

Natural Resource Ecology Laboratory



NREL

News Notes
Colorado State University

Spring 2005

Issue No. 39

[Special Events](#)[NREL in the Limelight](#)[Appointments](#)[Visitors](#)[Graduate Student News](#)[Special Publications](#)[UVB News](#)[Gifts to NREL](#)**SPECIAL EVENTS****CSU Distinguished Woman in Science and Engineering**

The Spring 2005 CSU Distinguished Woman in Science and Engineering, Dr. Jane Lubchenco (Oregon State University), presented a lecture "Seas the Day: Marine Ecosystem Science, Politics and Ethics" and a mentoring forum, "Dual Career Choices: A Personal Reflection," at NREL in March.



While at CSU, Dr. Jane Lubchenco (2nd from right), founder and co-chair of Aldo Leopold Fellowship Program, met with co-chair Dr. Diana Wall and CSU Fellows Drs. Barry Noon, Tom Hobbs, Kathy Galvin, and Dennis Ojima (not pictured).

Dr. Jane Lubchenco is an environmental scientist and marine ecologist actively engaged in teaching, research, synthesis and communication of scientific knowledge. Jane is currently Valley Professor of Marine Biology and Distinguished Professor of Zoology at Oregon State Univ. Her research interests include biodiversity, climate change, sustainability science and the state of the oceans. Jane is a member of the National Academy of Sciences, the Royal Swedish Academy of Sciences, is President of the International Council of Science, and has received numerous awards including a MacArthur Fellowship, a Pew Fellowship, eight honorary degrees (including one from Princeton University), the 2002 Heinz Award in the Environment, and the Nierenberg Prize for Science in the Public Interest from the Scripps Institution of Oceanography, 2003.

CNR Leadership Lectures in Natural Resources and the Environment

On April 7, Senator Timothy Wirth, President of the UN Foundation and Better World Fund, presented "Energy and the Lords of Yesteryear" as a Distinguished Speaker for the College of Natural Resources Leadership Lectures in Natural Resources and the Environment. A reception followed at Ammons Hall. **Dr. Diana Wall** hosted Tim and his wife Wren for this event.



Drs. Alan Charlton, Mark Stevens, and Keith Paustian. (Picture by Dennis Ojima)

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(NREL) and **Keith Paustian** (Soil and Crop Sciences NREL), Scott Denning (Atmospheric Sciences), and Paul Hudnut (College of Business) to discuss climate change research with Mr. Alan Charlton (Deputy Head of Mission, U.S. Embassy) and Mr. Mark Stevens (HM Consul, British Consulate, Denver). The purpose of the March 3rd meeting was to explore joint research activities. Keith and Dennis presented research on cropping systems, greenhouse gas emissions, international research efforts (e.g., Senegal, Brazil, India, Kazakhstan, China) to reduce GHG emissions and integrated analysis of carbon science and climate change.

A presentation by **Dr. Bill Larson** (USGS, NREL) on the effects of atmospheric nitrogen deposition to the Colorado Air Quality Control Commission is promoting a flurry of media attention. Stories were carried by the Rocky Mountain News, The Denver Post, Longmont Daily Times Call, the Boulder Daily Camera, and Colorado Public Radio. The Fort Collins Coloradoan stated "Rocky's air quality concerns loom large for Colorado air quality regulators because a declaration by federal land managers that the park's air quality has been significantly impaired would mean strict controls on state pollution and growth." See <http://www.nrel.colostate.edu/projects/lvws/pages/publications/LVintheNews2.htm>

Dr. Bill Larson is a member of the National Ecological Observatory Network (NEON) Design Committee. The first meeting developed questions for a 30 year NEON effort. The second meeting held in Boston in March defined observation platforms. The third meeting, held in Estes Park, CO in June, developed deployment of NEON infrastructure plans.

The final Global Litter Invertebrate Decomposition Experiment (GLIDE) workshop "Integrating Soil Biodiversity and an Ecosystem Process: Analysis of a Global Experiment" was held in San Ramon, CA, March 20. NREL participants included **Diana Wall** (Chair, GLIDE), **Dr. Mark St. John**, **Dr. Bill Parton**, and **Colleen Aden** (workshop organizer).

Dr. Wall was PI for an NSF Sponsored Workshop, "Synthesis of Soil Biodiversity Ecosystem Functioning in Victoria Land, Antarctica" in Jekyll Island, GA, April 22-23. NREL attendees included **Drs. Heidi Steltzer**, **Ed Arneson** and **Johnson Nem** as workshop organizers **Patti Rothermel** and **Lil Ojima**. This invited workshop of international scientists studying the Arctic, Antarctic and other ecosystems defined future research needs and priorities for terrestrial habitats of Victoria Land, Antarctica. Results will be published in *Soil Biology and Biochemistry* as a special issue.

Dr. Mike Coughenour presented "Models of Plants in Ecosystems" at the "Modeling Ecosystem Responses to Global Change: Techniques and Recent Advances" workshop Fort Meyers, FL, January 9-12, as part of the Terrestrial Ecosystem Response to Atmospheric and Climatic Change network (TERACC). TERACC is an NSF funded research coordination network, the goal of which is to synthesize experimental data for global change ecosystem manipulation experiments (soil warming experiments, water additions, elevated atmospheric CO₂, etc.) and to promote better interaction

between the ecosystem modeling community and experimentally oriented research scientists. The workshop was co organized by **Dr. Bill Parton**, and was also attended by **Dr. Dennis Ima**.

On March , **Dr. Coughenour** presented a talk at Rocky Mountain National Park on his ecosystem modeling assessment of interactions between vegetation, elk, and wolves in the park. Wolf reintroduction to the park, either purposeful or as a natural outcome of dispersal from Yellowstone, is being considered by the Park Service. In particular, there is interest in the potential effects wolves might have on reducing the incidence and spread of chronic wasting disease (CWD) by deer and elk. Mike also participated in the kick off meeting for the TEMBO project, held in Wageningen, The Netherlands, April 20. TEMBO will be studying the responses of elephants and vegetation to experimental manipulations of soil resources at different spatial scales in and near Kruger National Park, South Africa. The SAVANNA ecosystem model will play a central role in the project.

Dr. Dennis Ima hosted the Northern Eurasian C Land Use Climate Interaction in the Semi Arid Regions (LUCTEA) Workshop at NREL on March 7 . Attendees included Anat Akshalov (Kazakhstan), Muhtor Nasyrov, Bakhtiyor Mardonov, and Svetlana Nikulina (Uzbekistan), Togtohyn Chuluun (Mongolia NREL), Jiatingming Jiao (Univ. of New Hampshire) and Natalie Mahowald (NCAR). NREL participants included **Dr. Eric Dr. Julia** **lein**, Sayat Temirbekov, Tom Riley, and Hishig Jamiyansharav. The LUCTEA project is studying the effects of land use change and climate on carbon fluxes, climate feedback, and ecosystem productivity.

Drs. Stephen Gle and **Keith Paustian** (Soil Crop Science, NREL) held national greenhouse gas inventory meetings in Nicaragua and Belize as part of an effort funded by the U.S. Environmental Protection Agency and U.S. Agency for International Development (USAID) to improve national communications on greenhouse gas emissions and sinks from Central American countries to the United Nations Framework Convention on Climate Change (UNFCCC).

In May, **Drs. Keith Paustian** and **Rich Conant** participated in a workshop held in Atlanta for authors who are writing the U.S. State of the Carbon Cycle Report. Keith and Rich are lead authors for a chapter in this report that will summarize current knowledge about carbon cycling in North America.

NREL IN THE LIMELIGHT

CSU Scientists Devise Way to Track Colorado's Rapidly Changing Open Spaces and Protected Areas

A group of scientists at NREL have been building an electronic map that answers the question, "How can we best track Colorado's rapidly changing open spaces and protected areas " and have recently released what is likely the most accurate single map of land management in Colorado.

The goal of the Colorado Ownership, Management, and Protection, or COMaP, project is to provide comprehensive, consistent and current information on the ownership, management, and protection of federal, state, local, and private lands in Colorado. **Dr. David Theobald**, Research Scientist at the NREL and Assistant Professor with the Department of Natural Resource Recreation and

Tourism, initiated the project based on the premise that better understanding of the mixture of ownership and management of both public and private lands is needed for improved management of Colorado's ecosystems.

A year ago, **Theo Wald** and NREL colleagues **Nate Peterson** and **Grant Wilco** set out, with initial funding from the Colorado Division of Wildlife, The Nature Conservancy, and the U.S. Geological Survey, to fill this information gap. Working with over 100 collaborators across the state, including those from the Bureau of Land Management, Forest Service, the Division of Wildlife, and The Nature Conservancy, they have compiled a comprehensive database that includes information on wilderness areas, forest management zones, state parks and wildlife areas, city and county parks and open space, as well as data from participating land trusts throughout the state.

Dr. Theo Wald stated, "We add value to their data by bringing together the various pieces of the puzzle to form a comprehensive, consistent picture of the state. We believe that Colorado State University, as Colorado's land grant university, should play the role of weaving together these various data." (quoted from CSU E Comment)

Dr. Tom Stohlgren (USGS NREL) raised \$50,000 to help the U.S. Fish and Wildlife Refuge System document and map invasive plant species on selected refuges in the U.S.

Dr. Stohlgren's research team established a partnership with Sea Studios, National Geographic, and others to document, map, and model ten invasive species in the Arizona Sonoran Desert Museum area, using "citizen scientists" trained by the Museum. This program may be expanded to many cities in the U.S. The research team, led by **Jim Raham** and **Reg Newman** (NREL) unveiled the "Global Organism Detection and Monitoring System" a web-based geospatial database that tracks harmful invasive plants, animals, and diseases in the U.S. (see www.NIISS.org). Stohlgren was quoted in the May issue of Popular Mechanics about the team's partnership with NASA Goddard Space Flight Center for creating an Invasive Species Forecasting System for the nation. Stohlgren and colleagues have published two reports and an article in Ecological Applications resulting from this research effort.

Drs. Rich Conant (NREL) and **Joe von Fischer** (Biology NREL) created the Student Ecology Research Program (SERP) to provide content for the work carried out by undergraduate employees. SERP participants attend bi-weekly seminars on a variety of science-related topics, carry out an independent research project, and present their research results at a symposium at the end of the summer. The program has great potential to broaden the experience of undergraduate students and to train the students to be better scientists themselves.

APPPOINTMENTS

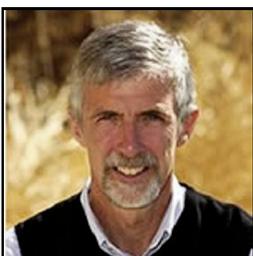
Dr. Diana Wall, NREL Director, has been appointed to the United States National Commission for the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as a representative of the at-large community. Through the U.S. Department of State, the National Commission will provide the U.S. Government with expert advice on U.S. interests in educational, scientific, cultural, and communications issues and will

assist with the implementation of UNESCO programs.

Diana was appointed to the National Research Council Polar Research Board (2005-2007) Advisory Board, U.S. Population Biology Network Program Advisory Committee, Tropical Soil Biology and Fertility CIAT Project on Conservation and Sustainable Management of Belowground Biodiversity (2005-2007).

Congratulations are in order to three NREL CSU scientists who have been elected to serve on the Ecological Society of America Governing Board: **Drs. Bill Parton**, Vice President for Finance, **Dennis Sims**, Member at Large, and **Alan Covich**, President elect (NREL affiliate Univ. of Georgia).

Dr. Dave Theobald has been promoted to Assistant Professor in the Natural Resources Recreation and Tourism Department.



Dr. N. Thompson Hobbs, NREL Senior Research Scientist, has been selected as Department Head of the Forest, Rangeland, and Watershed Stewardship (FRWS) Dept., to begin on July 1, 2005. **Dr. Joe Hobbie**, Dean of the College of Natural Resources, is quoted as saying, "Dr. Hobbs brings exceptional leadership skills, experience, and vision to his new position. He is a world class scientist who is nationally and internationally recognized for his research on the role of large herbivores in ecosystems, ecosystem modeling, and land use and climate change. Dr. Hobbs is also an exceptional teacher and is passionate about educating the next generation of natural resource professionals and scientists. Additionally, Tom is deeply committed to CSU's mission of service and outreach." Tom has been a great asset to NREL and will continue on as an affiliated scientist.

Dr. Stephen Gleason was appointed to the Scientific Steering Group of the North American Carbon Program (NACP). He was also selected to coordinate a Task Force with Ben Davis (Penn State Univ.) which oversees the Mid Continent Intensive Study Campaign. This campaign brings together atmospheric scientists and ecosystem modelers to compare "bottom up" and "top down" approaches for assessing CO₂, CH₄, N₂O, and CO₂ fluxes in a region centered on Iowa. It is also one of several across the U.S. that is expected to support NACP objectives.

Dr. Jill Aron (USGS NREL) was appointed to the science advisory board of the National Center for Ecological Analysis and Synthesis (NCEAS). Jill was also appointed to the Board of Directors of the Mountain Studies Institute, a research and education institute in Silverton, CO.

VISITORS

NREL's Spring 2005 Diversity in Academia Seminar Series, organized by **Drs. Lindse Christensen** and **Heidi Steltzer**, included NREL alums who have moved on to a diverse set of job and research opportunities. Lecturers included Dr. Serita Frey (Univ. of New Hampshire), Dr. Sarah Spaulding (USGS, National Wetlands Research Center), Dr. Amy Treonis (Creighton Univ.), Dr. Deanna Stouder (U.S. Forest Service, Washington, DC), Dr. Laura Powers (USAID, Washington, DC), and Dr. Loren Nydick (Mountain Studies Institute, Silverton, CO).

In the spring of 2005, Dr. Dan Binkley's (GDPE FRWS NREL) lab hosted a 3

month visit from Dr. Robert Jandl, Institute of Forest Ecology, Forest Research Center in Vienna. Robert's interests center on ecosystem biogeochemistry and the use of mountainous forests around the world. His visit was supported by a Fulbright Fellowship, and he taught a short course on Integrated Resource Use in Mountain Forests. Ana Heloisa Marrichi Carnaval (Univ. of Sao Paulo, Brazil) also visited Dan's lab and came to spend time with U.S. Forest Service scientists Mike Ryan and Rob Hubbard, mastering instruments and techniques for ecophysiology measurements on trees.

RAD STUDENT NEWS

Mar St. John (Dr. Diana Wall, advisor) successfully defended his PhD dissertation, "Soil Mite Biodiversity: Its Relationship to Grass Species and Influence on Decomposition in the Conza Tallgrass Prairie" on April 7. He graduated on May 3.

Sanja Advani (Dr. Bill Aron, advisor) successfully defended his MS thesis "Soil Respiration Responses to Fertilization: A Comparison of Two Forests with Different Nitrogen Deposition Histories" on April 5. He will graduate this summer.

PhD student **Catherine Crosier** (Dr. Tom Stohlgren, advisor) was hired full time by the U.S. Geological Survey to work on invasive species issues in the US.

In March, **Erandi Lo upiti a**, (GDPE Soil Crop Sciences) presented "Inventorying Agricultural Soil Greenhouse Gas Emissions: Methods Used by Anne Countries," with advisor **Dr. Keith Paustian**, at the USDA Greenhouse Gas Symposium in Baltimore. As a result, Erandi received an invitation from Dr. Wotek Galinski of Joanneum Research, Austria to present a talk at the Land Use Related Choices under the Kyoto Protocol Obligations, Options and Methodologies Conference in May in Graz, Austria.

New NREL MS grad students **Michelle Addi**, a research technologist from the Univ. of Nebraska, and **Megan Steinberg**, who earned a BS from Appalachian State, Boone, NC, arrived in May to work with **Dr. Rich Conant** on his NSF funded soil warming project.

SPECIAL PUBLICATIONS

Dr. Diana Wall was co lead author for a chapter, "Implications for Achieving the Millennium Development Goals" published in the 2005 Millennium Ecosystem Assessment, Volume 2, Island Press, Washington, DC. Additionally, **Drs. Dennis Williams** and **Bill Aron** were contributing authors for another chapter entitled "Current State and Trends: Findings of the Condition and Trends Working Group, Ecosystems, and Human Well Being." See the following link to the BBC news website:

http://news.bbc.co.uk/2/hi/science_nature/39355.stm

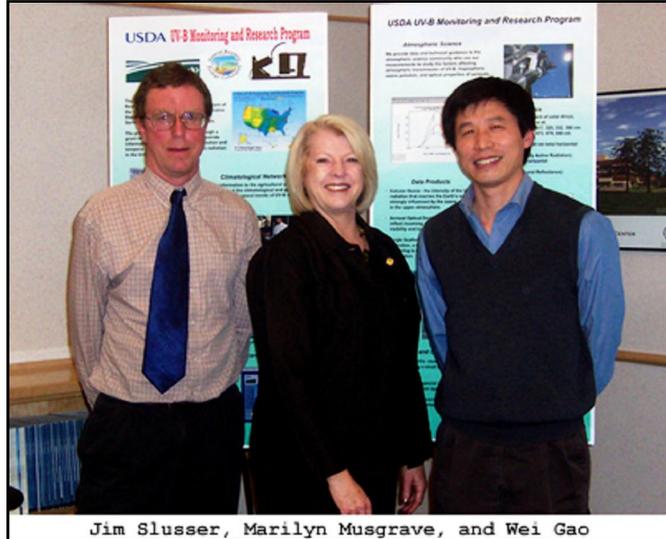
Dr. Diana Wall was featured in the April 2005 Discover Magazine Think Tank on the Environment section. She wrote on the importance of the research being conducted on the interaction of soil species "which provide fertile and productive soils for our food supply and for the ecosystem processes that we depend on."

Dr. Dan Minle (GDPE NREL) and Oleg Menyailo (Sukachev Institute of Forest Research, Irkutsk) edited "Tree Species Effects on

Soils: Implications for Global Change for Springer's NATO Science Series (Vol. 55). The book was a product of a NATO Advanced Research Workshop held in Rasnnyarsk, with scientists from ten countries working to understand how tree species matter in shaping soils and biogeochemistry.

UV NEWS

Congresswoman Marilyn Musgrave was on campus March 2, 2005, and met with President Larry Penley, Tony Frank, Interim Provost Hank Gardner, Associate Vice President for Research Lance Perryman, Dean, College of Veterinary Medicine and **Drs. James Slusser** and **Wei Gao** of the Ultraviolet B Radiation Monitoring and Research Program (UV B NREL). Drs. Slusser and Gao discussed the UV B Program and its relevance on agriculture, livestock, and human health. Musgrave also toured the CSU Animal Cancer Center and expressed her strong support for both programs.



Jim Slusser, Marilyn Musgrave, and Wei Gao

UV B scientists are collaborating with scientists at the NASA Goddard Space Flight Center to help measure aerosol absorption in the atmosphere. The impact of aerosols on climate is one of the largest uncertainties in climate models. It is still unknown whether these aerosols have an overall heating or cooling effect on the atmosphere. Additionally, Dr. Slusser has co-authored two papers on aerosol properties and was chief editor of the special section, entitled "Advances in UV Ground and Space based Measurement and Meteorology," that appeared in the April 2005 issue of *Optical Engineering*.

Dr. Gao was guest editor of a special edition issue of *Ultraviolet Radiation and Terrestrial Ecosystems* in the *Journal of Photochemistry and Photobiology*. The issue includes several papers co-authored by UV B staff, as well as a paper on UV radiation effects on plant growth and forage quality in a shortgrass steppe ecosystem authored by Dr. Dan Milchunas, NREL affiliated scientist.

Dr. Bill Davis has accepted a position as the Network Security Administrator for Student Housing on campus. He served as the UV B Monitoring and Research Program's system administrator for over ten years. Congratulations and good luck, Bill.

IN THIS NREL

NREL TALKS WITH DR. FRANCIS CLARK, RESIDENT SCIENTIST AT NREL

Dr. Francis Clark has made many contributions to ecosystem science, CSU, NREL, the College



of Natural Resources, Larimer County, and the City of Fort Collins. He is a world renowned microbial ecologist and recipient of the Agricultural Research Service's Hall of Fame Award and the Soil Science Society's Distinguished Career Award. He has authored several books and over 75 journal articles, and has collaborated over the years with many NREL and CSU scientists. He has mentored and advised a number of graduate students, and was a key advisor to George Van Dyne, an early catalyst to the formation of NREL, in the early IBP Grassland Biome days during 1970-71.

Among many important contributions to CSU, Dr. Clark and his late wife Evelyn established the Francis Clark Soil Biology Scholarship fund at NREL, an endowment which has supported graduate students in environmental science since its inception in 1999. Francis has now established the Excellence in Enhancing Global Connections (EEGC) endowment. In a February 2, 2005 ceremony, NREL honored Francis by renaming the Natural and Environmental Sciences Building's main conference room after him. NREL continues to be extremely grateful to Dr. Clark for his many contributions to NREL, and his commitment to the global research conducted here.

NREL is deeply grateful to the many individuals who have contributed to our Excellence in Enhancing Global Connections endowment started by matching funds from Dr. Francis E. Clark (see below). 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 Dr. Clark, making this a one of a kind opportunity to enhance NREL's future. Over \$10,000 has been raised so far towards a goal of \$100,000. If you are interested in contributing to this exciting new endowment, please contact Neil Shropshire (neil@nrel.colostate.edu or 970 975 5155) 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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