

Keith T. Weber, GISP

Curriculum Vitae

GIS Director
Idaho State University
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Professional Expertise

Spatial analysis of land cover change and its drivers within semiarid environments using multispectral satellite imagery and GIS

Education

The University of Montana (1994-1996) MS Wildlife Biology
Thesis title: Identifying Landscape Elements in Relation to Elk Kill Sites in Western Montana

University of Wisconsin- Green Bay (1991-1993). BS Environmental Science: Field Biology and Ecology

University of Wisconsin- Marinette (1989-1991). AAS.

Employment Record

GIS Director and founder, GIS Training and Research Center, Idaho State University	1998-present
Research Analyst, Texas Parks and Wildlife Department	1996-1998

Honors and Awards

Recipient URISA Exemplary Systems in Government- Enterprise systems (2014)
Recipient Friend of the Society Award, Idaho Professional Land Surveyors (2014)
Recipient of ESRI's Special Achievement in GIS award (2013)
Excellence in GIS from Northern Rockies URISA (2013)
Certified GIS professional (URISA-GISCi) (2004) (re-certified in 2009 and 2014)
Recipient, Letter of Recognition from Idaho Governor, Dirk Kempthorne (2003)
Recipient of ESRI's Special Achievement in GIS award (2000)

Administrative Experience

<u>GIS Director, Idaho State University</u> Responsibilities: Provide vision and direction for geospatial education and research at ISU. Coordinate and oversee a comprehensive program of education and research using GIS and related technologies for ISU. Serve as a resource both inside and outside ISU for those using or learning GIS.	1998-present
<u>Team Leader, GIS Training and Research Center, Idaho State University</u> Responsibilities: Pursue and secure extramural funding to support an active research program at ISU's GIS Training and Research Center. Develop and maintain a robust cyberinfrastructure (network, hardware, and software) to support GIS research and education.	1998-present
<u>Chair, Geospatial Coordinating Committee, Idaho State University</u> Responsibilities: The roles of the GsCC are to coordinate geospatial academic programs, coordinate and promote geospatial research collaboration, and assess the status of ISU's geospatial infrastructure relative to that required to achieve it's education and research roles.	2007-present
<u>Vice President, Intermountain chapter of ASPRS</u> Responsibilities: Participate in chapter events and planning activities including preparation for the 2012 Annual Meetings in Sacramento, CA	2011-2013
<u>President, Northern Rockies Chapter of URISA</u> Responsibilities: Actively lead the chapter toward satisfying its mission to provide an objective educational forum, foster the exchange of ideas, and promote professional interaction and the advancement of its members.	2002-2003

Research Experience

Spatial analysis of land cover change in semiarid environments using multispectral satellite imagery and GIS to understand change and the factors that drive them.

External Funding Record (n = 30 totaling over \$9 M)

\$95,000 NASA: Evaluating the Socioeconomic Impacts of Rapid Assembly and Deployment of Geospatial Data in Wildfire Emergency Response Planning **(PI)** 2016

\$250,000 Idaho Higher Education Research Council, research data center infrastructure **(PI)** 2015

\$50,000 ISU GIS Student Engagement Centers **(PI)** (2015)

\$175,000 Idaho Transportation Dept, Geodetic Coordination **(PI)** (2015-2020)

\$800,000 NASA: Rehabilitation Capability Convergence for Ecosystem Recovery: Phase 2 **(PI)** (2014-2017)

\$7,255 US Military/Idaho National Guard Land Cover Change detection **(PI)** (2014-2015)

\$33,700 Statewide Integration of CI-Visualization for EPSCoR MILES (Co-PI) (2014-2015)

\$48,204 Citizen Enabled Geospatial Inquiry (CEGI) (Co-PI) (2014-2015)

\$54,190 SCOPE: Spatial and Census data to Evaluate Obese Persons and their Environment (Co-PI) (2013-2014)

\$178,000 NASA: Rehabilitation Capability Convergence for Ecosystem Recovery **(PI)** (2012-2013)

\$40,000: FGDC CAP multi-state geodetic control planning **(PI)** (2011-2012)

\$30,000: Idaho imagery consortium NAIP imagery services **(PI)** (2010-2013)

\$135,000: NASA: Assessing Post-Fire Recovery of Sagebrush-Steppe Rangelands **(PI)** (2008-2011)

\$60,000: City of Pocatello: Street Centerline project **(PI)** (2008-2012)

\$1,000,000: NASA: Forecasting Rangeland Condition with GIS in Southeastern Idaho **(PI)** (2005-2010)

\$500,000: NASA: Comparing Effects Of Management Practices on Rangeland Health with Geospatial Technologies **(PI)** (2007-2009)

\$1,500,000: NASA: Impact of Temporal Land Cover Changes in Southeast Idaho Rangelands **(PI)** (2004-2008)

\$500,000: NOAA: Idaho State University-Boise Center Aerospace Laboratory (Co-PI) (2004-2007)

\$160,000: Joint-funded project: Selenium Information System Program **(PI)** (2003-2011)

\$1,500,000: NASA: Detection, Prediction, Impact, and Management of Invasive Plants using GIS **(PI)** (2002-2005)

\$800,000: NASA: BAA, Development and Implementation of Remote Sensing Techniques to Monitor Invasive Plant Species in the State of Idaho (Co-PI) (2002-2005)

\$500,000: NASA: Wildfire Effects on Rangeland Ecosystems and Livestock Grazing in Idaho **(PI)** (2001-2003)

\$200,000: USDI BLM: Wildland-Urban Interface Fire Susceptibility modeling **(PI)**(2000-2010)

\$210,000: DOE INEEL: Temporal Land Cover Change in southeast Idaho and Greater Yellowstone Ecosystem **(PI)** (1998-2002)

\$119,000: National Science Foundation: Major Research Instrumentation Grant **(PI)** (1998-2001)

In addition, numerous other smaller grants and contracts were received totaling more than \$380,000

Publications (n = 43) (one additional manuscripts in preparation)

Nies, M. A., **K. T. Weber**, J. Holmes, T. Peterson, K. Serr, J. Arias, W. Lim, and R. Force. 2015. Spatial and Census Data to Evaluate Obese Persons and their Environment (SCOPE). American Journal of Health Behavior.

Webber, B. L., **K. T. Weber**, P. E. Clark, C. A. Moffet, D. P. Ames, J. B. Taylor, D. E. Johnson, and J. G. Kie. 2015. Movement of Domestic Sheep in the Presence of Livestock Guardian Dogs. Sheep and Goat Research Journal.

Carroll, M. L., J. L. Schnase, **K. T. Weber**, M. E. Brown, R. L. Gill, M. Wooten, J. May, K. Serr, E. Smith, R. Goldsby, K. Newtoff, C. Doyle, E. Volker, and S. Weber. 2014. RECOVER An Automated Decision Support System for Post-fire Rehabilitation Planning, ISPRS PECORA transactions.

Carroll, M. L., J. L. Schnase, **K. T. Weber**, M. E. Brown, R. L. Gill, G. W. Haskett, and T. A. Gardner. 2013. A new application to facilitate post-fire recovery and rehabilitation in Savanna ecosystems. IEEE earthzine.

Weber, K. T., F. Chen, D. T. Booth, M. Raza, K. Serr, and B. Gokhale. 2013. Comparing Two Ground-Cover Measurement Methodologies for Semiarid Rangelands. Rangeland Ecology and Management. 66

- Chen, F., **K. T. Weber**, and J. L. Schnase. 2012. Assessing the success of Postfire Reseeding in Semiarid Rangelands Using Terra MODIS. *Rangeland Ecology and Management* 65:468-474.
- Weber, K. T.** and S. Horst. 2011. Desertification and Livestock Grazing: The Roles of Sedentization, Mobility, and Rest. *Pastoralism: Research, Policy, and Practice*. 1:19 doi:10.1186/2041-7136-1-19
- Chen, F., **K. T. Weber**, J. Anderson, and B. Gokhale. 2011. Assessing the susceptibility of semiarid rangelands to wildfires using Terra MODIS and Landsat Thematic Mapper data. *Int. J. of Wildland Fire* 20:690-701 (*IF = 1.4*)
- Chen, F., **K. T. Weber**, and B. Gokhale. 2011. Herbaceous Biomass Estimation from SPOT 5 Imagery in Semiarid Rangelands of Idaho. *GIScience and Remote Sensing* 48(2):195-209 (*IF = 0.7*)
- Anderson, J. H., **K. T. Weber**, B. Gokhale, and F. Chen. 2011. Intercalibration and Evaluation of ResourceSat-1 and Landsat-5 NDVI. *Canadian Journal of Remote Sensing*. 37(2):213-219 (*IF = 1.3*)
- Weber, K. T.** and B.S. Gokhale. 2011. Effect of Grazing on soil-water content in semiarid rangelands of southeast Idaho. *Journal of Arid Environments*. 75:464-470 (*IF = 1.6*)
- Raza, M., **K. T. Weber**, S. Mannel, D. P. Ames, and R. E. Patillo. 2011. Geospatial Analysis of Tree Root Damage to Sidewalks in Southeastern Idaho. *The URISA Journal*. 23(1):21-32.
- Sankey, T. T., Sankey, J., **K. T. Weber**, and C. Montagne. 2010. Changes in pastoral land use and their effects on rangeland vegetation indices. Pages 105-118 in J. Dierkes (Ed.), *Mongolians Interactions with each other and with Natural Resources*.
- Weber, K. T.**, T. T. Sankey, and J. Theau. 2010. Local-scale Validation of the Surface Observation Gridding System with *in situ* weather observations in a semiarid environment. *Int. J. of Remote Sensing*. 31(16):4411-4422 (*IF = 1.0*)
- Weber, K. T.**, and F. Chen. 2010. Detection Thresholds for Rare, Spectrally Unique Targets within Semiarid Rangelands. *PE & RS*, 76(11):1253-1259 (*IF = 1.8*)
- Chen, F., **K. T. Weber**, J. Anderson, and B. Gokhale. 2010. Comparison of MODIS fPAR Products with Landsat-5 TM-Derived fPAR over Semiarid Rangelands of Idaho. *GIScience and Remote Sensing* 47(3):360-378. (*IF = 0.7*)
- Theau, J., T. T. Sankey, and **K. T. Weber**. 2010. Multi-sensor Analyses of Vegetation Indices in a Semiarid Environment. *GIScience and Remote Sensing*. 47(2): 260-275. (*IF = 0.7*)
- Weber, K. T.**, C. L. Alados, C. G. Bueno, B. Gokhale, B. Komac, and Y. Pueyo. 2009. Modeling Bare Ground with Classification Trees in Northern Spain. *Rangeland Ecology and Management* 62:452-459 (*IF = 1.1*)
- Theau, J., T. T. Sankey, **K. T. Weber**, S. Ahmed, and J. Tibbitts. 2009. Effect of Spatial Resolution on Remotely-Sensed Rangeland Vegetation Indices. Page 678 in *Proceedings of the VIII International Rangeland Congress: Multifunctional Grasslands in a Changing World*. Volume 1, 925 pp.
- Tibbitts, J., **K. T. Weber**, J. Theau, and T. T. Sankey. 2009. Rangeland Sustainability modeling using Soil Exposure and Soil Moisture Parameters. Page 679 in *Proceedings of the VIII International Rangeland Congress: Multifunctional Grasslands in a Changing World*. Volume 1, 925 pp.
- Norton, J., N. Glenn, M. Germino, **K. T. Weber**, and S. Seefeldt. 2009. Relative Suitability of Indices Derived from Landsat ETM+ and SPOT 5 for Detecting Fire Severity in Sagebrush-Steppe. *International Journal of Applied Earth Observation and Geoinformation*. 11(5):360-367 (*IF = 1.9*)
- Sankey, T. S., J. B. Sankey, **K. T. Weber**, and C. Montagne. 2009. Geospatial assessment of grazing regime shifts and socio-political changes in a Mongolian rangeland. *Rangeland Ecology and Management*. 62(6):522-530 (*IF = 1.1*)
- Weber, K. T.**, S. Seefeldt, and C. Moffet. 2009. Fire Severity Model Accuracy Using Short-Term, Rapid Assessment versus Long-Term, Anniversary Date Assessment. *GIScience and Remote Sensing*. 46(1):24-38 (*IF = 0.7*)
- Weber, K. T.**, S. Seefeldt, C. Moffet, and J. Norton. 2008. Comparing Fire Severity Models from Post-Fire and Pre/Post-Fire Differenced Imagery. *GIS Science and Remote Sensing* 45(4):392-405 (*IF = 0.7*)
- Sankey, T. S., C. F. Moffet, and **K. T. Weber**. 2008. Post-Fire Recovery of Sagebrush Communities: Assessment Using SPOT-5 and Very Large-Scale Imagery. *Rangeland Ecology and Management*. 61:598-604 (*IF = 1.1*)
- Weber, K. T.**, S. S. Seefeldt, J. M. Norton, C. F. Finley. 2008. Fire Severity Modeling of Sagebrush Steppe Rangelands in Southeastern Idaho. *GIScience and Remote Sensing*. 45(1):68-82 (*IF = 0.7*)
- Weber, K. T.**, J. Theau, and K. Serr. 2008. Effect of Co-registration Error on Patchy Target Detection using High-resolution Imagery. *Remote Sensing of the Environment*. 112(3):845-850 (*IF = 3.9*)
- Weber, K. T.**, and J. Langille. 2007. Improving Classification Accuracy Assessments with Statistical Bootstrap Resampling Techniques. *GIS Science and Remote Sensing*. 44(3):1-14 (*IF = 0.7*)
- Serr, K., T. Windholz, and **K. T. Weber**, 2006. Comparing GPS Receivers: A Field Study. *URISA Journal* 18(2):19-23 (*IF = n/a*)
- Mundt, J. T., Glenn, N. F., **K. T. Weber**, and J. A. Pettingill. 2006. Determining Target Detection Limits and Accuracy Delineation using an Incremental Technique. *Remote Sensing of the Environment*. 105(2006): 34-40 (*IF = 3.9*)

- Ercanoglu, M., **K. T. Weber**, Langille, J. M., and R. Neves. 2006. Modeling Wildland Fire Susceptibility Using Fuzzy Systems. *GIScience and Remote Sensing* 43(3):268-282 (*IF* = 0.7)
- Weber, K. T.** 2006. Challenges of Integrating Geospatial Technologies into Rangeland Research and Management. *Rangeland Ecology and Management*. 59(1):38-43 (*IF* = 1.6)
- Glenn, N. F., J. T. Mundt, **K. T. Weber**, T. S. Prather, L. W. Lass, and Jeffrey Pettingill. 2005. Hyperspectral Data Processing for Repeat Detection of Small Infestations of Leafy Spurge. *Remote Sensing of Environment*. 95: 399-412 (*IF* = 3.9)
- Mundt, J. T., N. F. Glenn, **K. T. Weber**, T. S. Prather, L. W. Lass, and J. Pettingill. 2005. Discrimination of hoary cress and determination of its detection limits via hyperspectral image processing and accuracy assessment techniques. *Remote Sensing of the Environment*. 96(4):509-517 (*IF* = 3.9)
- Lass L., Prather, T., Glenn, N., **K. T. Weber**, Mundt, J., Pettingill, J., 2005. A Review of Remote Sensing of Invasive Weeds and Example of the Early Detection of Spotted Knapweed and Babysbreath with a Hyperspectral Sensor. *Weed Science*.53:242-251 (*IF* = 1.6)
- Weber, K. T.**, J. B. McMahan, and G. P. Russell. 2004. Effect of Livestock Grazing and Fire History on Fuel Load In Sagebrush-Steppe Rangelands. *Intermountain Journal of Sciences*. 10(1-4):1-7 (*IF* = *n/a*)
- Weber, K. T.** and G. Russell. 2003 Modeling Lightning as an Ignition Source of Rangeland Wildfire in Southeastern Idaho. *African Journal of Range and Forage Science*, 20(2): 126 (*IF* = *n/a*)
- Sauder, J., J. B. McMahan, and **K. T. Weber**, 2003. Fuzzy Classification of Heterogeneous Vegetation in a Complex Arid Ecosystem. *African Journal of Range and Forage Science*, 20(2):127 (*IF* = *n/a*)
- McMahan, J. B., **K. T. Weber**, and J. D. Sauder, 2002. Using Remotely Sensed Data in Urban Sprawl and Green Space Analyses. *Intermountain Journal of Sciences*, 8(1): 30-37 (*IF* = *n/a*)
- Weber, K. T.** 2001. A Method to Incorporate Phenology into Land Cover Change Analysis. *Journal of Range Management* 54(2):202-203 (*IF* = 1.1)
- Weber, K. T.**, Burcham M., and C. L. Marcum. 2001. Assessing Independence of Animal Locations with Association Matrices. *Journal of Range Management* 54(1):21-24 (*IF* = 1.1)
- Weber, K. T.**, C. L. Marcum, M. G. Burcham, and L. J. Lyon. 2000. Landscape influences on elk vulnerability to hunting. *Intermountain Journal of Science*, 6(2):86-94 (*IF* = *n/a*)
- Weber, K. T.** 1994. Analysis of Black Bear Habitat in Northeastern Wisconsin. *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*. 82:109-119. Note: published as an undergraduate at the University of Wisconsin (*IF* = *n/a*)

Professional Service and Affiliations

National

- National Science Foundation CyberInfrastructure Campus Champion for ISU (2010-present)
- GISci Oversight Committee (2006-present)
- American Society for Photogrammetry and Remote Sensing (member 1998-present)

State

- Northern Rockies Chapter of URISA, member and past-President
- Idaho Geospatial Council- Executive Committee standing member
- Idaho Geodetic Control Technical Working Group, chair
 - Following completion of an FGDC grant to develop a plan for a coordinated, multistate geodetic control point database (MCPD) and real-time network, pursue the implementation of these initiatives. The MCPD was completed in 2012 and the RTN should be deployed by 2014.
- Idaho Land Use/Land Cover Technical Working Group, past-chair
 - Lead author: **Idaho Land Cover Dataset Standard** (approved August 25, 2011)
- Idaho Imagery Technical Working Group, member

Idaho State University

- Geospatial Coordinating Committee (chair, 2008-present)
- Technology Oversight Committee (member, 1999-2005)
- GIS Oversight Committee (1998-2008)

Teaching Experience

Information Technology for GIS

- An undergraduate- and graduate-level course focusing on servers, networks, security, object-relational databases and
 - Previously taught Principles of GIS, Advanced GIS, Geotechnologies Seminar, and GIS Programming*

Geospatial Workshops

- Routinely taught a large number and variety of full-day and half-day workshop for the GIS community of Idaho and the Intermountain region (approximately 15 per year). Topics typically focus upon Esri's ArcGIS but also included fundamental concepts of uncertainty/error and projections/coordinate systems. In addition, taught workshops focusing on remote sensing and image analysis.