

# NREL NEWS NOTES

*NATURAL RESOURCE ECOLOGY LABORATORY*  
*Colorado State University*

*No.22 April, May and June 1997*

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## Spotlight on Science

**Featuring: Jill Baron, Research Scientist - Natural Resource Ecology Laboratory and Research Ecologist, Mid-continent Ecological Science Center, USGS, Biological Resources Division**

The more things change, the more they stay the same, pretty much describes the results of the political winds over the past four years on Jill Baron's research activities, and that is a good thing. Baron has been a member of the NREL since 1981, when she began research on Rocky Mountain alpine and subalpine aquatic biogeochemical processes. At that time, Baron was a National Park Service researcher, an arrangement that continued until 1993, when Baron took part in the formation of the National Biological Survey (NBS). The mission of the short-lived NBS was to provide the best possible scientific information to land management agencies of the Department of Interior. Although the NBS did not survive, land management agencies have a growing expectation that sound, ecosystem-scale information will be the base for resource management now that the NBS has merged with the U.S. Geological Survey. Baron credits her affiliation with the NREL as one of the main reasons why the research has been strong through the government shutdowns and budget cuts. The ecosystem approach that characterizes NREL is often used as an example of how to shape future government research and management efforts. And the successful partnership between federal and university researchers serves as a model of synergistic collaboration that benefits both agency and university.

Understanding ecosystem variability to distinguish natural from human-caused change has been Baron's research focus, and to do that she initiated the Loch Vale Watershed long-term ecological research and monitoring program in Rocky Mountain National Park. Loch Vale, an instrumented high

elevation basin, now has a 14-year continuous hydrologic and biogeochemical record. The Loch Vale program is capably managed by Eric Allstott and Brian Newkirk at NREL, with help from Doug Bopray. Students eather Rueth, Cyndi Brock, Ben Balk, Debra Planert, and Sarah Clements are adding to the knowledge of water, sulfur, nitrogen, and carbon cycles.

The intensive research in Loch Vale has become a core for regional expansion in several directions. Baron is part of a team exploring regional climate variability and climate change that is potentially driven by regional land use. Modeler Melannie artman successfully herds data from many sources and spatial scales into and out of CENTUR and RESSys, and will oversee the linking of CENTUR with RESSys this summer. This is mostly a modeling exercise about land -atmosphere feedbacks and the ecological and hydrologic consequences to both mountains and plains.

Placing Loch Vale at the top of the South Platte Basin has been one way of expanding. Placing it in the context of the Rocky Mountain chain has been another. Baron, along with co-organizers from Montana, is looking forward to hosting the workshop: *Human-Induced Change* to the Rocky Mountains: Unifying Principles. The workshop will bring together Rocky Mountain experts to synthesize and evaluate the extent of human-driven change on Rocky Mountain ecosystems.

Working for the USGS and being a good member of the University and NREL can sometimes mean double the administrative, committee work, and communications load, because in essence, Baron answers to two masters. She wouldn't have it any other way, however. She hopes she serves to transfer information both ways as ecosystem-scale perspectives take hold in management of federal lands.

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## NREL REUNION SUMOSUM

October 11, 1997

*(with the Association of Ecosystem Research Centers)*

To see who is attending, check the guest list on the www at:

<http://www.nrel.colostate.edu/30thguest.html>

**Attention:** If you have not filled out a registration form -

**DO SO NOW** at:

<http://www.nrel.colostate.edu/30threturn.html>

Be sure and see the comments and pictures on the

Remember NREL page /30thtrivia.html

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## Announcements

Natural Resource Ecology Laboratory Receives 100,000 Gift to Establish the Francis E. Clark Soil

## Biology Scholarship Endowment

The Francis E. Clark Soil Biology Scholarship will support undergraduate and graduate students working with NREL in the areas of soil biology. Dr. Clark was with the USDA ARS from 1938 - 1969 and a long time colleague and researcher with NREL scientists including the founder of NREL, George Van Dyne. Drs. Francis Clark and Eldor Paul recently published a revision of Paul and Clark "Soil Microbiology and Biochemistry."

Francis and Evelyn Clark established the scholarship fund in soil biology to keep NREL on the cutting edge of science. Dr. Diana Freckman, Director of the NREL, said "Dr. Clark's gift will make a huge difference at the

Laboratory in recruiting the best and brightest students to work at the NREL. As a highly respected scientist in the research community, Francis reinforces our commitment to excellence in ecosystem research. We are very excited to have him share our vision and make this major contribution to the future of soil biology and ecosystem research at the NREL."

**Congratulations** At the May 1 Research Scientist meeting, Dan Binkley, Deb Coffin, John Gross, Daniel Milchunas, Eith Paustian, Frank Singer, and Tom Stohlgren were unanimously accepted as Voting Members of the NREL Senior Staff.

The NADP Executive Committee met in May to consider cost saving measures for the Program in the face of flat budgets and increasing costs. The result of that meeting was to recommend that the activities conducted at the NADP Coordination Office housed here at CSU be

consolidated with and moved to the analytical laboratory at the University of Illinois. The majority of the transfer will occur by October 1. NADP has been a part of NREL for nearly 20 years and currently employs eight staff members and four undergraduate students. Re-employment services and retraining are being offered to the affected staff members.

Dr. Dexing Chen, Research Associate, accepted a position as a software engineer at Hewlett-Packard in Fort Collins effective May 30th. Dexing, a valued NREL Research Associate since 1992 contributed significantly to NREL by modeling plant and ecosystem responses to atmospheric change. His work on the little known ydrilla project helped get this NREL project through some darker days. He managed to develop a model of C4 photosynthesis and a land-surface model called GEMTM. His recent work on coupling ecosystem and atmospheric models is at the forefront. NREL has lost a great modeler, but we wish him all the best in his new career endeavor.

Deb Coffin served on the USDA/NRICGP Range/Crop/Aquatic Ecosystems panel, March 4-7.

Diana Wall Freckman is a candidate for President Elect in the 1997 elections of the Ecological Society of America, along with Robert J. Naiman of the College of Ocean and Fisheries Science, University of Washington, Seattle, WA.

Ted Elliott has been elected Treasurer for the Association of Ecosystem Research Centers (AERC) for 1997.

Jill Baron and Andy Parsons were inducted into Sigma Xi, the Scientific Research Society, on April 23.

Indy Burke and Bill Lauenroth returned to CSU on June 1, from a much-deserved sabbatical at the Institute of Ecosystem Studies in Millbrook, N. Welcome home

Chris Andre and Pella Brinkman, Freckman lab personnel, departed NREL at the end of April to

follow new career paths. They will be missed

Tim ittel was promoted to Research Scientist effective July 1, 1997.

Alan Covich has ust completed his term as President of the North American Benthological Society (NABS) at the Annual Meeting held in San Marcos in late May.

Diana Wall Freckman and David Schimel were among 19 other ecologists who wrote a letter to President Clinton regarding accelerated climate change. Full text of the letter can be found on the World Wide Web. <http://www.nrel.colostate.edu/NREL/globalwarmletter.html>

Ted Elliott served on the CSU Experiment Station review panel which reviewed over 30 proposals that were submitted in competition for the Interdisciplinary Research RFP distributed on campus. e also served on the USDA-Soil and Soil Biology Panel which met in Washington, DC, April 8-11.

Beth olland, Director, organized a NATO Advanced Study Institute, "Soils and Global Change: Carbon Cycle, Trace Gas Exchange and ydrology," held June 1 -27, 1997, at the Chateau de Bonas in Toulouse, France. Beth also presented lectures titled "The Role of Trace Gases in the Earth System: Sources, Sinks and the Composition of the Atmosphere" and "Linkages between Global Carbon and Nutrient Cycles." Dave Schimel served on the Organizing Committee and presented lectures on "The Physical Climate System" and Global Biogeochemistry." Vern Cole presented lectures at the NATO Institute titled, "The Terrestrial Phosphorus Cycle: Links to the Carbon and Nitrogen Cycles" and "Assessment of Potential Mitigation of Greenhouse Gases in Agriculture." Vern is presenting a tutorial on "Phosphorus Methodology and Modeling" and Dave Schimel is giving a tutorial on "Using the CENTUR Ecosystem Model." Gene elly (Dept. of Soil and Crop Sciences) gave lectures titled "Using Isotope Techniques to Understand Soil ydrology" and "Long Term Processes of Soil Development: Lessons Applicable to Future Changes." Approximately 0 -80 students attended the Institute. During the evenings, lecturers held tutorials for smaller groups of students in their area of specialization. 2-3 tutorials were held each evening, allowing each student to attend several tutorials throughout the course of the Advanced Study Institute.

## Meetings

### COLORADO

Jim Gibson gave an invited seminar titled "Increasing UVB Radiation: Should we be concerned?" at the Institute of Rural and Environmental ealth for faculty and students on March 3.

Ted Elliott attended the NSF "Symposium on Future Research" in Golden on March 13. Neil Lane (NSF), President ates (CSU) and others from the State were in attendance. The meeting stressed the importance of research and academics and their mutual benefits. Research advancement in the future with limited budget allocations was also discussed.

Jill Baron attended Loch Vale meetings in April and May. Guest speakers at those meetings included: Dr. Alex Wolfe (paleolimnologist) and Dr. Mel Reasoner (palynologist, University of Colorado Institute for Arctic and Alpine Research), and Debra Planert (M.S. student, Department of Forest Sciences at CSU) who is working in Loch Vale on forest floor microbial processes.

Francis Singer, Mike Coughenour, Ted Elliott, Jeff Welker, Linda iegenfuss, Steve Williams, and others presented papers to an expert panel on "Vegetation Monitoring in Rocky Mountain National Park" on April 1 -17 at the Park. The panel made subsequent recommendations which may affect further research on elk-vegetation interactions, and elk management.

Tim ittel presented a research review for the NSF Site Visit to the Geophysical Statistics Proect, NCAR, Boulder, CO, May 21-23, titled "istorical Climate Reconstruction for the United States for the Last 100 ears."

A workshop titled "Climate Change Impacts on Ranching, Farming, and Wildlife Conservation in the Central Great Plains (Colorado, ansas, Nebraska, and Wyoming) was sponsored by the White ouse Office of Science, Technology and Policy (OSTP), NREL, University of Nebraska and the Department of Energy. The workshop, organized by Dennis Oima, was held at the Lory Student Center and Sylvan Dale Ranch, May 27-30. Speakers included Mr. Tim Wirth, Under Secretary of State for Global Affairs. NREL attendees were D. Oima, B. Parton, V. Cole, . Paustian, and D. Wall Freckman. The workshop will provide critical information to the President's environmental policy regarding the potential impact of climate change on the Great Plains. The outcome of the workshop will be produced as a report to highlight the critical features of the Great Plains ecosystems relative to current climate variability and potential climate changes. The organization of the workshop was greatly assisted by Ms. Becky Techau of NREL. Additional information about the workshop can be found on the www at: <http://www.usgcrp.gov/usgcrp/gp.html>.

Dennis Oima hosted a U.S. Information Agency (USIA) Voluntary Visitor Program on June 14 -28 at NREL/CSU for the Mongolian Minister of Nature and the Environment and a delegation of scientists. The participants were: Mr. Adyasuren Tsobiogyn (Minister of Nature and the Environment) Ms. Batnyam Lamaviin (Sr. Enviornmental Pollution Expert, ydro Meteorological Environmental Monitoring Agency) Mr. Damdin Tserendashiin (General State Environmental Inspector, Ministry of Nature and Environment) Mr. Lubsan Gombosurengiin (Consultant, Industrial Energy Efficiency and the Environment, Mongolian Consulting and Service Company) Mr. Shagdarsuren Dambiin (Advisor to the Minister, Ministry of Nature and the Environment) Mr. Tsogtbaatar Jasrangyn (Director, Institute of Geo-Ecology, Mongolian Academy of Sciences and Advisor to the Minister, Ministry of Nature and Environment). They were accompanied by: Mr. Palgi Gyamcho and Mr. Toch-Toch Gyamcho (U.S. Escort Interpreters). The Mongolian Ministry of Nature and the Environment has been working to develop a pollution discharge permit system. They wish to observe how U.S. authorities use discharge permits to control pollution from several specific industries. The delegation will make site visits to observe permit regulations and procedures and to discuss the discharge permit management and policy with government officials and industry representatives. They are also interested in learning about methods and instruments used to measure, monitor, and analyze pollution discharge. NREL speakers at this meeting include: Jim Ellis, Mike Coughenour, Dennis Oima, Lindsey Christensen, Robin elly, Becky Mceown and Rocky Coleman.

Jill Baron, and the Resource Management and Interpretation Divisions of Rocky Mountain National Park, organized and held the first ever Rocky Mountain National Park All-Scientists Meeting in Estes Park, CO, June 9-10. Tom obbs was the Plenar speaker. Many NREL scientists and students gave excellent presentations and posters, including Romulo Menezes, Geneva Chong, Mohammed alkhan, Dan Binkley, Tom Stohlgren, Lisa Schell, Cyndi Brock, Eric Allstott, Melannie artman, Jan Cipra, Jill Baron and Francis Singer.

Jill Baron will present the paper "The Influence of Land Cover and Temperature Change on ydrological and Ecosystem Dynamics in the South Platte River Basin in a Special Session on Water Resources and Potential Climate Change" at the American Water Resources Association and University Consortium on Water Research meeting in eystone, CO, June 29 -July 3. Co-authors of the paper include Melannie artman, Dennis Oima, Tim ittel, Richard Lammers, Larry Band, and Roger Pielke.

## **N □ T I O N □ L**

eith Paustian attended a meeting with collaborators on the USDA/NRCS proect who are analyzing carbon sequestration with conservation management practices in Iowa, Feb. - in Des Moines. eith

then traveled to the Dept. of Soil and Environmental Sciences, University of Riverside, Riverside, CA, Feb. 19-23 and gave an invited seminar titled "Adventures in Modeling Soil Organic Matter: Research and Policy Application at Local and Regional Scales."

Deb Coffin attended a meeting on establishing U.S.-Mexico LTER connections and developing joint proposals at the Sevilleta LTER on March 31-April .

Keith Paustian gave an invited seminar on April 11 at the University of Wyoming titled "Assessing Agriculture's Potential to Sequester C for Mitigation of Anthropogenic CO<sub>2</sub> Emission: A Case Study of the CRP."

Diana Wall Freckman attended the Seventh Annual Cary Conference "Successes, Limitations, and Frontiers in Ecosystem Ecology," in Millbrook, N, May 19-21.

Jill Baron presented an invited paper titled "Sensitivity of Rocky Mountain Watersheds to Climate Variability" at the 10th annual meeting of the National Watershed Coalition in Reno, NV, May 18 -19.

Mike Coughenour, Francis Singer and Jim Detling participated in the Pryor Mountain Wild Horse Range Management Forum held by the BLM and USGS/BRD in Billings, MT on May 7-8. The three researchers have been involved in research in the Pryor Mountains/Bighorn Canyon National Recreation Area for 3+ years. Jim Ellis also attended the conference.

Dennis Oima, Chuluun Togtohyun and Laura Stretch attended a TEAL -GANA workshop May 21-24 in Sioux Falls, SD. The workshop was to develop land cover database for the GANA research area.

Tim Lauenroth, Dave Schimel, Dennis Oima and Bill Parton attended the U.S. Government Agency Briefing on VEMAP in Arlington, VA, May 20. Dave gave a keynote talk titled "The Vegetation/Ecosystem Modeling and Analysis Project" and Tim gave a presentation titled "The VEMAP Phase 2 Historical Climate Database."

A number of NREL-ers (Ted Elliott, Diana Wall Freckman, Serita Frey, Romulo Menezes, Bob Niles, Andy Parsons, Johan Six, and Amy Treonis) attended the Soil Ecology Society 1997 Conference "Soil Ecology: Understanding and Preserving Soil Systems" on May 27-30 at Kansas State University in Manhattan, S. Talks included: "Rationale for Bioindicators of Soil Health by Ted Elliott Bacterial and Fungal Abundance and Biomass in conventional and No-tillage Agroecosystems" by Serita Frey (with Ted Elliott and Keith Paustian) and "A Comparison of Primary Producer-based and Detritus-based Food Chains" by John Moore (with Peter De Ruiter). Posters presented included: "Resolving the Small-scale and Large-scale Patterns of Nematode Distribution Within Alfalfa Plants and Fields in Colorado" (R. Niles and D. Wall Freckman) "Unwinding the Coil: The Relationship Between Soil Moisture, Salinity, and Nematode Anhydrobiosis in Taylor Valley, Antarctica" (A. Treonis, D. Wall Freckman and R.A. Virginia) "Glucosamine and Muramic Acid Pattern in Conventional and No-tillage Agroecosystems" (G. Guggenberger, S.D. Frey, E.T. Elliott, Keith Paustian and W. Parton) "Effects of Productivity on the Trophic Structure of Detritus-based Food Webs of Wind Cave and Jewel Cave, SD" (R.D. Jessor and J.C. Moore) "Influence of Substrate Type on Growth and Activity of Certain Soil Micro-fungi" (G.M. Lipari and J.C. Moore) "Agrosilvopastoralism in Semi-arid Northeastern Brazil: Do Trees Lead to Sustainability in These Systems?" (R.S.C. Menezes, I. Salcedo and E.T. Elliott) "Impacts of Managed Grazing on Mycorrhizal Associations in Mountain Ecosystems" (J.M. Sipes, R.D. Jessor, J.G. Osborne, S. Davis and J.C. Moore) and "Aggregation and Sequestration of SOM in Cultivated and Native Grassland Soils" (J. Six, E.T. Elliott and Keith Paustian).

Diana Wall Freckman, member of the Advisory Committee, reviewed the Oak Ridge National Laboratory, Environmental Science Division.

Mike Coughenour was one of four panelists presenting information to the Summer Meeting of the Society for Range Management in Billings, on the topic "Natural Regulation in Yellowstone National Park." NREL alumnus Rod Eitschmidt was the principal organizer of the meeting.

Dennis Oima and Robin Kelly traveled to the Ponca City, OK area, June 2-4, to sample soils and vegetation near two flux towers (one in a wheat field, the other in a tallgrass system) in collaboration with Shashi Verma (University of Nebraska, Lincoln).

Keith Paustian and Dennis Oima traveled to Tsukuba, Japan, March 1-5, as invited participants at the International Workshop on "Evaluation of Soil Processes on Carbon Cycling in Terrestrial Ecosystems and Their Modeling." Dennis co-chaired the session on Global Carbon Modeling. Since returning, they have completed a follow-up report on their visit.

Diana Wall Freckman chaired the SCOPE meeting on "Soil and Sediment Biodiversity and Ecosystem Functioning" in Wageningen, the Netherlands, April 4-12. Alan Covich was one of the 40 international participants. This was the first integrative workshop of scientists studying soils, freshwater sediments and marine sediments and was the first to emphasize the functional significance of specific organisms and taxa across the 3 domains and the ecosystem services they represent.

The SR-CRSP project, funded by USAID, held a second workshop in Nairobi, May 21-24 on "Developing a Decision Support System for Integrated Assessment of Pastoral-Wildlife Interactions in East Africa." The first workshop was held there in February. Assessment team members included: Mike Coughenour (PI), Kathy Galvin (co-PI), Jim Ellis, Ann Magennis, Dennis Child, Jim DeMartini and Larry Rittenhouse from CSU, and Terry McCabe and Bob Davis from CU.

Dennis Oima participated in the 1997 Open Meeting of the Human Dimensions of Global Environmental Change Research Community IIASA in Vienna, Austria on June 12-14.

Jill Baron's Loch Vale project has three Research Experience for Undergraduate (REU) students for the summer: Matt Ridge from Adams State College, Julie Hawkins from CSU, and Toby Minear from Colorado College. In addition to conducting research in Rocky Mountain National Park, all will participate in the CSU Interdepartmental Water Resources Site REU program. Welcome to NREL

Dr. Charles Rhoades will begin a post-doc with Dan Binkley and Bob Stottlemyer (USGS/BRD). Chuck completed his Ph.D. under the supervision of Dave Coleman at the University of Georgia, where he worked on the effects of reforestation on soil fertility in Ecuador. Chuck will be housed at the U.S. Forest Service laboratory on Prospect St., but will be seen around NESB frequently. His new work will focus on long-term ecological research in biogeochemistry at Fraser Experimental Forest (Colorado) and in the Noatak National Preserve (Alaska).

Yumi Suzuki has joined Deb Coffin's project as a student hourly programmer for the summer.

Tom Stohlgren has hired three summer field teams of undergraduate students for his projects. The "Plains Project" is headed by Kelly Bull. Kelly will be assisted by Cindy Villa, Yuka Otsuki, Dennis McCrumb, Stephanie Nolley and Michelle Hart. Their project is developing a multi-agency, multi-scale vegetation sampling program for the Central Grasslands. The "Landscape-scale Gap Analysis" project is headed by Geneva Chong. Geneva's team includes Cindy Jones, Paige Lynch, and Roger Miller. Geneva and her team are busy in the third field season of multi-scale vegetation sampling in

Rocky Mountain National Park. The information will add an herbaceous layer to the Park vegetation map that is currently based on tree cover. This new map will provide a much better representation of vascular plant biodiversity in the Park. The "Exclosure Project" is headed by Lisa Schell. Lisa is joined by Brian Vanderveer and John Moeny in the second and final field season, which involves quantifying native and exotic plant species diversity and their interactions with livestock and wildlife grazing. This is a multi-state, multi-agency effort that involves vegetation sampling in Colorado, Wyoming and Montana, with the cooperation of the National Park Service, the Fish and Wildlife Service and the Bureau of Land Management. This field work provides research data to support Lisa's Masters in Environmental Studies at Prescott College in Arizona.

Lawrence C. Bliss, Professor Emeritus of Botany, University of Washington, Seattle, WA

nearly missed the plane in Champaign for we had overslept that morning. In fact, I plane bound for Chicago. That first meeting went quite well as I recall and it was good to grassland remnants in Illinois and the fact that Bob Redmann was completing his

The years of 1970-8 were exciting ones, helping to organize all of the U.S. IBP studies 1970-199 we conducted research on Devon Island nearly every summer. We had our last

Philip . Crowley, Thomas Morgan School of Biological Sciences and Center for

Many thanks for the invitation to your anniversary extravaganza. I won't be able to come IBP models for a while (Eastern Deciduous Forest Biome, in my case), and learned an of the IBP effort, which really left quite a legacy. Best wishes for a fabulous reunion

Dr. John Antle, Northern Plains and Rockies Center for the Study of Western Hemisphere Trade, Montana State University, visited NREL on April 7. I met with Ted Elliott and Eith Paustian to discuss collaborative work on the NIGEC project.

Dr. John Doran, University of Nebraska, met with Eith Paustian and Ted Elliott at NREL to discuss preparation of a synthesis paper for work done at Sidney, NE.

Dr. Bruce Winterhalder, Anthropology Department, University of North Carolina, visited NREL,

April 9-11, as part of the Visiting Distinguished Lecturer Ecology Series.

Dr. Christopher B. Field, Department of Plant Biology, Carnegie Institute of Washington, visited CSU and met with members of the Graduate Degree Program in Ecology, April 22-2. e also presented a Colloquium in Life Sciences Lecture.

Dr. Brian Baer, Department of Crop and Soil Sciences, Michigan State University, visited NREL May -9, to collaborate on the SALUS cropping systems model. e was sponsored by eith Paustian and endrick illian.

Mrs. Wren Wirth, Washington, DC, visited NREL on May 27.

Dr. Ross Virginia and graduate student Melody Brown Bukins, will be visiting NREL and attending the McMurdo Dry Valley LTER meeting at the University of Colorado, June 21-2.

**April 4:** Dave Schimel, NREL & NCAR. "The Ecology and Economics of Stabilizing Atmospheric Greenhouse Gases."

**April 11:** Vern Cole, NREL. "Assessment of Potential Mitigation of Greenhouse Gases in Agriculture: A Challenge for Ecological Studies."

**April 18:** Diane Waddle, Assistant Professor, Department of Anthropology, CSU. "Prehistoric Migrations and the Origin of Modern umans."

**April 25:** Gary Lear, NADP. "Atmospheric Deposition."

**May 2:** Mohammed alkhan, NREL. "Linking Multiphase Sampling and Spatial Cross -Correlation to Assess Map Accuracy and Patterns of Plant Species Richness."

**May 9:** Jim Ellis, NREL. "Implications of spatial Scale for Diversity, Stability, and Productivity - Lessons from South African Game Ranching."

NO SEMINARS ARE SCEDULED FOR TE SUMMER

Cyndi Brock successfully defended her master's research thesis titled "Sulfur Isotope Watershed" on May 14.

Cyndi's maor professor is Jill Baron. Congratulations, Cyndi

Dr.

Tom Bongers at Wageningen Agricultural University, The Netherlands.

Chong the honor a nd of from CSU  
Fellowship. Incoming student Rochelle by Schoettle Dan  
was a of CSU Fellowship.

Jason aye, an incoming GDPE student (advised by Dan Binkley) will arrive in July.

Trends in Ecology and Evolution (with his MS advisor, Steve art) on "Competition for Nitrogen Between Plants and Soil Microorganisms." Tree 12:139-143.

Serita Frey gave a guest lecture discussing the importance and role of soils to world food production for Dr. Robert imdahl's undergraduate course on world population and food.

Gyuri roel -Dulay, Tamara ochstrasser and Deb Coffin won the best poster award for the CSU Graduate Student Symposium, March 27-28. Gyuri and Magdi roel -Dulay returned to ungary after 10 months of studying with Deb Coffin at CSU.

Rich Alward was awarded the Shortgrass Steppe LTER Summer Research Fellowship and a GDPE Reserch Award to help cover expenses on his research in climate change effects on plant and insect herbivore interactions. Rich also received a plaque at the GDPE Annual Spring Meeting in recognition of his Outstanding Student Contribution to the GDPE.

eather Reuth, graduate student working in Loch Vale Watershed attended Jim Ehleringer's Ecological Applications of Isotope Chemistry intensive class in Salt Lake City, UT, June-July 3.

Tom Stohlgren was funded 124,803 by USGS/BRD to study the exposure of breeding sheep herds to heavy metals, primarily copper and potentially molybdenum and other metals. These heavy metals are carried from the site by the Alamosa River and onto the sheep pastures of the irrigated river valley.

Beth olland received funding from NASA for the proposal titled, "The Bio -Atmospheric Ecosystems." Bill Parton received a subcontract amount of 82,00. The proect will x and N is fertilizing the Earth's biosphere, generating another perturbation of the global atmospheric and terrestrial biospheric nitrogen and carbon cycles using 3-D The proect will evaluate how changes in land use will impact global atmospheric biosphere.

Temperate

East Asia Land-Cover Database.

Dan Milchunas, Diana Wall Freckman and Bob Niles received 40,000 from the  
 Controls on Soil C Dynamics and N Cycling Under Elevated CO<sub>2</sub>. This project will  
 carbon and nitrogen dynamics in the belowground ecosystem, and links  
 be used to predict impacts of rising atmospheric CO<sub>2</sub> on the capacity  
 region studied includes most of eastern Colorado and

The focus is on  
 The information will  
 climate change scenarios. The  
 titled  
 "Land Use Change in the East African Savannas: A Case Study of Northern  
 Ngorongoro Conservation  
 Area (NCA) and the adjacent area of Loliando. They will  
 in turn, influence human well-being, land  
 cover and wildlife habitat. The study will  
 welfare in the future. This has major implications for biodiversity  
 and how we go about

Deb Coffin was awarded 47,380 in funding from NSF/Career Advancement Awards for  
 to use GIS with  
 simulation models to analyze landscape level vegetation patterns. The  
 shrubland ecotones in Colorado.

Ecosystems for 900,000 (with 177,000 going to a collaborator, Dale Johnson, at the  
 Long Term Sink  
 for Anthropogenic Additions of Nitrogen."

Diana Wall Freckman and Bob Niles received an award of 284,022 from  
 "GIS to Determine Alfalfa Stem  
 Nematode Occurrence and Alfalfa Disease Risk in the  
 Ditylenchus dipsaci which incites the most important disease of alfalfa in  
 Colorado and constitutes an  
 technology to nematode disease in Weld and Larimer Counties and develop a risk  
 combined with data on disease and nematode incidence, at the scale of irrigated crop  
 producer's fields.

study  
 aspen in and adjacent to Rocky Mountain National Park. Aspen is a keystone  
 recreation, and local economies and  
 elk). Monitoring aspen in Rocky Mountain  
 part of a larger USGS effort to develop an integrated  
 Inventory and Monitoring Plan for

workshop for the Great Plains titled "Regional Climate Change Impacts on the Great

An NSF Leen proposal titled "Soil Communities in an Antarctic Desert: Biodiversity  
NSF/Dartmouth College by Diana  
Wall Freckman and Andrew N. Parsons.

Agricultural Land Conversion: Effects on Amenity Values of Wildlife" to

Dennis Oima submitted a proposal titled "U.S. Participation in IMGRASS" to

Bill Parton submitted a proposal to NASA titled "The Bio-Atmospheric Cycles of

Factor Global Change Experiments" was submitted by Bill Parton to DOE. Multi-

Risk  
Assessment: Soil, Vegetation, and Livestock Exposure Investigation."

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Diana Wall Freckman spent time on April 18 reading to students in grades - at Tavelli Elementary School as part of Tavelli's "Dream Team" program.

Jill Baron helped lead a field trip of 4- graders from Rivendell Elementary School to Rawhide Power Plant on April 17.

Andy Parsons gave a talk about Antarctic research to the City International Center at the Fort Collins

Library on May 13.

Geneva Chong gave a presentation on onduras to the olderness Central School 2nd grade (olderness, N) on May 23.

by the last Monday of each month.

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