

Special Event



Dr. Diana Wall was the Keynote Speaker at a Symposium held in honor of **Dr. David Coleman** at the University of Georgia's Institute of Ecology in October. Dr. Coleman served as a Senior Research Ecologist in the Natural Resource Ecology Laboratory and Professor in the Department of Zoology and Entomology at CSU from 1972-1985. Dr. Coleman left CSU to serve as a Research Professor of Entomology and a Distinguished Research Professor at the Institute of Ecology at the University of Georgia until his retirement in 1993. Dr. Coleman was a scientific leader at NREL during a period of rapid growth in ecosystem science. His success in obtaining extramural funding established that the NREL could provide a stable environment for interdisciplinary research. Dr. Coleman's example led the way for the sustained development of ecosystem science at Colorado State University. In recognition of Dr. Coleman's many contributions at NREL and CSU, he was the recipient of the 2000 Award for Excellence in Ecosystem Science.

Awards

The Millennium Ecosystem Assessment received the Zayed Prize for Global Leadership and Environment. Co-authors include **Drs. Diana Wall** and **Dennis Ojima** (NREL), and **Dr. Jill Baron** (USGS/NREL). The award was warmly received by UN Secretary General Kofi Annan.

Dr. Diana Wall received recognition by the Association Ecosystem Research Centers (AERC) Board as the 2004 President.

Appointments

Dr. Jill Baron has agreed to serve on an 11-member committee to identify major strategic science directions for the US Geological Survey. The 9-month effort will guide science planning and science priorities for the next decade.

Dr. Baron has also been named to the Science Advisory Board for the H.J. Andrews Long-term Ecological Research Program.

Dr. Richard Conant has become a Research Affiliate at the Center for Science and Technology Policy Research at the University of Colorado. Rich works closely with several scientists at the Center on projects related to carbon cycle science and decision-making.

Diana Wall was nominated to become a member of the International Ecology Institute.

Diana Wall was appointed to the Board of Directors for the World Resources Institute, an environmental think tank that goes beyond research to create practical ways to protect the Earth and improve people's lives.

Dr. Slusser has been selected to chair the 11th Conference on Remote Sensing of Clouds and the Atmosphere in Stockholm, Sweden. The conference will focus on all aspects of remote sensing of clouds and the atmosphere with several planned specialist sessions.

Research Notes



Pictured from left to right are Byron Adams (BYU), Breana Simmons, Diana Wall, Ed Ayres and Adler Dillman (BYU).

and Ross Virginia, respectively. On a side note, Diana and Ed competed in the annual Scott's Hut Race. Diana placed third in the over-40 women's age class and Ed placed ninth in the under-40 male age class.

After leaving Antarctica, Diana and Ed went on to the Peruvian Amazon and the temperate rainforest in New Zealand to collect soil samples as part of their Global Soil Biodiversity study. The study aims to see if hotspots and coldspots of aboveground diversity are associated with similar patterns of diversity belowground, and how soil biodiversity and ecosystem processes are linked.

Drs. Diana Wall, Breana Simmons and Ed Ayres spent January in Antarctica conducting fieldwork for the McMurdo LTER. Their research focused on the soil faunal community of the Dry Valleys, one of the coldest and driest ecosystems on Earth. The soil community in this ecosystem has extremely low diversity, making it an excellent subject for studying the relationships between diversity and ecosystem processes. This season, Diana celebrated her 15th year of fieldwork in the Dry Valleys. The NREL team continued their long-time collaboration with researchers from Brigham Young University and Dartmouth College headed by Byron Adams



Meetings

Members of NREL attended a conference “Ecology in an Era of Globalization” in Merida, Mexico in January that was co-hosted by the Ecological Society of America (ESA), the Universidad Autónoma de Yucatán, and the Centro de Investigaciones Científicas de Yucatán. This conference was designed to develop strategies to increase international access to ecological knowledge and collaboration among environmental scientists. NREL attendees included:

- **Dr. Jill Baron** (NREL/USGS) was one of three invited speakers at a UNESCO/MAB sponsored workshop on “New Ecological Knowledge and Practices for Society and Sustainability.”
- **Dr. Dennis Ojima** presented a poster entitled “Estimates of trace gas fluxes affected by land use change and irrigation of

major crops in the Americas” by **Drs. Ojima, Steve DelGrosso, and Bill Parton, and Cindy Keough.**

- **Jim Graham** (NREL/GDPE PhD student and member of The National Institute of Invasive Species Science [NISS]) presented a workshop and poster on the Global Organism Detection and Monitoring (GODM) system that was well received by US, Central American, and South American weed managers and decision makers. Conference participants took field trips to nearby ecological reserves and Mayan ruins.



The following is an update from **Dr. Tom Stohlgren**, (USGS/NREL) the Science Director and Invasive Species Branch Chief of the USGS National Institute of Invasive Species Science (NIISS), and his colleagues.

Greg Newman presented a poster on the GODM System at the 2005 National Biological Information Infrastructure (NBII) All Nodes Meeting in October, representing the NIISS' Invasive Species Information Node. GODM was created by the USGS NIISS (<http://www.niiss.org>) to track and model invasive species range changes. The system also addresses the need for a central repository of real-time information on invasive species for land managers and the public. Additionally, **Dr. Tom Stohlgren** presented information on gathering and management for invasive species early detection, rapid assessment, and rapid response.

Dr. Tom Stohlgren was a keynote speaker at the first statewide conference in Texas on non-native invasive plants. The conference was hosted by the Pulling Together Initiative which is a collaborative project between the Texas Forest Service, the Forest Health Protection branch of the U.S. Department of Agriculture Forest Service, the NBII Central Southwest Gulf Coast Information Node at the Houston Advanced Research Center, and the Lady Bird Johnson Wildflower Center. The meeting served scientists, land managers, state and federal agencies, local governments, and other professionals interested in invasive plant research and policy in Texas. An additional day of the conference was devoted to public awareness and educational outreach.

Dr. Stohlgren met with state weed managers (Austin, TX in November and CO in December) to coordinate data on invasive plant species across the western U.S. The NIISS team also presented an information booth at the Colorado Weed Management Association's annual conference and trade show in Fort Collins.

NREL scientist/NIISS team publications:

Stohlgren TJ, Crosier C, Chong GW, Guenther D, and Evangelista P. 2005. Life-history habitat matching in invading non-native plant species. *Plant and Soil* 277(1-2):7-18.

Kaye MW, Binkley D, and **Stohlgren TJ.** 2005. Effects of conifers and elk browsing on quaking aspen forests in the central Rocky Mountains, USA. *Ecological Applications* 15(4):1284-1295.

Stohlgren TJ, Guenther DA, and Evangelista PH, et al. 2005. Patterns of plant species richness, rarity, endemism, and uniqueness in an arid landscape. *Ecological Applications* 15(2):715-725.

Sara Simonson and **Dr. Heidi Steltzer** presented research projects related to alpine vegetation and snow ecology in the San Juan Mountains, CO, at the Snow System Science Workshop in October, hosted by CIRES, Univ. of Colorado, and the Center for Snow & Avalanche Studies (<http://www.snowstudies.org/>).

Dr. Steve Ogle led training workshops during the fall of 2005 in Central America (Belize, Costa Rica, Guatemala, El Salvador, Honduras, Nicaragua, and Panama). They were part of an ongoing effort funded by the US-EPA and US-AID to improve national communications on greenhouse gas emissions and sinks from Central American countries to the United Nations Framework Convention on Climate

Change. Dr. Ogle provided training on the use of a national greenhouse gas inventory software program that is being developed at Colorado State University. **Amy Swan** (Research Associate) also participated in these workshops.

Drs. Keith Paustian (Soil and Crop Sciences/NREL) and **Steve Ogle** were in Sydney, Australia in December working on the Intergovernmental Panel on Climate Change (IPCC) 2006 Guidelines for National Greenhouse Gas Inventories. The Guidelines are used by all countries to prepare their national greenhouse gas inventory report to the UN Framework Convention on Climate Change. Keith is serving as a Coordinating Lead Author and Steve as a Lead Author on

Volume 4: Agriculture, Forestry and Other Land Use (AFOLU) of the guidelines, which will replace the current 1996 IPCC Guidelines.

Drs. Jill Baron and Dennis Ojima, Melannie Hartman, and Cindy Keough hosted a modeling workshop at Sylvan Dale Guest Ranch in February. DayCent-Chem model results for four LTER sites, National Parks, and southern California Forests were compared with long-term data presented by site managers from all areas. The goal of the EPA and NPS-funded effort is to present effects of atmospheric pollution on ecosystems and understand future responses with deposition and climate change scenarios.

Drs. Kathy Galvin and Diana Wall attended the Aldo Leopold Leadership Meeting in Stanford, CA in November.

Graduate Student News The 2005-2006 Francis Clark Scholarship Recipients



From left: Dennis Ojima (NREL Interim Director, Suellen Melzer, Francis Clark, Jana Heisler and Michelle Haddix

Suellen Melzer (Dr. Gene Kelly, advisor) has been a Ph.D. candidate in the Soil and Crop Sciences Dept. since the fall of 2004 upon completion her Master's degree in geology from the University of Colorado. Her interests include the study of how sedimentary processes interact with the biological environment thus gaining a clearer understanding of present and past environments. Suellen is currently investigating the role of plants on soil weathering. Specifically, quantifying biogenic silica mobilization and weathering rates in diverse terrestrial ecosystems. She plans to complete her dissertation in the summer of 2008

after which she plans to apply for academic positions in the west.

Jana L. Heisler is a PhD graduate student in the Graduate Degree Program of Ecology (Dr. Alan Knapp, advisor). She plans to complete her dissertation and defend in 2007. Her general research interests in ecology are focused on the potential impacts of human-induced global changes on biological systems. She is conducting an experimental manipulation that emphasizes the impacts of precipitation variability on ecosystem function. The Francis Clark Scholarship will enable Jana to investigate N availability as a function of precipitation frequency (and subsequently soil moisture availability). Ultimately, she hopes to document the ecosystem-level consequences of seasonal precipitation patterns in the three distinct grassland types of the Great Plains (shortgrass steppe, mixed grass prairie, and tallgrass prairie) and then provide the mechanistic underpinnings for the patterns observed. Jana's professional goal is to eventually take a faculty position at a university that will allow her to continue research and to teach and mentor graduate students.

Michelle Haddix is a first year GDPE MS student at NREL (**Dr. Rich Conant** and **Dr. Eldor Paul**, advisors). She received her B.S. in Environmental Science from the University of Nebraska at Lincoln. Michelle then worked as a Research Technologist in the Department of Agronomy and Horticulture at UNL working on carbon sequestration in agroecosystems. Michelle's research focuses on the temperature sensitivity of soil organic matter.

Moffatt Ngugi (Dr. Rich Conant, advisor) spent eight weeks traveling through Kenya conducting field work and interviews for his NASA-supported research project entitled 'Characterizing Key Resource Areas in Kenyan Rangelands.'

Congratulations to **Erin Bergquist (Dr. Tom Stohlgren, advisor)** on the successful defense of her MS thesis "Invasive Species and Coal Bed Methane Development in the Powder River Basin, Wyoming." She graduated and acquired a position at MWH, a water engineering firm.

Publications

On January 20, the Proceedings of the National Academy of Sciences published an on-line article, with NREL Research Scientist **Dr. Julia A. Klein** as one of the co-authors, entitled “Plant community responses to experimental warming across the tundra biome” (Walker M.D., Wahren C.H., Hollister R.D., et al., 103(5):1342-1346). This paper is based on a meta-analysis of plant community measurements in response to experimental warming from 11 tundra sites across the globe. Dr. Klein’s on-going research on the Tibetan Plateau provided data from one of those 11 sites. This work emerged from Dr. Klein’s on-going participation in the International Tundra Experiment Program (ITEX), an international collaboration of arctic and alpine scientists investigating the tundra biome response to warming and other global changes. On January 18th, the *Denver Post* reported on Dr. Klein’s contribution to this study and also mentioned her affiliation with CSU and the NREL. Dr. Klein met with her ITEX colleagues in Miami in January to discuss their next synthesis effort.

Dr. Tom Stohlgren is a co-author on a paper that was a very successful collaboration between scientists and public affairs (“A tamarisk habitat suitability map for the continental United States,” *Frontiers in Ecology and the Environment* 1(4):11-17). The paper has received a great deal of media coverage on television, newspaper, and various web sites. NASA-TV did a great job in lining up live shots, featuring the great talent of Goddard scientist Jeff Morissette.

A paper co-authored by **Dr. Lindsey Christensen**, **Shauna BurnSilver**, and **Dr. Michael Coughenour**, “Integrated Assessment of the Dynamics, Stability, and Resilience of the Inner Mongolian Grazing Ecosystem” will soon be published in a special issue of *Nomadic Peoples* 9.1:131-146 in: “Pastoralists in Post-Socialist Asia,” by Berghahn Press.

Other Recent NREL publications include:

Bamforth, S.S., **D.H. Wall**, and R.A. Virginia. 2005. Distribution and diversity of soil protozoa

in the McMurdo Dry Valleys of Antarctica. *Polar Biology* 28:756-762.

Barrett, J.E., R.A. Virginia, A.N. Parsons, and **D.H. Wall**. 2005. Potential soil organic matter turnover in Taylor Valley, Antarctica. *Arctic, Antarctic, and Alpine Research* 37:108-117.

D.H. Wall, et al. 2005. Comment on “El Nino suppresses Antarctic warming” by N. Bertler et al. *Geophysical Research Letters* 32: Art. No. L07706.

Nkem, J.H., D.H. Wall, R.A. Virginia, J.E. Barrett, E. Broos, D.L. Porazinska, and B.J. Adams. 2005. Wind dispersal of soil invertebrates in the McMurdo Dry Valleys, Antarctica. *Polar Biology* 29:346-352.

Nkem, J.N., R.A. Virginia, J.E. Barrett, D.H. Wall and **G. Li**. 2005. Salt tolerance and survival thresholds for two species of Antarctic soil nematodes. *Polar Biology* Online First DOI 10.1007/s00300-005-0101-6.

Treonis, A.M., and **D.H. Wall**. 2005. Soil nematodes and desiccation survival in the extreme arid environment of the Antarctic Dry Valley. *Integrative and Comparative Biology*. 45:741-750 (Invited).

Wall, D.H. 2005. Biodiversity and ecosystem functioning in terrestrial habitats of Antarctica. *Antarctic Science* 17:523-531.

Wall, D.H., E. Ayres, V. Behan-Pelletier, A.P. Covich, and P.V.R. Snelgrove. 2005. Soils, freshwater and marine sediments: the need for integrative landscape science. In H. Browman and K.I. Stergiou, eds. Theme Section: Bridging the Gap between Aquatic and Terrestrial Ecology. *Marine Ecology Progress Series*. 304:302-307. (Invited).

Treonis, A.M., **D.H. Wall**, and R.A. Virginia. 2005. Invertebrate diversity in Taylor Valley soils and sediments. *Antarctic Journal of the United States* 33:13-16.

Dr. Tom Stohlgren and **David Barnett** (USGS/NREL) co-authored a manuscript as part of the National Institute of Invasive Species Science on “Plant species invasions along the latitudinal gradient in the United States,” that was published in *Ecology* 86(9):2298-2309.

Staff Changes at NREL

Dr. Johnson Nkem has left **Diana Wall's** lab to begin his work for the Center for International Forestry Research in Ouagadougou, Burkina Faso.

Replacing Johnson as part of Diana Wall's lab is **Dr. Breana Simmons**. She is currently involved with the McMurdo Dry Valleys LTER in Antarctica, working to understand the soil biodiversity and ecosystem functioning in this extreme polar desert environment. Breana received her MS in entomology from Michigan State University and her PhD in ecology from The University of Georgia. While at UGA, she worked under the direction of Dr. David Coleman, studying the effects of land management and soil type on soil ecology of cotton fields. Working with Dr. Coleman and Dr. DAC Crossley, Dr. Simmons became interested in soil microarthropods and their effects on ecosystem function. She also worked for Drs. Peter Vitousek and David Rothstein at the Magma Lab in Hawaii, studying litter invertebrates beneath native and non-native tree species. Dr. Simmons is never happier than when peering down the microscope, and is extremely familiar with most soil invertebrate groups, specializing in Collembola and Acari. With the help of Dr. Wall and her lab group, Dr. Simmons has added nematodes to her lengthy list of favorite soil animals.

Gwen Scott of NREL/UV-B retired in December after serving for 30 years. Gwen was initially part of the biogeochemistry group and more recently has been working with the UVB Program. We want to thank her for her numerous contributions and dedication.

UV-B News

The UV-B Monitoring Program received a letter from Senator Ken Salazar giving thanks for the outstanding research done at CSU. "Your work has provided greater understanding of the effects of ultraviolet light on plants and animals to the scientific community and the nation as a whole," wrote Salazar. "Thank you for keeping Colorado State's tradition of excellence a reality."

Dr. Jim Slusser traveled to Mexico City to meet with Dr. Michel Grutter and Andres Hernandez to work on the infrastructure and equipment for a NSF Grant to study pollution in the Mexico City area. Colorado State University's field suite of spectrally-resolved UV radiation instrumentation will be deployed for the NSF-sponsored MIRAGE-Mex field campaign at three Mexico City "supersite" ground stations. This UV radiation package includes instrumentation from Colorado State University and the University of Houston.

Dr. Wei Gao attended the SPIE Photonics West 2006 meeting in San Jose, California, Jan. 21-26. Wei presented ultraviolet ground- and space-based measurements, models and effects research. The meeting also gave Wei the opportunity to network with other researchers from around the world. SPIE is the largest international force for the exchange, collection, and dissemination of knowledge in optics, photonics, and imaging.

Congratulations to **Rita Deike** for achieving her 20 year milestone at Colorado State University in January. She has been an integral part of the UV-B Program and the department is grateful for her many contributions.

GIFTS TO NREL: NREL would like to thank the many donors who have contributed to our Excellence in Enhancing Global Connections endowment, which was started by matching funds from **Dr. Francis E. Clark**. This endowment will be used to support bridge salary for scientists and other financial needs which cannot be accommodated by NREL's base of federal grant funding. The fund has now reached over \$177,000. If you are interested in contributing to this exciting endowment, please contact **Neil Shropshire** (neil@nrel.colostate.edu or 970-491-5645) for more information.