

Jason Paul Field

University of Arizona
School of Natural Resources and the Environment
1311 E 4th Street, Tucson, AZ 85721
Phone: 520-626-7131
jpfield@email.arizona.edu

Education

Ph.D., Natural Resources. *Minor-Global Change.* Dec. 2009. SCHOOL OF NATURAL RESOURCES AND THE ENVIRONMENT, THE UNIVERSITY OF ARIZONA. GPA 4.00.
Dissertation: *Differential response of wind and water erosion under climatic extremes and alternate land management practices.*
Advisor: Dr. David D. Breshears, Professor

M.S., Soil, Water & Environmental Science. Dec. 2003. DEPARTMENT OF SOIL, WATER AND ENVIRONMENTAL SCIENCE, THE UNIVERSITY OF ARIZONA. GPA 4.00.
Thesis: *Comparative effectiveness of conventional trenches and seepage pits for treatment of septic tank effluent.*
Advisor: Dr. James L. Walworth, Professor

B.S., Environmental Science. *Minor-Chemistry.* Dec. 2000. ARTHUR TEMPLE COLLEGE OF FORESTRY AND AGRICULTURE, STEPHEN F. AUSTIN STATE UNIVERSITY. GPA 3.91.
Undergraduate Thesis: *Sediment and nutrient fluxes following herbicide, prescribed fire and mechanical site preparation in loblolly pine forests.*
Advisor: Dr. Kenneth W. Farrish, Professor

Research Experience

- Fall 2011** **Adjunct Instructor**, School of Natural Resources and the Environment, The University of Arizona.
- 2010 –** **Research Specialist**, Department of Atmospheric Sciences; School of Natural Resources and the Environment, The University of Arizona.
- 2008 – 2009** **Graduate Research Associate**, School of Natural Resources and the Environment, The University of Arizona
- 2005 – 2008** **USDA CSREES Ecohydrology Fellow**, School of Natural Resources and the Environment, The University of Arizona
- 2002 – 2004** **Soil Conservationist**, USDA Natural Resources Conservation Service
- 2001 – 2005** **Graduate Research Assistant**, Department of Soil, Water & Environmental Science, The University of Arizona
- 1999 – 2001** **Undergraduate Research Assistant**, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University

Professional Leadership and Contributions

Principal Organizer for the Ecological Society of America Organized Oral Session: *Ecohydrological consequences of aeolian processes: Local- to global-scale perspectives*. Ecological Society of America 93rd Annual Meeting, 3-8 August 2008. Milwaukee, Wisconsin.

See resultant publication: Field et al. (2010) in *Frontiers in Ecology and the Environment*.

Peer-reviewer for leading scientific journals: *Nature Geoscience* – *Global Change Biology* – *Journal of Geophysical Research-Biogeosciences* – *Ecological Applications* – *Oecologia* – *Earth Surface Processes and Landforms* – *Aeolian Research* – *Journal of Hydrology* – *Journal of Arid Environments* – *Surveys in Geophysics* – *Pedosphere* – *Chemosphere* – *Transactions of the American Society of Agricultural and Biological Engineers* – *Land Degradation and Development* – *Journal of Ecology and the Natural Environment* – *Surveys in Geophysics*

Guest Lecturer for AFE Field Trip: *Desert grasslands and savannahs on the Santa Rita Experimental Range*. Association of Fire Ecology Regional Conference, 28-31 January 2008. Tucson, Arizona.

Honors and Awards

- 2010** *Outstanding Doctoral Student Scholarly Achievement Award*, School of Natural Resources and the Environment, The University of Arizona.
- 2009 Spring** *Institute for the Study of Planet Earth Travel Award*, The University of Arizona.
- 2008 Fall** *Institute for the Study of Planet Earth Travel Award*, The University of Arizona.
- 2006 – 2007** *The National Dean's List*, Educational Communications, Inc.
- 2006 Spring** *Institute for the Study of Planet Earth Travel Award*, The University of Arizona.
- 2006** *ICAR VI Travel Grant*, International Conference on Aeolian Research.
- 2004** *Meritorious Teaching Award*, College of Agriculture and Life Sciences, The University of Arizona. First student in department to receive this award.
- 2003 – 2004** *The Chancellor's List*, Educational Communications, Inc.
- 2003** *Exceptional Service Award*, USDA Natural Resources Conservation Service.
- 2003** *Outstanding Assistance Award*, Aspen Emergency Watershed Protection Project, USDA Natural Resources Conservation Service.

Professional Affiliations

American Geophysical Union
Ecological Society of America
International Society for Aeolian Research
Soil Science Society of America
Soil and Water Conservation Society

Research Focus

My research integrates across traditional disciplines of ecology, hydrology and geomorphology to gain new insight into the relative importance and potential interactions between physical and biological surficial processes, particularly wind and water erosion and transport, in the context of ecosystem biogeochemistry, vegetation dynamics, land management and climate variability.

Peer-reviewed Publications

Breshears, D.D., T.B. Kirchner, J.J. Whicker, **J.P. Field**, C.D. Allen. Modeling aeolian transport in response to succession, disturbance and future climate: Long-term risk assessment for contaminant redistribution. *Aeolian Research*, (in press).

Ravi, S., P. D'Odorico, D.D. Breshears, **J.P. Field**, A. Goudie, T.E. Huxman, J. Li, G.S. Okin, R. Swap, A. Thomas, R.S. van Pelt, J.J. Whicker, T. Zobeck. 2011. Aeolian processes and the biosphere: Interactions and feedback loops. *Reviews of Geophysics*, 49, RG3001.

Field, J. P., D.D. Breshears, J.J. Whicker, and C.B. Zou. 2011. Interactive effects of grazing and burning on wind- and water-driven sediment fluxes: Rangeland management implications. *Ecological Applications*, 21(1): 189-199.

Field, J. P., D.D. Breshears, J.J. Whicker, and C.B. Zou. 2011. Conserving soil under global-change-type extreme events: On the ratio of wind-to-water-driven sediment fluxes. *Journal of Soil and Water Conservation*, 66(2): 51A-56A.

Field, J.P., J. Belnap, D.D. Breshears, J.C. Neff, G.S. Okin, J.J. Whicker, T.H. Painter, S. Ravi, M.C. Reheis, R.L. Reynolds. 2010. The ecology of dust. *Frontiers in Ecology and the Environment*, 8(8): 423–430.

- **Media coverage:** (1) *Dust: Tiny particles with a big impact*. R. S. Boyd. Dec. 30, 2009. Covered in > 25 media outlets; (2) Interview with Amber Sullins, KNXV-TV ABC Phoenix. Jan. 19, 2010; (3) Interview with Dennis Lambert, KJZZ NPR Phoenix, *The Nitty-Gritty Of Dust*. Feb. 22, 2010.

Field, J.P., D.D. Breshears, J.J. Whicker. 2009. Toward a more holistic perspective of soil erosion: Why aeolian research needs to explicitly consider fluvial processes and interactions. *Aeolian Research*, 1(1-2): 9–17.

Breshears, D.D., J.J. Whicker, C.B. Zou, **J.P. Field**, C.D. Allen. 2009. A conceptual framework for dryland aeolian sediment transport along the grassland-forest continuum: Effects of woody plant canopy cover and disturbance. *Geomorphology*, 105(1-2): 28–38.

Field, J.P., K.L. Farrell-Poe, J.L. Walworth. 2007. Comparative treatment effectiveness of conventional trench and seepage pit systems. *Water Environment Research*, 79(3): 310–319.

Field, J.P., K.W. Farrish, B.P. Oswald, M.T. Romig, E.A. Carter. 2005. Forestry site preparation effects on soil and nutrient losses in east Texas. *Transactions of the ASABE*, 48(2): 861–869.

Field, J.P., K.W. Farrish, E.A. Carter. 2003. Soil and nutrient losses following site preparation burning in a harvested loblolly pine site. *Transactions of the ASABE*, 46(6): 1697–1703.

Manuscripts in Review

Field, J.P., D.D. Breshears, J.J. Whicker, C.B. Zou. Dust amplification and capture among vegetation patch types: Support for underlying desertification assumptions. *Journal of Geophysical Research - Biosciences*.

Belnap, J., S.M. Munson, **J. P. Field**. Aeolian and fluvial processes in dryland regions: the need for integrated studies. *Ecohydrology Bearings - Invited commentary. Ecohydrology*.

Peer-reviewed Proceedings

Field, J.P., K.L. Farrell-Poe, J.L. Walworth. 2003. Comparative effectiveness of trenches and seepage pits for microbial treatment of septic tank effluent in Arizona. *In National Onsite Wastewater Recycling Association 12th Annual Conference and Exposition Proceedings*, 3-6 November, Franklin, TN. p. 259–272.

Field, J.P., K.L. Farrell-Poe, J.L. Walworth. 2002. Seepage pit effectiveness for treatment of septic tank effluent in Arizona. *In National Onsite Wastewater Recycling Association 11th Annual Conference and Exposition Proceedings*, Kansas City, MO. 18-21 September 2002. p. 263–274.

Field, J.P., K.W. Farrish, E.A. Carter. 2000. Soil and nutrient losses following site preparation burning. Presented at American Society of Agricultural Engineers Annual International Conference, Milwaukee, WI. 9-12 July 2000. Paper No. 005017.

Competitive Funding and Awards

- 2005 – 2008** **Ecohydrology Fellowship**, \$69,000. USDA Cooperative State Research, Education and Extension Service. *Principal Investigator*: Dr. David D. Breshears.
- 2006** **Best Graduate Student Poster**, \$500. Global Change Graduate Interdisciplinary Program, University of Arizona.
- 2005 – 2006** **Earth Fellowship**, \$5,000. Institute for the study of Planet Earth, University of Arizona.
- 2005 – 2006** **Best Graduate Student Technical Paper**, \$800. Grand Canyon Section of the Air and Waste Management Association.
- 2003 – 2005** **Research Grant**, \$40,000. Implementation of Best Management Practices to reduce non-point source pollutants to ground water and surface water from agricultural sources. Pima Natural Resource Conservation District. *Principal Investigator*: Dr. James L. Walworth.
- 2000 – 2001** **Research Grant**, \$10,000. Soil and nutrient losses following chemical herbicide, prescribed fire, and mechanical site preparation treatments in loblolly pine forests. Biological/Engineering System and Technologies for Ecosystem Management Unit, USDA Forest Service. *Principal Investigator*: Dr. Kenneth W. Farrish.

Teaching Experience

- 2008 – 2010** **Co-Instructor** for RNR 200: *Foundations in Natural Resources History and Policy*. School of Natural Resources and the Environment, University of Arizona. Class size: 60 students.
- 2008 – 2010** **Guest Lecturer** for WSM 452/552: *Dryland Ecohydrology & Vegetation Dynamics*, School of Natural Resources and the Environment, University of Arizona. Class size: 20 students. *Lectures taught*: 9.
- 2008 Spring** **Teaching Assistant** for NATS 101: *Introduction to Global Change*, Department of Hydrology and Water Resources, University of Arizona. Class size: 150 students. *Instructor*: Dr. Steven W. Leavitt.
- 2007 Fall** **Co-Instructor** for RNR 200: *Foundations in Natural Resources History and Policy*. School of Natural Resources and the Environment, University of Arizona. Class size: 60 students. *Instructor*: Dr. Steven R. Archer.
- 2006 Fall** **Teaching Assistant** for WSM 452/552: *Dryland Ecohydrology & Vegetation Dynamics*, School of Natural Resources and the Environment, University of Arizona. Class size: 20 students. *Instructor*: Dr. David D. Breshears.
- 2006 Spring** **Teaching Assistant** for NATS 101: *Introduction to Global Change*, Department of Hydrology and Water Resources, University of Arizona. Class size: 150 students. *Instructor*: Dr. Steven W. Leavitt.
- 2004 – 2005** ***Instructor** for SWES 201: *Soil Science Laboratory*, Department of Soil, Water and Environmental Science, University of Arizona. Class size: 30 students. *Classes taught*: 4.
- 2002 Fall** **Guest Lecturer** for SWES 200: *Introduction to Soils*, Department of Soil, Water and Environmental Science, University of Arizona. Class size: 75 students. *Lectures taught*: 6.
- 2001 – 2003** ***Instructor** for NATS 101: *Introduction to Environmental Science Laboratory*, Department of Soil, Water and Environmental Science, University of Arizona. Class size: 30 students. *Classes taught*: 7.
- 2001 Spring** **Guest Lecturer** for SOIL 201: *Forest Soils Laboratory*, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University. Class size: 30 students. *Lectures taught*: 4.
- 2000 – 2001** **Teaching Assistant** for CHE 133 & 134: *General Chemistry Lab I & II*, Department of Chemistry; Stephen F. Austin State University. Class size: 30 students. *Instructor*: Dr. Paul B. Steinbach.

*Courses considered for *Meritorious Teaching Award* – See Honors and Awards.

Invited and Symposium Presentations

Field, J.P., D.D. Breshears, and J.J. Whicker. *Biophysical drivers of erosion and aeolian transport in semiarid grasslands: Consequences of prescribed fire, livestock grazing and climate variability*. American Geophysical Union Fall Meeting. 13-17 December 2010. San Francisco, California.

Field, J.P., D.D. Breshears, J.J. Whicker, and C.B. Zou. *Wind and water sediment transport under climate extremes and land management practices*. Seventh Annual Research Insights in Semiarid Ecosystems (RISE) Symposium. 2 October 2010. Tucson, Arizona.

Field, J.P., D.D. Breshears, J.J. Whicker, C.B. Zou and C.D. Allen. *Wind erosion and dust flux from plot to landscape scale: Effects of fire and grazing*. Ecological Society of America 93rd Annual Meeting. 3-8 August 2008. Milwaukee, Wisconsin.

Field, J.P., D.D. Breshears, J.J. Whicker, C.B. Zou, C.D. Allen. *Wind erosion and dust flux along the grassland-forest continuum: Effects of disturbance and woody plant cover*. Joint Meeting of the Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America. 5-9 October 2008. Houston, Texas.

Breshears D.D., J.J. Whicker, **J.P. Field**, C.B. Zou, J.E. Pinder III, C.D. Allen and M.P. Johansen. *Wind- and water-driven transport and erosion: Insights from along the grassland-forest continuum*. Texas Christian University. 28 February 2007. Fort Worth, Texas.

Contributed Oral Presentations

Field, J.P., D.D. Breshears, C.B. Zou, and J.J. Whicker. *Wind and water erosion under global-change-type conditions and alternate land management practices*. Ecological Society of America 94th Annual Meeting. 2-7 August 2009. Albuquerque, New Mexico.

Field, J.P., D.D. Breshears, C.B. Zou and J.J. Whicker. *Simultaneous measurements of wind and water erosion and transport: Applications for soil and water conservation*. Soil and Water Conservation Society. Annual Meeting. 26-30 July 2008. Tucson, Arizona.

Zou C.B., D.D. Breshears, J.J. Whicker and **J.P. Field**. 2008. *Effects of woody plant canopy cover on dryland aeolian sediment transport*. Soil and Water Conservation Society. Annual Meeting. 26-30 July 2008. Tucson, Arizona.

Field, J.P., D.D. Breshears, J.J. Whicker, C.B. Zou and C.D. Allen. *Sediment transport and dust flux in disturbed and undisturbed dryland ecosystems: From site specific estimates to trends across gradients of woody plant cover*. American Geophysical Union Fall Meeting. 10-14 December 2007. San Francisco, California.

Breshears D.D., J.J. Whicker, C.B. Zou, **J.P. Field** and C.D. Allen. *Wind erosion and dust flux in undisturbed and disturbed dryland ecosystem along the grassland-forest continuum: A conceptual framework spanning gradients of woody plants*. Ecological Society of America and Society for Ecological Restoration Joint Meeting. 5-10 August 2007. San Jose, California.

Contributed Oral Presentations (*continued*)

Breshears D.D., **J.P. Field**, C.B. Zou and J.J. Whicker. *Wind and water erosion under alternate land uses: Insights from ongoing research at the Santa Rita Experimental Range*. Third Annual Research Insights in Semiarid Ecosystems Symposium. 7 October 2006. Tucson, Arizona.

Field, J.P., D.D. Breshears, C.B. Zou and J.J. Whicker. *Resource redistribution by wind and water erosion in semiarid grassland*. Ecological Society of America 91st Annual Meeting. 6-11 August 2006. Memphis, Tennessee.

Field, J.P., K.L. Farrell-Poe and J.L. Walworth. *Comparative effectiveness of trenches and seepage pits for microbial treatment of septic tank effluent*. National Onsite Wastewater Recycling Association 12th Annual Conference and Exposition. 3-6 November 2003. Franklin, Tennessee.

Field, J.P., K.L. Farrell-Poe and J.L. Walworth. *Conventional drainfield and seepage pit efficiency for treatment and dispersal of domestic wastewater*. University of Arizona National Science Foundation Water Quality Center Bi-Annual Spring Meeting. 12-13 May 2003. Tucson, Arizona.

Field, J.P., K.L. Farrell-Poe and J.L. Walworth. *Seepage pit effectiveness for treatment of septic tank effluent in Arizona*. National Onsite Wastewater Recycling Association 11th Annual Conference and Exposition. 18-21 September 2002. Kansas City, Missouri.

Farrell-Poe, K.L., **J.P. Field** and J.L. Walworth. *Seepage pit soil quality status report*. Southwest On-Site Wastewater Management Conference and Exhibit. 6-7 March 2002. Laughlin, Nevada.

Field, J.P., K.W. Farrish and E.A. Carter. *Soil and nutrient losses following site preparation burning in a harvested loblolly pine site*. American Society of Agricultural Engineers Annual International Meeting. 9-12 July 2000. Milwaukee, Wisconsin.

Poster Presentations

Power, R.C., T.H. Melhem, **J.P. Field**, D.D. Breshears, and S.R. Archer. *Rates of soil-litter mixing beneath and between shrub canopies in a semiarid shrubland: Combined effects of aeolian/fluvial redistribution*. American Geophysical Union Fall Meeting. 13-17 December 2010. San Francisco, California.

Power, R.C., T.H. Melhem, **J.P. Field**, D.D. Breshears, and S.R. Archer. *Wind and water-driven resource redistribution at the vegetation-patch scale in a semiarid shrubland: Characterizing rates of soil-litter mixing*. Seventh Annual Research Insights in Semiarid Ecosystems (RISE) Symposium. 2 October 2010. Tucson, Arizona.

Power, R.C., T.H. Melhem, **J.P. Field**, D.D. Breshears, and S.R. Archer. *Dynamic soil/litter surfaces in shrubland vegetation patches: Implications of wind and water erosion for litter decomposition*. 15th Annual University of Arizona Graduate College Undergraduate Research Opportunities Consortium Conference. 10 August 2010. Tucson, Arizona.

Poster Presentations (*continued*)

Field, J.P., D.D. Breshears, C.B. Zou, and J.J. Whicker. *Aeolian and fluvial sediment fluxes under climatic extremes and land use change*. International Conference of Aeolian Research (ICAR VII). 5-9 July 2010. Santa Rosa, Argentina.

Breshears, D.D, T.B. Kirchner, J.J. Whicker, and **J.P. Field**. *Modeling omnidirectional aeolian horizontal sediment transport during succession and with disturbance: implications for contaminants*. International Conference of Aeolian Research (ICAR VII). 5-9 July 2010. Santa Rosa, Argentina.

Field, J.P., L. Merino-Martin, J.C. Villegas, J.J. Whicker, D.D. Breshears, D.J. Law, and A.M. Urgeghe. *Characterizing Regional and Local Aerosol Components Associated with Wind Erosion Following Grassland Fire*. Ecological Society of America 95th Annual Meeting. 1-6 August 2010. Pittsburg, Pennsylvania.

Breshears, D.D, **J.P. Field**, J.J. Whicker, S. Ravi, T.E. Huxman, P. D'Odorico, and C.B. Zou. *Toward a more holistic perspective of wind and water erosion within ecohydrology*. AGU Chapman Conference – Examining Ecohydrological Feedbacks of Landscape Change Along Elevation Gradients in Semiarid Regions. 4-8 October 2009. Boise and Sun Valley, Idaho.

Merino-Martin, L., **J.P. Field**, J.C. Villegas, J.J. Whicker, D.D. Breshears, D.J. Law, and A.M. Urgeghe. *Background dust emission following grassland fire: A snapshot across the particle-size spectrum highlights how high-resolution measurements enhance detection*. Sixth Annual Research Insights in Semiarid Ecosystems (RISE) Symposium. 3 October 2009. Tucson, Arizona.

Moore, D., T.H. Melhem, **J.P. Field**, D.D. Breshears, and S.R. Archer. *Microclimate variation around individual shrubs and shrub clusters in semiarid ecosystems*. University of Arizona Annual iPlant Teacher Fellowship Symposium. 10 July 2009. Tucson, Arizona.

Field, J.P., D.D. Breshears, C.B. Zou and J.J. Whicker. *Wind and water erosion: Competing processes on the Santa Rita Experiment Range*. Third Annual Research Insights in Semiarid Ecosystems Symposium. 7 October 2006. Tucson, Arizona.

Field, J.P., D.D. Breshears, C.B. Zou and J.J. Whicker. *Simultaneous measures of competing erosion types: Water-centric focus neglects potential importance of wind-driven soil transport*. Fourth Annual Institute for the Study of Planet Earth Symposium, 5 October 2006 and University of Arizona First Annual Graduate Interdisciplinary Program Showcase. 7 December 2006. Tucson, Arizona.

Breshears, D.D., J.J. Whicker, C.D. Allen, **J.P. Field**, C.B. Zou, R.J. Oertel and K.L. Beeley. *Wind erosion and transport along the grassland-forest continuum*. Sixth International Conference on Aeolian Research. 24-28 July 2006. Guelph, Ontario, Canada.

Field, J.P., D.D. Breshears, C.B. Zou and J.J. Whicker. *Simultaneous field-based measurements of wind and water erosion in semiarid grasslands*. Sixth International Conference on Aeolian Research. 24-28 July 2006. Guelph, Ontario, Canada.

Jason Paul Field – Curriculum Vitae

Choi, S., P.A. O'day, **J.P. Field** and J. Chorover. *Strontium incorporation and dehydration in secondary zeolites from bulk and microfocused EXAFS*. The 229th American Chemical Society National Meeting. 13-17 March 2005. San Diego, California.

Field, J.P., K.W. Farrish and E.A. Carter. *Forestry site preparation effects on soil and nutrient losses*. Soil Science Society of America Annual Meetings. 5-9 November 2000. Minneapolis, Minnesota.