2195.
- Gamon, J.A., K.F. Huemmrich, J. Chen, D. Fuentes, F.G. Hall, **J.S. Kimball**, S. Goetz, J. Gu, K.C. McDonald, J.R. Miller, M. Moghaddam, D.R. Peddle, A.F. Rahman, J.-L. Roujean, E.A.

- Smith, C.L. Walthall, and P. Zarco-Tejada, 2004. Remote sensing in BOREAS: Lessons learned. *Remote Sensing of Environment* 89(2), 139-162.
- Hanson, P.J., J.S. Amthor, S.D. Wullschleger, K.B. Wilson, R.F. Grant, A. Hartley, D. Hui, E.R. Hunt JR., D.W. Johnson, **J.S. Kimball**, A.W. King, Y. Luo, S.G. McNulty, G. Sun, P.E. Thornton, S.S. Wang, M. Williams, and R.M. Cushman, 2004. Carbon and water cycle simulations for an upland oak forest using 13 stand-level models: Intermodel comparisons and evaluations against independent measurements. *Ecological Monographs* 74(3), 443-489.
- Kang, S., D. Lee, and **J.S. Kimball**, 2004. The effects of spatial aggregation of complex topography on hydro-ecological process simulations within a rugged forest landscape: Development and application of a satellite-based topoclimatic model. *Canadian Journal of Forestry* 34, 519-530.
- Kimball, J.S.**, K.C. McDonald, S. Frohling and S.W. Running. 2004. Radar remote sensing of the spring thaw transition across a boreal landscape. *Remote Sensing of Environment* 89(2), 163-175.
- Kimball, J.S.**, K.C. McDonald, S.W. Running, and S. Frohling, 2004. Satellite radar remote sensing of seasonal growing seasons for boreal and subalpine evergreen forests. *Remote Sensing of Environment* 90, 243-258.
- Kimball, J.S.**, M. Zhao, K.C. McDonald, F.A. Heinsch, and S. Running, 2004. Satellite observations of annual variability in terrestrial carbon cycles and seasonal growing seasons at high northern latitudes. In *Microwave Remote Sensing of the Atmosphere and Environment IV*, G. Skofronick Jackson and S. Uratsuka (Eds.), Proceedings of SPIE – The International Society for Optical Engineering, 5654, 244-254.
- McDonald, K.C., **J.S. Kimball**, E. Njoku, R. Zimmermann, and M. Zhao, 2004. Variability in springtime thaw in the terrestrial high latitudes: Monitoring a major control on the biospheric assimilation of atmospheric CO<sub>2</sub> with spaceborne microwave remote sensing. *Earth Interactions* 8(20), 1-23.
- McDonald, K.C., **J.S. Kimball**, M. Zhao, E. Njoku, R. Zimmermann, and S.W. Running, 2004. Spaceborne microwave remote sensing of seasonal freeze-thaw processes in the terrestrial high latitudes: Relationships with land-atmosphere CO<sub>2</sub> exchange. In *Microwave Remote Sensing of the Atmosphere and Environment IV*, G. Skofronick Jackson and S. Uratsuka (Eds.), Proceedings of SPIE – The International Society for Optical Engineering, 5654, 167-178.
- Turner, D.P., S.V. Ollinger, and **J.S. Kimball**, 2004. Integrating remote sensing and ecosystem process models for landscape- to regional-scale analysis of the carbon cycle. *Bioscience* 54(6), 573-584.
- Kang, S., S. Doh, D. Lee, D. Lee, V.L. Jin, and **J.S. Kimball**, 2003. Topographic and climatic controls on soil respiration in six temperate mixed-hardwood forest slopes, Korea. *Global Change Biology* 9, 1427-1437.
- McDonald, K. C., R. Zimmermann, and **J.S. Kimball**, 2002. Diurnal and spatial variation of xylem dielectric constant as related to microclimate, xylem sap flow, and xylem chemistry in Norway Spruce. *IEEE Transactions in Geoscience and Remote Sensing* 40(9), 2063-2082.
- Whited, D.C., J. A. Stanford and **J.S. Kimball**. 2002. Application of airborne multi-spectral digital imagery to characterize riverine habitat under variable hydrologic flows. *Regulated Rivers Research & Management* 18, 583-594.
- Amthor, J. S., J. Chen, J. Clein, S. Frohling, M. Goulden, R. Grant, **J. Kimball**, A. King, A. McGuire, N. Nikolov, C. Potter, S. Wang, and S. Wofsy, 2001. Boreal forest CO<sub>2</sub> exchange and evapotranspiration predicted by nine ecosystem process models: Inter-model comparisons

- and relationships to field measurements. *Journal of Geophysical Research* 106(D24), 33,623-33,648.
- Kimball, J.S.**, K. McDonald, A.R. Keyser, S. Frohking and S.W. Running, 2001. Application of the NASA Scatterometer (NSCAT) for determining the daily frozen and non-frozen landscape of Alaska. *Remote Sensing of Environment* 75: 113-126.
- Potter, C.S., J.S. Amthor, J.M. Chen, J.S. Clein, S.E. Frohking, R.F. Grant, **J.S. Kimball**, A.W. King, A.D. McGuire, N.T. Nikolov, and S. Wang, 2001. Comparison of boreal ecosystem model sensitivity to variability in climate and forest site parameters, *J. Geophys. Res.* 106(D24), 33,671-33,688.
- Whited, D.C, J.A. Stanford, and **J.S. Kimball**. 2001. Application of airborne multi-spectral digital imagery to characterize riverine habitat. *Proceedings of the 28<sup>th</sup> Congress of the International Association of Theoretical and Applied Limnology* 28:1373-1380.
- Keyser, A.R., **J.S. Kimball**, R.R. Nemani and S.W. Running, 2000. Simulating the effects of climate change on the carbon balance of North American high latitude forests. *Global Change Biology* 6(1): 185-195.
- Kimball, J.S.**, A.R. Keyser, S.W. Running and S.S. Saatchi, 2000. Regional assessment of boreal forest productivity using an ecological process model and remote sensing parameter maps. *Tree Physiology* 20, 761-775.
- Running, S.W., J.B. Way, K. McDonald, **J.S. Kimball**, S. Frohking, and A.R. Keyser, 2000. Radar remote sensing proposed for monitoring freeze-thaw transitions in boreal regions. *Earth in Space* 12(5), 5-9.
- Frohking S., K. McDonald, **J. Kimball**, R. Zimmermann, J.B. Way and S.W. Running, 1999. Using the space-borne NASA Scatterometer (NSCAT) to determine the frozen and thawed seasons of a boreal landscape. *Journal of Geophysical Research* 104(D22), 27,895-27,907.
- Kimball, J.S.**, S.W. Running and S.S. Saatchi, 1999. Sensitivity of boreal forest regional water flux and net primary production simulations to sub-grid scale landcover complexity. *Journal of Geophysical Research* 104(D22), 27,789-27,801.
- Running, S.W., J.B. Way, K. McDonald, **J.S. Kimball**, A.R. Keyser, S. Frohking and R. Zimmermann, 1999. Recent advances in the use of satellite radar data to monitor freeze/thaw transitions in boreal regions. *Eos* 80(19), 213-221.
- Marks, D., **J.S. Kimball**, D. Tingey, T. Link, 1998. The sensitivity of snowmelt processes to climate conditions and forest cover during rain-on-snow: a study of the 1996 Pacific Northwest flood. *Hydrological Processes* 12, 1569-1587.
- Kimball, J.S.**, S.W. Running and R.R. Nemani, 1997. An improved method for estimating surface humidity from daily minimum temperature. *Agricultural and Forest Meteorology* 85, 87-98.
- Kimball, J.S.**, P.E. Thornton, M.A. White and S.W. Running, 1997. Simulating forest productivity and surface-atmosphere carbon exchange in the BOREAS study region. *Tree Physiology* 17, 589-599.
- Kimball, J.S.**, M.A. White and S.W. Running, 1997. BIOME-BGC simulations of BOREAS stand hydrologic processes. *Journal of Geophysical Research* 102(D24), 29,043-29,051.
- Hope, A.S., **J.S. Kimball** and D.A. Stow, 1993. The relationship between tussock tundra spectral reflectance properties and biomass and vegetation composition. *International Journal of Remote Sensing* 14(10), 1861-1874.

### **Book chapters and other publications:**

- Ackerman, S.A., R. Bevilacqua, B. Brune, B. Gail, D. Hartmann, G. Hurtt, L. Jones, B. Gross, **J. Kimball**, L. Ritchie, C.K. Shum, B. Csatho, W. Rose, C. Del Castillo, and C. Yuhas, 2009. NASA Earth Science Senior Review. NASA Earth Science Division, Science Mission Directorate. 91 pp.
- Kimball, J.S.**, 2008. Vegetation phenology. Encyclopedia of Remote Sensing. E.G. Njoku (Ed.), Springer, NY (In press).
- Kimball, J.S.**, 2008. Book review of "Earth Observation of Global Change - The Role of Satellite Remote Sensing in Monitoring the Global Environment", Emilio Chuvieco (Ed.). *Eos* 89, 32, p. 294.
- McDonald, K.C., and **J.S. Kimball**, 2006. Boreal Forests: A lengthening growing season. In: King, M. D., C. L. Parkinson, K. C. Partington, and R. G. Williams (Eds): Our Changing Planet: The View from Space, Cambridge University Press, Cambridge, UK., pp. 86-88.
- McDonald, K.C., B. Chapman, **J.S. Kimball**, and R. Zimmermann, 2006. The tropical rain forest: Threatened powerhouse of the biosphere. In: King, M. D., C. L. Parkinson, K. C. Partington, and R. G. Williams (eds): Our Changing Planet: The View from Space, Cambridge University Press, Cambridge, UK., pp. 162-166.
- McDonald, K.C., and **J.S. Kimball**, 2005. Hydrological application of remote sensing: Freeze-thaw states using both active and passive microwave sensors. Encyclopedia of Hydrological Sciences. Part 5. Remote Sensing. M.G. Anderson and J.J. McDonnell (Eds.), John Wiley & Sons Ltd. DOI: 10.1002/0470848944.hsa059a.
- Running, S.W., and **J.S. Kimball**, 2005. Satellite-based analysis of ecological controls for land-surface evaporation resistance. Encyclopedia of Hydrological Sciences. Part 9, Ecological and Hydrological Interactions. M.G. Anderson and J.J. McDonnell (Eds.), John Wiley & Sons Ltd. DOI: 10.1002/0470848944.hsal10.
- McGuire, A.D., M. Apps, F.S. Chapin III, R. Dargaville, M.D. Flannigan, E.S. Kasischke, D. Kicklighter, **J. Kimball**, W. Kurz, D.J. McCrae, K. McDonald, J. Melillo, R. Myneni, B.J. Stocks, D.L. Verbyla, and Q. Zhuang, 2004. Land cover disturbances and feedbacks to the climate system in Canada and Alaska. Chapter 9 in Land Change Science. G. Gutman, et al., (eds), Springer, 139-161.
- Heeswijk, M.V., **J.S. Kimball** and D. Marks, 1996. Simulation of water available for runoff in clearcut forest openings during rain-on-snow events in the western Cascade Range of Oregon and Washington. Report of the Cooperative Monitoring, Evaluation, and Research Committee of the Washington State Timber/Fish/Wildlife Agreement and the Washington State Department of Natural Resources, USGS Earth Science Information Center.

### **Graduate and Post doctoral students supervised:**

Lucas Jones (MS, DECS; PhD, OBE), Ke Zhang (PhD, OBE); Claudio Meier (PhD, OBE); Bonnie Ellis (PhD, OBE); Michelle Anderson (PhD, OBE); William Kleindl (PhD, DECS); Erin Sexton (PhD, DECS); Erin Grinde (MS, DECS); Matt Jones (MS, DECS); David Mildrexler (MS, DECS); Alisa Keyser (MS, Forestry), Ann Radil (MS, Forestry); Erika Podest (PhD, Univ. of Dundee, Scotland); Faith Ann Heinsch (Postdoc); Sinkyu Kang (Postdoc); Youngwook Kim (Postdoc); Huan Wu (Postdoc); Qiaozhen Mu (Pos doc); Yonghong Yi (Postdoc).

### **Professional affiliations:**

- American Geophysical Union (AGU)
- International Association of Hydrological Sciences (IAHS)
- IEEE Geoscience & Remote Sensing Society

**URL's describing current research:**

<http://www.ntsg.umt.edu>

<http://www.umt.edu/flbs>