Oklahoma NSF EPSCoR 2018 Annual State Conference

TUESDAY, APRIL 24, 2018 * EMBASSY SUITES HOTEL * OKLAHOMA CITY, OK

Adapting Socio-Ecological Systems to Increased Climate Variability

NSF Grant
OIA-1301789

DR. JACK FRIEDMAN

Research Scientist in Cultural Anthropology
Center for Applied Social Research
University of Oklahoma, Norman, OK

Email: jack.r.friedman@ou.edu

Dr. Jack R. Friedman (Ph.D. Duke University 2003) is a research scientist at the Center for Applied Social Research at the University of Oklahoma. Dr. Friedman is a cultural anthropologist who received training in psychological anthropology, economic/political anthropology, and medical anthropology. In addition, he has extensive experience designing, leading, and conducting research on topics related to environmental, ecological, and coupled natural-human systems, with a special focus on water limited environments and the impacts of climate change on socioecological systems. Dr. Friedman's research projects share a focus on understanding communities and individuals under stress – whether this is caused by economic collapse, political disorder, medical stressors, natural disasters, or environmental stressors. His expansive research experience includes conducting multi-year research projects on unemployment in Romania; mental health care and systems in California, Oklahoma, and Romania; tornadoes and meteorologists in the Great Plains and the Southeast; as well as work across four watershed in Oklahoma (as part of the 2013-2018 OK NSF EPSCoR) and across the full length of the Rio Grande/Rio Bravo.

DR. DUANE A. GILL

Regents Professor of Sociology
Director, Center for the Study of Disasters & Extreme Events
Oklahoma State University, Stillwater, OK

Email: duane.gill@okstate.edu

Duane A. Gill is Regents Professor of Sociology and Director of the Center for the Study of Disasters and Extreme Events at Oklahoma State University. He was part of a research team that investigated impacts of the 1989 Exxon Valdez oil spill through a series of longitudinal studies spanning 24 years. He led an NSF-funded research project to document and understand impacts of the 2010 BP Deepwater Horizon oil spill in coastal Alabama. Dr. Gill collaborated on several studies of Hurricane Katrina and organized and led a Katrina Summit that brought together national and local disaster scholars to discuss research needs and approaches to the disaster. These research activities generally seek to understand community capacity to respond to and recover from disasters, as well as ways to enhance community preparedness and resilience. Dr. Gill is a Fulbright Scholar, having spent the 1998-99 academic year at the University of Bahrain and the Fall 2015 semester as a Visiting Research Chair in Native Studies at the University of Alberta in Canada.

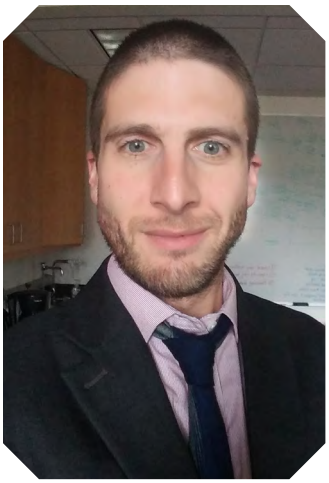
DR. BENJAMIN GRAY

Postdoctoral Fellow
Dept. of Sociology
Oklahoma State University, Stillwater, OK

Email: benjamin.j.gray@okstate.edu

Dr. Benjamin J. Gray is a post-doctoral fellow in the Sociology Department at Oklahoma State University. He received his Bachelor's Degree in Anthropology from Rollins College in Winter Park, Florida and his Master's and Doctorate Degrees in Anthropology from the University of Kansas. Dr. Gray's training at Kansas benefitted from participating in the Kansas EPSCoR program.

Dr. Gray is an applied anthropologist who studies environmental decision making with an emphasis on the intersection of social, environmental, and technical factors. His dissertation research examined the ways that cultural values, irrigation technology, and the characteristics of the Ogallala Aquifer influenced farmers' decisions in southwest Kansas. At Oklahoma State University, his focus has expanded to include perspectives on how individuals and communities prepare for and respond to natural hazards. Using extensive interviews with officials responsible for disaster preparedness, response, and recovery, he is researching aspects of climate change denial and is participating in the design of decision-support tools that will assist officials in their efforts to encourage individuals to engage in emergency preparation. In collaboration with colleagues from the University of Oklahoma, Dr. Gray is also implementing a program to improve small and minority farmers' and ranchers' resilience to extreme weather events.



DR. JOSEPH HOLLER

Asst. Professor of Geography
Dept. of Geography
Middlebury College, Middlebury, VT

Email: joseph@josephholler.com

I research social vulnerability and adaptation to global environmental change and natural hazards as a human geographer and geographic information scientist. I earned my Bachelor of Arts degree from Ithaca College in 2003, with majors in media studies, computer science, and anthropology/archeology. After graduation, I joined the U.S. Peace Corps in Tanzania to teach math and information technology in secondary schools. Completing two years of service, I sought opportunities to study the structural causes of poverty and environmental degradation I had observed. I enrolled in the Geography Doctoral Program and NSF IGERT Fellowship in Geographic Information Science (GIScience) at the University at Buffalo, where I integrated studies of GIScience, economic geography, and ecosystem conservation/restoration to study social adaptation to environmental change on Mount Kilimanjaro. I completed my degree in 2012 and started teaching human geography and GIS at the University of Mary Washington and Middlebury College, while working on summer research and teaching projects at Brown University. My current research interest is in modelling social vulnerability to natural hazards and environmental change by integrating geographic indices of social vulnerability with geographic data on exposure and micro-scale evidence of harm and adaptation.

DR. RAY HUHNKE

Oklahoma NSF EPSCoR Project Director & PI
Director, Biobased Products & Energy Center
Professor of Biosystems & Agricultural Engineering
Oklahoma State University, Stillwater, OK

Email: raymond.huhnke@okstate.edu

Dr. Ray Huhnke is Director, Biobased Products and Energy Center for the Division of Agricultural Sciences and Natural Resources; Associate Director, Sun Grant Program - South Central Region; and Professor, Biosystems and Agricultural Engineering at Oklahoma State University (OSU). In July 2015, he assumed the role of project director for the current Oklahoma NSF EPSCoR Research Infrastructure Improvement project "Adapting Socio-ecological Systems to Increased Climate Variability." He has been a Principal or Co-Principal Investigator on nearly $70 million in grants and contracts from federal, state, university and private sources. Dr. Huhnke has authored or co-authored over 90 journal articles, two patents, three book chapters, over 60 educational videos and CDs, and nearly 300 technical papers and presentations. Recently, he was appointed to serve as a member of the joint U.S. Department of Agriculture (USDA) and U.S. Department of Energy (DOE) Biomass Research and Development Technical Advisory Committee. His leadership roles at OSU include serving as advisory board member on the university's National Energy Solutions Institute and the Food-Energy-Water Nexus Council. Dr. Huhnke is a licensed professional engineer and fellow in the American Society of Agricultural and Biological Engineers.

DR. HANK C. JENKINS-SMITH

Professor of Political Science
Director, Center for Energy, Security & Society
Co-Director, National Institute for Risk & Resilience and
Center for Risk & Crisis Management
University of Oklahoma, Norman, OK

Email: hjsmith@ou.edu

Hank Jenkins-Smith earned his Ph.D. in political science and public policy from the University of Rochester (1985). He has been employed as a policy analyst in the DOE Office of Policy Analysis (1982-83), and previously served on the faculty of Southern Methodist University, the University of New Mexico, and Texas A&M University. He is a George Lynn Cross Research Professor in the Department of Political Science, and serves as co-Director (with Dr. Silva) of the National Institute for Risk and Resilience. He is also the Director of the Center for Energy, Security and Society, and co-Director of the Center for Risk and Crisis Management.

Professor Jenkins-Smith has published books, articles and reports on public policy processes, risk perception, national security, and energy and environmental policy. He has served on National Research Council Committees focused on policies to transport spent nuclear fuel and disposal of chemical weapons, and he currently serves as an elected member on the National Council on Radiation Protection and Measurement and the American Political Science Association. In 2012, he gave several presentations to the Blue Ribbon Commission on America's Nuclear Future to assist in the Commission's deliberations on public acceptance of new initiatives in nuclear facility siting.

Dr. Jenkins-Smith's current research focuses on theories of the public policy process, with particular emphasis on the management (and mis-management) of controversial technical issues involving high-risk perceptions on the part of the public. He applies a variant of Cultural Theory (as advanced by anthropologist Mary Douglas and political scientist Aaron Wildavsky) to understand variations in public understanding and response to a range of societal risks, including climate change, nuclear technologies, natural disasters, radioactive materials, vaccines, and others. As part of this work he has fielded a series of national surveys since 1993 focusing on public understanding and preferences regarding nuclear security, accompanied by a more recent series (starting in 2006) focusing on energy, environmental issues, and nuclear materials management.

In his spare time, Professor Jenkins-Smith engages in personal experiments in risk perception and management via skiing, scuba diving and motorcycling.

DR. PETER KEDRON

Asst. Professor of Geography
Dept. of Geography
Oklahoma State University, Stillwater, OK

Email: pkedron@okstate.edu

Dr. Peter Kedron's research program focuses on understanding how geographic differences in economic activity are related to social and ecological aspects of regions. He also contributes to the development of new spatial analytical methods, with a current focus on technological recombination, cluster detection, and downscaling prediction. Within the Oklahoma NSF EPSCoR research project he is involved in the development of novel statewide socio-ecological observation, modeling, and decision-support systems designed to aid in the understanding of connections between humans and their environment. Dr. Kedron is also Co-PI on two NSF project grants examining the regional evolution of innovation and production in the U.S. biofuel sector (BCS 1338970), and the effect data composition and configuration have on the statistical biases associated with changes in spatial resolution (BCS 1561021).

DR. GEHENDRA KHAREL

Postdoctoral Research Fellow
Dept. of Natural Resource Ecology and Management
Oklahoma State University, Stillwater, OK

Email: gehendra.kharel@okstate.edu

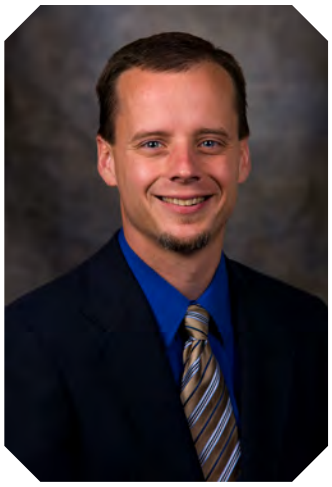
Gehendra Kharel is a postdoctoral research associate in the Department of Natural Resource Ecology and Management at Oklahoma State University. He received his Ph.D. in Earth System Science and Policy from the University of North Dakota (2015), M.S. in City and Regional Planning from the University of Texas, Arlington (2010), and B.S. in Environmental Studies from the University of Nebraska, Omaha (2007). His research expertise and interests include coupled human-natural systems modeling, water resources management, and climate change adaptation and mitigation. Currently, he is working on the OK EPSCoR project (NSF Grant No. OIA-1301789) with the responsibilities of developing a coupled human-natural system model of the Cimarron River Watershed, Oklahoma, using the integrated modeling platform- ENVISION.

DR. RON MILLER

Postdoctoral Fellow
Dept. of Biosystems & Agricultural Engineering
Oklahoma State University, Stillwater, OK

Email: ron.miller@okstate.edu

A Postdoctoral Research Fellow at Oklahoma State University, Dr. Ron Miller currently lives in Houston, Texas with his wife of 27 years, Marion Miller. His dissertation research concerned water movement in alluvial floodplains. Subsequent research projects have also included modeling the stability of composite gravel/soil streambanks, and the contribution of eroded bank soil to stream nutrient concentration. He's currently part of an interdisciplinary team working on a coupled human-natural systems model for the Kiamichi River watershed in southeast Oklahoma.



DR. TYSON OCHSNER

Assoc. Professor of Applied Soil Physics
Dept. of Plant and Soil Sciences
Oklahoma State University, Stillwater, OK

Email: tyson.ochsner@okstate.edu

Dr. Ochsner is a native of Chattanooga, Oklahoma. He earned a B.S. in Environmental Science at OSU in 1998. He then studied Soil Science and Water Resources at Iowa State University earning a M.S. in 2000 and a Ph.D. in 2003. From 2003 through 2008, he worked as a soil scientist for the USDA Agricultural Research Service in St. Paul, Minnesota. Since then, he has served as assistant and associate professor of applied soil physics in the Department of Plant and Soil Sciences at Oklahoma State University. The aim of Dr. Ochsner's soil physics work is to help people better understand and appreciate the soil, the soil water balance, and the surface energy balance so that we can more wisely manage and conserve the land and water with which we have been entrusted. His team's primary research focus is on multi-scale soil moisture monitoring and improved utilization of soil moisture data in agriculture, meteorology, environmental modeling, and drought adaptation.

DR. JOSEPH RIPBERGER

Asst. Professor of Political Science
Assoc. Director, National Institute for Risk & Resilience
Deputy Director for Research, Center for Risk & Crisis Management
University of Oklahoma, Norman, OK

Email: jtr@ou.edu

Joe Ripberger is an Assistant Professor of Political Science, an Associate Director at the National Institute for Risk & Resilience, and the Deputy Director for Research at the Center for Risk and Crisis Management at the University of Oklahoma. He received his Ph.D. in Political Science from the University of Oklahoma in 2012. Prior to his appointment in the Department of Political Science, he was a Postdoctoral Research Associate and then a Research Scientist at the Cooperative Institute for Mesoscale Meteorological Studies where he worked with the National Severe Storms Laboratory and the National Weather Service on severe weather policy.

Currently, his research focuses on risk and public policy with an emphasis on weather, climate, and water policy. He is working on a number of projects, including projects on climate variability and human adaptation in Oklahoma, social responses to changes in complex river systems, and a systematic assessment of the watch, warning, and advisory system in the United States. Joe teaches courses in research methods and public policy, including graduate courses on the analysis of political and administrative data. In his free time, he enjoys cycling, traveling, and cooking.

DR. RHEINHARDT SCHOLTZ

Postdoctoral Fellow
Dept. of Natural Resource Ecology & Management
Oklahoma State University, Stillwater, OK

Email: r.scholtz@okstate.edu

Rheinhardt Scholtz grew up in Cape Town, South Africa, where he attended the University of Cape Town and received his M.Sc. in Marine Biology. Upon receiving his Master of Science degree he took a job with the South African National Parks and moved to the savannas of Kruger National Park (northeast corner of South Africa bordering Zimbabwe and Mozambique). He worked there for just over three years, while completing his Ph.D. Working at the park, Marine science took a backseat and Scholtz engaged more with statistics and species distributions, focusing on woody plant species distribution and dynamics with respect to long-term effects of disturbance - fire and herbivory, specifically elephant herbivory.

After completing his Ph.D., Scholtz moved to Stillwater, Oklahoma to begin a post-doctoral program to improve understanding of woody plant dynamics and encroachment with Dr. Sam Fuhlendorf in the Oklahoma State University Department of Natural Resource Ecology and Management. The new exposure to North America's woodland expansion, compared to South Africa's controlled national park setting, has provided Scholtz with new experiences and research opportunities. Within Oklahoma and beyond, most land is privately owned and this adds an extra source of variance that was not a factor in Scholtz's research in South Africa. He states that working on the EPSCoR project has enabled extensive collaboration both in- and out- of the network. He and his co-researchers have produced a number of publications that have shed light on woody plant dynamics in the Great Plains. His talk today focuses on what this means for future woodland expansion in the entire region.

DR. CAROL SILVA

Professor of Political Science
Director, Center for Risk & Crisis Management
Co-Director, National Institute for Risk & Resilience and
Center for Energy, Security & Society
University of Oklahoma, Norman, OK

Email: clsilva@ou.edu

Carol L. Silva earned her Ph.D. in political science and public policy from the University of Rochester (1998). She was previously employed by the University of New Mexico's Institute for Public Policy, the Department of Political Science, and the George Bush School of Government and Public Service at Texas A&M University. She is the Edith Kinney Gaylord Presidential Professor in the Department of Political Science at the University of Oklahoma, and serves as co-Director of the National Institute for Risk and Resilience. She is also Director of the Center for Risk and Crisis Management, and co-Director of the Center for Energy, Security and Society.

Dr. Silva's current research encompasses the intersection of a set of theoretical and methodological social science issues. She studies social valuation generally, and more specifically the translation of values into public choice. The empirical underpinnings of the social valuation and risk perception research are grounded in applied survey research methodologies and public policy analysis. The specific topics of research interest include: risk perception, environmental politics and policy; science and technology policy; climate, weather and social science, contingent valuation methodology; policy analysis; cost benefit analysis; risk analysis and assessment.

DR. MIKE STANTON

Postdoctoral Research Fellow
Center for Applied Social Research
University of Oklahoma, Norman, OK

Email: stanthro@gmail.com

Dr. Mike Stanton is an environmental social scientist with interests in bioregional political ecology focusing on agroecology, food security issues, and impacts of climate change on land and resource use. There is also a broader interest in sustainable systems development and bridging gaps in interdisciplinary studies within the humanities, social sciences, and natural sciences. As a post-doc researcher with the EPSCoR project, ethnographic fieldwork was conducted in the Kiamichi and North Canadian Watersheds. Much of the research in the Kiamichi region focused on the impacts of water issues; from flooding, to drought, to controversies over ownership and allocation, exploring the connections between different scales of analysis to better understand past and proposed changes in land and resource use. Research in the North Canadian Watershed included gathering data on various aspects of the region including local culture, history, economics, politics, hydrology, and ecology within the broader climate conditions affecting issues of risk and resilience. Future research focuses on the effects of globalized food systems and the problems related to the treadmills of production and consumption as the context for empowering communities transitioning to more sustainable regionally based socioecological systems.

DR. EVAN TANNER

Postdoctoral Fellow
Dept. of Natural Resource Ecology and Management
Oklahoma State University, Stillwater, OK

Email: evan.tanner@okstate.edu

Dr. Evan Tanner is currently a post-doctoral fellow at Oklahoma State University working under the direction of Dr. Sam Fuhlendorf. He received a Bachelor of Science degree in Forestry, Resource Management (2009) and a Master of Science degree in Wildlife and Fisheries Science (2012) from the University of Tennessee. His M.S. research focused on population ecology of northern bobwhite (Colinus virginianus) on reclaimed surface coal mines in western Kentucky. He received his Doctor of Philosophy degree in Natural Resource Ecology and Management from Oklahoma State University in 2015. His Ph.D. research focused on understanding how extreme weather events and future climate change influence population dynamics of northern bobwhite and scaled quail (Callipepla squamata) along the periphery of their distributions. Currently he is researching the spatio-temporal dynamics of thermal conditions in human influenced landscapes and how these dynamics impact ecological patterns and processes across multiple scales.

DR. TIM VANREKEN

Program Director, EPSCoR
National Science Foundation
Office of Integrative Activities
Alexandria, VA

Email: tvanreke@nsf.gov

Tim VanReken is a Program Director with EPSCoR at the National Science Foundation, where he's worked since June 2014. His program responsibilities include RII Track-1, RII Track-4: EPSCoR Research Fellows, Workshop Opportunities, and Innovations at the Nexus of Food, Energy and Water Systems (INFEWS). Dr. VanReken holds a B.S. from the University of Florida and a Ph.D. from Caltech, both in Chemical Engineering. He held a postdoctoral position at the National Center for Atmospheric Research before joining WSU in 2007.

DR. JIE WANG

Postdoctoral Fellow
Dept. of Microbiology & Plant Biology
Center for Spatial Analysis
University of Oklahoma, Norman, OK

Email: jiewang@ou.edu

Dr. Jie Wang is a Postdoctoral Research Associate in Ecology and Remote Sensing at the University of Oklahoma. Jie's study focuses on understanding the changes of grasslands in structure, function, and services to improve grassland conservation and sustainability. Her research is conducted at various spatial and temporal scales using a variety of remote sensing approaches and ecosystem models. She has taken part in projects to examine juniper woody plant encroachment into grasslands in Oklahoma over the last several decades using optical and SAR satellites. This work examined the dynamics of juniper forest encroachment into native grasslands in Oklahoma using a combination of Phased Array type L-band Synthetic Aperture Radar (PALSAR) mosaic data (from 2010) and Landsat images (from 1984-2010). The historical maps of juniper abundance and distribution were generated representing distinct five-year periods. The resultant maps were further used to study the impacts of juniper forest encroachment on grassland ecosystem including gross primary production, evapotranspiration, and land surface temperature. This study found that (1) juniper forests have expanded linearly in time over 1984-2010; (2) juniper forests had notable spatial clusters in the expansion process, varying significantly between counties; (3) juniper encroachment could increase the gross primary production (GPP), evapotranspiration (ET), and greenness-related vegetation indices and regulate the local land surface temperature.

DR. SHEILA YOUNGBLOOD

Asst. Professor of Engineering
Dept. of Chemistry, Physics & Engineering
Cameron University, Lawton, OK

Email: syoungbl@cameron.edu

Dr. Sheila Youngblood is an Assistant Professor of Engineering in the Department of Chemistry, Physics, and Engineering at Cameron University in Lawton, Oklahoma. She is the primary contact for all engineering students at CU. Her passion is to encourage students of southwest Oklahoma to pursue higher education through the use of enrichment opportunities. Dr. Youngblood is the co-director of CU Engineering and Applied Mathematics Summer Academy for high school students, It's MathE – a middle school enrichment experience, and CU Empowering Women in Leadership and STEM Conference. Her research is pedagogy in an engineering classroom and water quality. Before joining CU in August 2010, she worked for the USDA-NRCS in Oklahoma, Kentucky, and Texas as a civil engineer for approximately 10 years. Her university teaching experience began in 2001 and spans multiple states and university systems from Research 1 to community college to private university and finally a regional university setting. She received her Ph.D. from Oklahoma State University in Biosystems and Agricultural Engineering, and also holds a Master's degree from University of Kentucky and B.S. from OSU.

DR. JAD ZIOLKOWSKA

Asst. Professor of Environmental Economics
Dept. of Geography & Environmental Sustainability
University Oklahoma, Norman, OK

Email: jziolkowska@ou.edu

Jadwiga R. Ziolkowska is an Assistant Professor and Environmental Economist in the Department of Geography and Environmental Sustainability at the University of Oklahoma, and Manager of the Water-Energy-Food Institute (WEFI). Before joining OU, Jad was a post-doctoral scholar at University of California at Berkeley; an EU Marie Curie Fellow in the 7th Framework Program; and a researcher at University of Texas at Austin. She received her Ph.D. and habilitation, both in agricultural economics, from Humboldt University of Berlin. She published three books and authored more than 40 peer-reviewed journal publications and book chapters. Jad is specialized in policy evaluation and decision-making support in the field of natural resource, environmental, bioenergy, agricultural economics, and sustainable resource management. Her current research focus is on optimizing water management systems, desalination, biofuels, and socio-economic implications of drought.