

## Natural Resource Ecology Laboratory



NREL

News Notes  
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[NREL in the Limelight](#)[Research Project News](#)[Appointments](#)[Outreach & Special Meetings](#)[Graduate Student News](#)[Visitors](#)[People](#)[Gifts to NREL](#)**NREL IN THE LIMELIGHT***NREL GLOBAL CONNECTIONS SYMPOSIUM*

On September 8, 2004, NREL hosted the Symposium "Global Connections between NREL and the World: Lessons Learned" at the CSU Student Center. Colleagues, NREL alumni, and members of the scientific community from near and far attended. In addition to the research presented by NREL scientists, there was stimulating social interaction and discussion among attendees. Ten NREL scientists gave presentations of their research. A complete program, downloadable Powerpoint presentations and photos, are at <http://www.nrel.colostate.edu/events/symposium2004.htm>.

Following the Symposium, the External Advisory Committee (EAC), (**Drs. Norman Christensen**, Duke University, **Thomas Lovejoy**, H. John Heinz III Center for Science, Economics and the Environment, and **Jim MacMahon**, Utah State University, participated in a panel discussion "Perspectives on challenges for global ecosystem science." NREL's **Dr. Bill Parton** substituted on the panel for EAC member Dr. Jerry Melillo of The Ecosystems Center at Woods Hole, who was unable to attend.

The lecture presented by the previous recipient of the NREL Award of Excellence in Ecosystem Science is a highlight of the NREL symposium. The 2002 awardee, **Professor Thomas Rosswall** of the International Council for Science in Paris, honored us with his lecture, "Microbiology-From Ecosystem Science to Sustainable Development."

*MCNAUGHTON 2004 EXCELLENCE IN ECOSYSTEM SCIENCE AWARDEE*

The NREL Award of Excellence in Ecosystem Science was established in 1997. It is presented to an individual whose independent and interdisciplinary research has contributed to sustained, innovative syntheses and new insights in the study of ecosystems. Previous recipients are: **Dr. Jerry Melillo**, Woods Hole, **Dr. David Coleman**, Univ. of Georgia and **Professor Thomas Rosswall**, ICSU, Paris.

At the reception immediately following the NREL Symposium, Dr. Mike Coughenour, NREL, presented the 2004 Award of Excellence in Ecosystem Science to **Dr. Samuel J. McNaughton** who is internationally recognized

for his contributions to the field of grazing ecosystem ecology. He is an eminent scholar and holds an endowed chair at Syracuse Univ. Dr. McNaughton is globally recognized for definitive research in the world's premier grazing ecosystem, the Serengeti, for three decades. He was the architect of central ideas in ecosystem science and in developing a deeper understanding of the fundamental importance of herbivores in structuring and altering the basic processes of grassland and savanna ecosystem. Dr. Coughenour closed the ceremony by noting that NREL is especially honored to name Dr. Sam McNaughton for this award.

*Dr. Jill Baron (USGS/NREL) receives local publicity*

Publicity surrounding effects of nitrogen deposition to high elevations of Rocky Mountain National Park has included news articles in the Rocky Mountain News, the Estes Park Trail Gazette, and the Loveland Herald. Interviews were given to Channel 7 and Channel 9 TV.

**RESEARCH PROJECTS**

*FUNDED RESEARCH PROJECTS*

**Drs. Eldor Paul** and **Rich Conant** received 19,201 of funding from DOE for "Ecosystem Controls on Carbon Sequestration Following Afforestation of Agricultural Lands." This research project is focused on understanding how conversion from agriculture to forest impacts the amount and chemical characteristics of soil carbon.

**Dr. Stephen Gle**, PI, with co-PIs from NREL and Statistics, CSU, and NASA Ames, were awarded 100,000 through the NASA-USDA-DOE Interagency Carbon Cycle Science Program for "CO<sub>2</sub> Fluxes between Agricultural Lands and the Atmosphere: Towards More Complete Accounting by Integrating Remote Sensing with Simulation Modeling." This research will support objectives of the North American Carbon Program as well as U.S. carbon management policy.

**Dr. Stephen Gle**, PI, with co-PIs from NREL and Anthropology, CSU and Montana State Univ. were also awarded 44,000 for "Emissions Trading Through Agricultural Carbon Sequestration: Adopting Conservation Practices, Leakage and Non-CO<sub>2</sub> Greenhouse Gases," through the USDA-NRI Markets and Trade Program. This project will support public policy development dealing with mitigation of greenhouse gas emissions focusing on socioeconomic and environmental constraints to adoption, as well as a better accounting of mitigation occurring with adoption by including leakage and non-CO<sub>2</sub> greenhouse gas emissions.

**Drs. Cathy Galvin** (NREL/Anthropology) and Dennis Ojima were awarded 73,900 for a 1-year grant from NSF's Human and Social Dynamics Special Competition for "Household Decision Making Under Uncertainty." The research team is assessing household patterns and processes of coping with climate variability from various sites around the world and are developing or adapting and linking socio-economic agent-based household models to ecosystem models to test hypotheses that relate climate variability and climate change to decision making and the impacts and consequences on people and ecosystems.

**Dr. Diana Hall** and **Holley Aheh** were awarded 10,000 from the Winslow Foundation for "Integrating Soil Biodiversity and an Ecosystem Process: Analysis of a Global Experiment."

**Drs. Rich Conant** (PI) and **Jill Baron** (co-PI) received 40,000 in funding from USGS for "Taking the PULSE of Colorado's Front Range." They will develop indicators for ecological conditions of biomes of the Front Range.

**Dr. Rich Conant** is co-PI for a subcontract with Univ. of Colorado (R.A. Pielke Jr., PI) on a 2.4 million NSF project "Science Policy Assessment and Research on Climate (SPARC)." Conant et al. will develop tools to reconcile supply of and demand for scientific information, carry out sensitivity analyses to help prioritize research, and characterize model output for policymakers.

**Dr. Mohammed al han** is PI on a 1.1 million NASA project for biological fingerprinting of the Western United States. The purpose of this project is to map native and non-native species diversity. The work extends cooperative research with NASA Goddard Space Flight Center and NASA Headquarters being conducted by **Dr. Tom Stohlgren** (USGS/NREL) and a team of scientists, including **Greg Newman** of NREL.

PhD graduate student **Moffatt Ngugi** (**Dr. Rich Conant**, advisor) received a three-year, 72,000 NASA Earth System Fellowship for a project entitled "Characterizing key resource areas in rangelands using remote sensing." He will investigate how key resource areas (areas with forage available during dry seasons and/or drought) and changes to key resource areas impact forage supply for the broader regions. His research will be carried out in seven rangeland districts arrayed across an aridity gradient.

#### PP INTMENTS

Congratulations to **Neil Shroshire** who has been appointed as NREL Assistant Director.

**Dr. Joe von Fisher** (NREL/ biology) was appointed as the Director for the Colorado Laboratory of Environmental Mass Spectrometry (CLEMS). This lab has two stable isotope mass spectrometers that are ideal for ecological analyses and have been used to analyze everything from precipitation collected across the entire U.S. to arctic clonal plants and avian breath. One machine is a continuous flow instrument and the other a dual-inlet machine. The lab is primarily used by NREL members, but samples from other CSU departments, and from other institutions, can be analyzed upon request. Go to <http://www.nrel.colostate.edu/about/lab/ms.html>.

**Dr. Jill Baron** has joined the board of Directors of the Mountain Studies Institute, Silverton CO.

**Dr. Rod Chimner** was elected President of the Rocky Mountain Chapter of the Society of Wetland Scientists.

**Dr. Lindsey Christensen** was appointed the NREL graduate student liaison.

**Dr. Steven Del Grosso** is now working as a Soil Scientist for Soil, Plant and Nutrient Research, USDA, ARS, in Fort Collins. Steve is responsible for the next edition of the USDA Greenhouse Gas Inventory and for compiling trace gas flux data from various sites into a common database. Steve will continue to work with **Drs. Keith Paustian** and **Steve Gleason** on the Central American Greenhouse Gas Inventories project and with **Drs. Bill Parton** and **Dennis Jima** on greenhouse gas mitigation strategies.

TRECHND SPECIAL MEETINGS*National*

**Dr. Rich Conant**, and colleagues from Colorado and Arizona State Universities, organized a meeting at CSU entitled "Reconciling Supply and Demand of Carbon Cycle Science." Additional participants included NSF, DOE, and NOAA program managers, city planners, as well as agricultural producers and policy makers.

**Dr. Cathy Galvin** organized a workshop at CSU for her NSF Decision Making Under Uncertainty project. Attendees included: **Dr. Dennis Jima Jill Lacett**, **Dr. Randy Boone Shauna Burnsilver**, and **Dr. Rich Conant**, NREL; **Dr. Peter Deadman**, Univ. of Waterloo, Canada; **Dr. .S. Rajan**, Univ. of Tokyo, Japan; **Dr. Philip Thornton**, International Livestock Research Institute (ILRI), Nairobi, Kenya and the Univ. of Edinburgh, U.K. and **Dr. Tom Veldkamp**, Laboratory of Soil Science and Geology, Wageningen, the Netherlands.

**Drs. Eldor Paul** and **Rich Conant** organized a meeting in Des Moines, Iowa entitled "The contribution of terrestrial and anthropogenic processes to atmospheric CO<sub>2</sub> concentrations in the Mid-Continent North American Carbon Program (NACP) study." **Drs. Keith Paustian Niall Hanan**, and **Steve Gleason** of NREL also attended.

**Dr. Diana Wall** gave the invited plenary address for the Society of Nematologists, Estes Park, CO, entitled, "Revisiting Van Gundy's Challenge: Have We Taken Our Binders Off?" **Drs. Emma Broos Johnson Nem**, and **Grace Li** also participated.

**Drs. Jill Baron** and **Lindsey Christensen** attended the Western Mountain Initiative meeting in New Mexico at Bandelier National Monument, where Lindsey gave a talk.

**Greg Newman** attended the National Biological Information Infrastructure (NII) All Node Meeting in Big Sky, Montana to assist in the further development of the NII Invasive Species Information Node.

**Dr. Rod Chimner** presented a poster on ecosystem carbon cycling in San Juan forests at the State of the San Juans meeting "San Juan Mountains Science & Research: Linking Communities, Researchers and Practitioners," in Silverton, Colorado. This conference was specially designed for presentations of academic and agency research, results of local watershed-based assessment and restoration efforts, and current natural, economic, and social conditions and trends in the San Juan Mountains.

As an Aldo Leopold Leadership Fellow, **Dr. Tom Hobbs** attended a week long training session in communicating science to government in Washington, DC this fall. Dr. Hobbs also participated in the Ecology of Infectious Diseases Workshop for the National Ecological Observatory Network in Baltimore.

The Agroecosystem Research Group made a strong showing at the 8th Annual Meeting of the Soil Science Society of America with the Canadian Society of Soil Science in Seattle, WA. Presentations were given by **Drs. Keith Paustian Eldor Paul Steve Gleason Aronien Deneff** and **Johan Sieling** (NREL), **Johan Sieling** (UC Davis/NREL), and NREL grad students **Erandathie Louitiya** and **Cathy Stewart**. Alain also chaired a symposium and Cathy presented a poster for which she was awarded the top prize for graduate student

posters in the Soil Biology and Biochemistry (S3) division.

The UV- Monitoring and Research Program (UVMRP) hosted its second Site Operators Workshop at Sylvan Dale Guest Ranch, Loveland. Seven of the 43 site operators attended the two-day workshop and heard presentations and updates by UVMRP staff about their projects, followed by hands-on training with the instruments and ancillary components. Powerpoint presentations are available under the "Instrumentation" section

<http://uvb.nrel.colostate.edu/UV/>.



Participants at the 2004 UV- Site Operators Workshop, from left: Jose DeSoto, s.CA Mike Newell, MD Lee Thomas, ME Gordon Labow, NASA Royce Fontenot, LA Mim Pendleton, VT Mark Lindquist, CO John Davis, Jim Slusser, Gwen Scott, all UVMRP staff.

### *International*

**Drs. Dan Binley** (GDPE) and Oleg Menyailo (Sukachev Institute of Forest, Russian Academy of Sciences) co-organized a NATO Advanced Research Workshop to explore patterns and processes of interactions between trees and soils. The workshop was held in Irkutsk, Siberia, and brought together 2 scientists from North America, Europe, and Russia. One of the key conclusions was that species effects are commonly larger than the effects of modest differences in climate, so the effect of climate change on biogeochemistry (and trace gas fluxes) will likely depend more on changes in species dominance on sites rather than on direct effects of climate.

**Drs. Keith Paustian** (NREL/Soil and Crop Sciences), **Stephen Gleason** (NREL) and **John Brenner** (USDA-NRCS/NREL) attended the Second Authors meeting in preparation of the 2001 IPCC National Greenhouse Gas Inventory Guidelines, in Le Morne, Mauritius. This meeting focused on the further developments of the IPCC Greenhouse Gas Inventory Guidelines in the Agriculture, Forestry and Other Land Use Sector (formerly LULUCF).

**Dr. Diana Wall** was co-leader of a University of Idaho Technology & Biological Sciences Research Council (SRC) funded international workshop, "Integrative Approaches for the Investigation of Root Herbivory in Sustainable Agricultural Systems" in Redding, U.S.

**Dr. Wall** participated in NASA Planetary Protection Advisory Committee meetings in Washington DC and in the Peer Review Committee meeting for the Graduate School of Production Ecology & Resource Conservation of Wageningen University, The Netherlands. She also presented a keynote address on "Biodiversity and Ecosystem Functioning in Terrestrial Habitats in Antarctica" for the Scientific Committee meeting on Antarctic Research (SCAR), Bremen, Germany, and the keynote address on "The Contribution of Soil Invertebrates to Soil Ecosystem Services" at the International Colloquium of Soil Biology, Rouen, France.

**Dr. Melannie Hartman** gave a presentation, "Modeling the Timeline for Stream Acidification from Excess Nitrogen Deposition in Loch Vale Watershed," at the NADP Scientific Symposium and Technical Committee Meeting in Halifax, Nova Scotia.

**GRAND TETON NEWS***Francis Clark Soil Biology Scholarship Recipients*

**Jill Baron** is a GDPE and NREL MS student (**Dr. Jill Baron**, advisor). She received her B.S. in Environmental Science from the Univ. of Kansas. Her research focuses on identifying the major controls on soil acidity under dominant vegetation types within Loch Vale Watershed (LVWS), Rocky Mountain National Park to better define the capacity of the watershed to buffer changes in soil chemistry in response to atmospheric nitrogen deposition. Jill is also involved as a NSF graduate fellow in the G-12 program. Jill expects to complete her research by December 2007, and will pursue opportunities to work professionally on resource conservation issues related to human population growth and urban development.

**Erandi Louitiya**, from Sri Lanka, is a GDPE PhD student at NREL and the Dept. of Soil and Crop Sciences (**Dr. Keith Paustian**, advisor). Erandi obtained her MSc in Soil Biology from the Univ. of Wyoming where she studied soil nematodes in alpine soil. Subsequently, she worked in the Sri Lankan Ministry of Forestry and the Environment on climate change and greenhouse gas issues. Erandi's research consists of analyzing national scale carbon dynamics in agricultural soils in the U.S. using national crop databases, GIS, modeling, and remote sensing. She has also evaluated the methodologies used by different counties to inventory their national greenhouse gas emissions from agricultural soils. In the future, Erandi plans to develop expertise on climate change implications in relation to soils.



**Sarah Hamman** is a fourth year GDPE doctoral student (**Dr. Ingrid Burke**, advisor) studying the seasonal effects of prescribed fire on soil nutrient dynamics in Sequoia National Park and varying severity wildfire effects on soil microbial community structure and function in the Hayman fire site. Sarah plans to graduate in December 2007 and is pursuing a post-doc position in biogeochemical cycling research. Her goal is to share ecological knowledge and inspire others to learn and care about the fascinating world around us.

News Grand student welcome

**Dr. Tom Stohlgren's** group welcomes the following five new graduate students:

- 1) **Cory Bolen** is a Dept. of Forest Rangeland and Watershed Stewardship MS student working under Dr. Mohammed Alkhan. Cory has a B.S. in Forest Resources from the Univ. of Idaho and has worked for various federal agencies on fire/fuels research and vegetation mapping projects. Cory's master's thesis will explore the spatial modeling of fire/fuel characteristics in Grand Teton



National Park.

2) **Ginger Bradshaw** earned a BS in Natural Resources Management from CSU. She has worked with the National Park Service on diverse natural resource issues. Ginger plans to develop research projects that will help land managers decide where control efforts will have the most effect and apply limited resources to manage invasive species problems.

3) **Hilary Druc er** graduated from Fort Lewis College in Durango, CO with a BS in environmental biology and a minor in chemistry. She is currently working towards her MS in Plant Pathology and Weed Science in the College of Agricultural Sciences and Pest Management, Dr. Cynthia Brown, advisor. Hilary is involved in a project to identify the next invasive weed species of Colorado by developing invasive weed lists for each county. These Watch Lists will be available to land managers through the National Institute of Invasive Species Science (NIISS) web-sites.

4) **Jon reeman** is a GDPE MS student (**Drs. Tom Stohlgren** and **Phil mi**, advisors). His research is part of a Joint Fire Science Program project on the interactions between pre-fire fuel treatments, post-fire severity, and non-native plant species. Jon began collecting data this past summer on the Aspen Fire on Mt. Lemmon, near Tucson, AZ and the Davis Fire south of Medford, OR, working with Don Carpenter, Dr. Geneva Chong (NREL), and Erik Martinson. Jon graduated from the Univ. of Kentucky.

5) **Sunil umar**, from northern India, earned a BS in Mathematics & Physics and a MS in Forestry. He worked on the 'Indian Central Himalaya Biodiversity Mapping and Monitoring' project before coming to CSU on a Ford Foundation International Fellowship. Sunil has recently shifted to the GDPE to work on the effects of spatial heterogeneity on the distribution of native and non-native species diversity in areas of Rocky Mountain National Park, the state of Colorado, and the Western U.S.

**Lindsay Reynolds** is a PRIMES PhD student (**Dr. Tom Hoopes**, advisor) working on the development of a project in Rocky Mountain National Park looking at how elk browse affects bird communities. She earned her BA in Ecology from Dartmouth College.

**Joseph DeCant** is a GDPE MS student in forest ecology working with **Dr. Dan Binley** on various aspects of forest restoration ecology in Colorado.

**Doi The Bui**, PhD student in forestry (**Dr. Dan Binley**, advisor) is doing his research on community ecology and forest regeneration on limestone-derived soils in Viet Nam.

**Eli na** is a PhD student working with Dr. Cathy Galvin, advisor, on her NSF-funded "Biocomplexity of the Greater Serengeti" project. Eli is currently working in Tanzania, but will be at NREL next summer.

**Monique LaPerriere** is a GDPE MS student in working on forest biogeochemistry with **Drs. Dan Binley** and **Chuc Rhoades**. Monique will be investigating the dynamics of biogeochemistry in riparian ecosystems at the Fraser Experimental Forest in central Colorado.

DISIT RS

Daniela Piermatteo, a PhD student at the Seconda Universita di Napoli, Italy, visited NREL in September to work with **Dr. Stephen Gleason**. Her research is part of a large field experiment near her home institution in Italy, under the direction of Francesca Cotrufo, which is anticipated to provide a broader understanding of climate change impacts on plant and soil processes in Mediterranean ecosystems. Daniela is focusing her studies on litter production and decomposition under experimentally-manipulated precipitation regimes.

Simon Israt, an Eritrean Univ. instructor and graduate student with NREL alumnus Dr. Layne Coppock, Utah State Univ. visited NREL and **Drs. Mike Coughenour** and **Randall Boone** learning the Savanna Modeling System. Lengthy discussions about the ecology of African wild asses within Eritrea confirmed that the ecosystem model will be useful in management of this critically endangered species.

NREL hosted a meeting of the Grand Canyon Research and Monitoring Program Science Advisory Board. SA members, including **Drs. Jill Baron**, Lance Gunderson, Jim Mitchell, Dale Robertson, and Dave Garrett, spent two days reviewing the Program's Strategic Plan, Core Monitoring Plan, Humpback Chub Recovery Plan, and Long-Term Experimental Plan.

#### PEOPLE

##### *NEW PEOPLE AT NREL*

**Dr. Jackie Grant** is a Research Scientist working with **Dr. Dave Theobald** (NREL, NRRT). She received her Ph.D. for chemical and behavioral ecology of caterpillars from the Dept. of Neurobiology and Behavior at Cornell Univ., NY. Jackie will be working as a TNC Postdoctoral Fellow with Dave on landscape connectivity models that incorporate genetic data from leopard frogs in the Black Hills ecoregion.

**Dr. Lindsey Christensen**, previous NREL graduate student, has rejoined NREL as a Research Scientist. Lindsey left NREL in 2000 to work at the Center for Environmental Science, Stanford Univ. as a Postdoctoral Fellow with **Dr. Pam Matson**. She went on to serve as Program Director for an educational foundation. She is now working with Dr. Jill Baron on the Western Mountain Initiative, a USGS project that examines the effect of global change on high elevation mountain ecosystems.

**Dr. Joseph Ogutu** is working with **Drs. Tom Hoopes** and **Robin Reid** (ILRI/NREL) as a Research Scientist on their NSF-funded project studying effects of pastoralists on the abundance and distribution of wildlife in the Mara region of Kenya. Dr. Ogutu is a Kenyan wildlife ecologist and biometrician and will be based in Tanzania.

**Dr. Chris Williams**, previous NREL grad student, has returned to NREL as a Research Scientist working with **Dr. Niall Hanan** on his NOAA and NASA-funded project to study the carbon dynamics of the African continent. Chris' research will seek to improve not only our understanding of the spatial and temporal dynamics of African carbon exchange, but also the role of Africa in global atmospheric carbon dynamics. Chris completed his PhD at the Duke Univ. Pratt School of Engineering.

##### *PEOPLE WHO HAVE LEFT NREL*

**Dr. Jeff Miller, Sr.** Research Scientist, has accepted an appointment as Director of the Environment and Natural Resources Institute, University



of Alaska, Anchorage. Dr. Welker will be establishing a lab similar to the Stable Isotope Laboratory he directed at NREL. He was also appointed professor in Biological Sciences and is already engaged in cooperative research and programmatic efforts.

**John Brenner** was reassigned to the new USDA Natural Resources Conservation Service West National Technology Support Center in Portland, OR. He is responsible for technology development and transfer for model based greenhouse gas analysis for NRCS. John continues to lead the USDA effort to incorporate Century into the DOE Energy Information Agency Voluntary Reporting of GHG s 1 0 (b) system. This joint effort and the new Carbon Management Evaluation Tool for Voluntary Reporting (COMET-VR) continues to showcase how NRCS and NREL work together and how research tools can be refined for conservation activities for use by land managers on private lands.

#### GI TS T NREL

NREL is deeply grateful to the many individuals who have contributed to our Excellence in Enhancing Global Connections endowment. This ambitious endowment will be used to support bridge salary for scientists and other costs and opportunities which cannot be accommodated by NREL's base of federal grant funding. It is expected to be a very important part of NREL's future operations. Every dollar donated to this endowment by individual NREL supporters is being matched by an anonymous donor, making this a one-of-a-kind opportunity to enhance NREL's future. Over 9,000 has been raised so far. If you are interested in contributing to this exciting new endowment, please contact Neil Shropshire (970-491- 4 or [neil@nrel.colostate.edu](mailto:neil@nrel.colostate.edu)) for more information.

NREL is also grateful for the continuing support given by donors to the James Ellis Scholarship Fund, which will support students interested in human dimensions of global environmental change, and to the general NREL gift fund, which supports a variety of efforts beneficial to NREL.

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