Andrews Forest NEWSLETTER

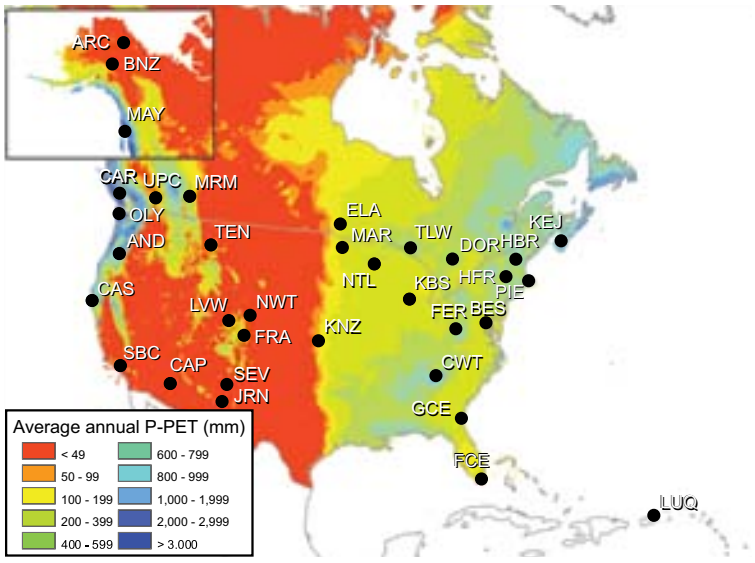
Issue 12 Spring 2012

Decadal Reporting from the Long-Term Ecological Research Program

On each decadal anniversary of the Long-Term Ecological Research (LTER) program the community of LTER scientists produces a set of papers in the journal *BioScience,* taking stock of discoveries and accomplishments of the network. This is an important opportunity to reflect on the program, which is entering its fourth decade. The Andrews Forest program made important contributions to the set of *Bioscience* papers which appear in the April issue of the journal.

The most data- and analysis-rich paper in the set examines temporal variation in climate and streamflow at 35 sites of long-term research in the US and Canada, including 18 LTER sites and 12 Forest Service Experimental Forests. This effort, led by Julia Jones of Andrews Forest with 23 co-authors, found that although streamflow in headwater basins correlated with climate variability (*e.g.*, el Nino, Pacific Decadal Oscillation), expression of climate trends on streamflow was muted by vegetation change (growth, physiological response, and succession), including vegetation adaptations to conserve water. Timing of spring runoff shifted earlier in snowmelt-influenced basins, but otherwise streamflow changed little from 1950 to 2010.

The Andrews Forest program is also represented in papers describing the influence of science on policy and management and use of future scenarios of land change as a form of synthesis of knowledge and connection with society. In a paper concerning long-term experiments (greater than 6 years) the Andrews Forest ranks high in terms of total number of such studies (23), including four exceeding 30 years in length and another ten in the 15-30 year age range. These include experimental watershed, vegetation manipulation, and our hallmark log-decomposition studies.



Average annual precipitation (P) minus potential evapotranspiration (PET) with study-site locations. The color scheme ranges from <50 mm (red) to >3000 mm (blue). Figure by Kendra Hatcher and Adam Spargo.

Radioactive Fallout from Fukushima Reaches Andrews Forest

Andrews Forest NADP station with technician John Moreau (left) and Site Director Mark Schulze (right).

The National Atmospheric Deposition Program (NADP), of which the Andrews Forest is a member, released results from analysis of radioactive isotopes in precipitation in March and April 2011. Radioactive isotopes of Iodine or Cesium were detected at 21% of the NADP sites. Iodine-131 and Cesium-134 were found in low concentrations at some sites across the nation, but not in Oregon. Cesium-137 was found at the Andrews Forest site, but in very low concentrations (our high precipitation resulted in total deposition roughly equivalent to the network median value) relative to other US sites (sites in Alaska, California & Colorado recorded the highest concentrations). Deposition amounts at all sites in the NADP network were found to be below levels for public health concern, and similar to measurements taken by the EPA. This study illustrates the value of the NADP network, and the Andrews Forest program's participation in it. The NADP station at the Andrews Forest is funded through contributions from the USFS PNW and Andrews Forest LTER, and has been maintained through the hard work Andrews Forest technician John Moreau, one of the most experienced operators in the NADP network.

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Editors:
Lina DiGregorio, OSU
Fred Swanson, USFS

Contact:
Andrews Forest Newsletter
College of Forestry
330 Richardson Hall
Oregon State University
Corvallis, OR 97331-5752

andrewsnewsletter@fsl.orst.edu

Website:
http://andrewsforest.oregonstate.edu

The H.J. Andrews Experimental Forest
Where Ecosystems Are Revealed

The H.J. Andrews Experimental Forest is the hub of a cooperative program of research, education, and research-management partnership involving Oregon State University and the USDA Forest Service's Pacific Northwest Research Station and Willamette National Forest. The mission of this partnership is to support basic and applied research concerning forests, streams, and watersheds, and to foster strong collaboration among ecosystem science, education, natural resource management, and the humanities.

Oregon State University OSU

Letter from the Leadership

This message is coming to you from the Executive Committee of Andrews Forest LTER as we transition from Principal Investigator (PI) leadership of Barbara Bond to her successor. As Barb is retiring and phasing out as Lead PI, we wish to thank her for a very fruitful six-year term as our leader. Her leadership has advanced our science, strengthened our education program, and expanded connections within the university and to communities beyond. The research that Barb promoted on airsheds and roles of steep topography in altering geophysical and ecological effects of climate change has strongly linked traditional components of the Andrews Forest research (long-term studies of climate, watersheds, vegetation dynamics) to the most contemporary science and societal questions. We wholeheartedly thank Barb for her service to our community.

We are pleased to announce that Michael Nelson has formally agreed to come to OSU to become the next Ruth H. Spaniol Chair of Natural Resources and the next Lead PI for the Andrews Forest LTER program. Michael comes to us from Michigan State University where he has been working as a conservation ethicist with the Isle Royale project. We will introduce Michael in the next edition of the newsletter.

In other personnel changes: Fred Swanson retired from the Forest Service in January but plans to remain active in support of Andrews Forest projects, such as fund-raising and the Long-Term Ecological Reflections program. Forest Service earth scientist Steve Wondzell has rejoined the research team and will ramp up his hydrology and geomorphology work at the Andrews Forest, building on his nearly 25 years of work in the Lookout Creek basin. Fred Bierlmaier will retire at the end April, after 35 years of service. Fred has played a key role in the development of the climate program, data management systems, headquarters computer network and wireless systems for streaming data from Andrews Forest sensor networks. Adam Kennedy, who has prior experience with the Andrews program, has been training alongside Fred since October and will take over the position in May. We bid a fond farewell to our outgoing colleagues and a warm welcome to the newcomers!

—Andrews Forest LTER Executive Commitee: Barbara Bond, Hannah Gosnell, Mark Harmon, Don Henshaw, Sherri Johnson, Julia Jones, Mark Schulze, Tom Spies

Student Spotlight—Scott Allen

Scott Allen is working toward his MS degree in the Water Resources Graduate Program through OSU's Department of Forest Ecosystems and Society. Scott studies precipitation interactions with forest canopies, so it is no surprise that the Andrews Forest is an ideal location for his research because of the site's abundance of rain and trees. Dense conifer forests, like those found in the Oregon Cascades, are able to intercept enormous amounts of precipitation, a large fraction of which evaporates before ever reaching the ground, through a process called interception loss. Scott is working on two projects: using stable isotope analyses to learn more about mixing and evaporation processes in the canopy, and using modeling to investigate spatial variability of interception loss across Watershed 1 in the Andrews Forest.

Scott Allen surveying vegetation in Watershed 1 of the Andrews Forest.

Where Are They Now?—Jim Hall

Then: Jim Hall (right) conducts a field lecture in a late 1970s ecosystems field course in the Andrews Forest.

Now: Jim Hall in 2011, at work in OSU's Department of Fisheries and Wildlife.

Jim Hall has been a "fish squeezer" (*aka* fisheries biologist) since arriving in Corvallis in 1963, but he has consistently provided leadership for highly interdisciplinary endeavors to the benefit of the larger Corvallis community and wider science community. In the 1960s Jim helped coordinate the Alsea Watershed Study in the Coast Range, the first such study to bring a fisheries perspective to study of impacts of forestry on streamflow and water quality in experimental watersheds. That prepared him for helping make stream ecology a critical part of the International Biological Programme project at Andrews Forest beginning in the early 1970s. In cooperation with Norm Anderson, he rallied "bug pickers" (*aka* aquatic entomologists), like Jim Sedell, and "slime scrapers" (*aka* primary production specialists), like Dave McIntire, Jack Lyford and Stan Gregory, to launch the vibrant Stream Team, whose weekly gatherings remain a critical meeting ground for discussion of all things having to do with freshwater ecosystems. Despite retiring in 1992, Jim remains active in OSU's Department of Fisheries and Wildlife. One of his surprising findings from the Andrews Forest work, done in collaboration with Mike Murphy and Peggy Wilzbach, was that in some situations fish and salamanders can be more numerous in clearcuts than in adjacent native forest—apparently because higher light levels increased the food supply and improved foraging efficiency—but not if the habitat is degraded. The Andrews Forest and Corvallis science community have benefited greatly by Jim's friendly, straight-shooter leadership over the decades.

Landslide Cuts Access to Andrews Forest

January 2012 landslide on USFS Road 15 to the Andrews Forest. Photo by Mark Schulze.

Some problems have silver linings. An innocent driver traveling USFS Road 15 narrowly escaped injury when his car became part of a massive landslide (see photo), which cut access to the route that Andrews Forest staff travel daily. Apparently wet weather and drainage problems associated with the road set the stage for the slide. Unlike the February 1996 flood, no other landslides occurred in the general area. The good news is that the Willamette National Forest, Lane Electric, and other outfits have worked diligently to restore access and communications, which highlights the value of our long-term, highly-collaborative working relationships. A temporary, one-lane road now provides access for researchers and other visitors; work on a more permanent fix should begin in late summer.

Faculty Faces—Julie Pett-Ridge

Julie Pett-Ridge in the Oregon Cascades. Photo by Dana Warren.

Julie Pett-Ridge studies geochemistry and biogeochemistry as an Assistant Professor in the Department of Crop and Soil Science and Adjunct Professor in the College of Earth, Ocean, and Atmospheric Science. She came to Oregon State University in 2009 after completing a Natural Environment Research Council Fellowship at the University of Oxford. Julie's research focuses on how chemical weathering shapes landscapes, controls nutrient supplies to ecosystems, and regulates global elemental and climate cycles by sequestering atmospheric CO_2 as carbonate rock. She employs novel geochemical tracers in her research, such as in her recent National Science Foundation award to study the fractionation of iron and molybdenum isotopes in order to better understand biogeochemical cycling in soils. Julie's work at the Andrews Forest is focused on using temporal and spatial stream chemistry records as well as new chemical analyses of soils and plant litter to examine weathering fluxes and biological cycling of silicon, a key terrestrial and marine nutrient whose biogeochemical cycling is poorly understood. Julie brings important new perspectives to the Andrews Forest landscape and community. Welcome, Julie!

Long-Term Ecological Reflections

Look up and let go. Down
come fluttering showers of leaves
that rustle and shuffle
when the forest breathes.

Now sort your convictions
into what's heartfelt or hurtful
and leave one behind you: remember
this place in other places.

—by Brian Turner, from New Zealand, an Andrews Writer-in-Residence in Fall 2011

Engagement of arts and humanities in long-term ecological research programs is taking root at other LTER sites and gaining broad exposure. A half-day session of ten talks on place-based, arts-humanities-science collaborations will take place August 9 at the Ecological Society of America (ESA) meeting in Portland, Oregon, and a how-to-do-it workshop will be held as part of the meeting. Visual art work from three other LTER sites are on display in the National Science Foundation building, from March–June, in conjunction with the annual LTER mini-symposium. We will add a visual display of photographic and written works from the Andrews Forest program when this collection is displayed at the ESA and LTER All-Scientists meetings in late summer. Negotiations are underway for a six-month display of these works in the Portland Airport, which would give much greater exposure than ever before.

Memorial—Gail Achterman, a Friend of Andrews Forest

Gail Achterman, former Director of the Institute for Natural Resources and long-time environmental lawyer in Oregon, passed away January 28, 2012, at age 62. She was highly influential in legislative and administrative works for the betterment of the environment and people of Oregon through work on projects such as the Columbia Gorge National Scenic Area. Gail was former Chair of the Oregon Transportation Commission and participated on the 2008 National Research Council panel on Hydrologic Effects of a Changing Forest Landscape, serving with several Andrews Forest scientists. Contributions to her memory can be made to several organizations, including the Gail Achterman Fund of the Oregon Community Foundation, which includes the Andrews Forest program as one of the potential grantees.

Join Us for HJA Day

Presentation by Stan Gregory at HJA Day 2011. Photo by Lina DiGregorio

HJA Day is the annual field gathering at the Andrews Forest. This year's event will be held on Thursday, June 28, 2012. Activities will include field trips to sites in the Andrews Forest, and presentations from researchers, student, and managers. Everyone is welcome to attend—from OSU, the Forest Service, other institutions and organizations, and the public. Register through the Andrews website: *http://andrewsforest.oregonstate.edu/hjaday.*

Schematic design of the GREENHouse, by Tozer Design Firm. The building will house visiting scientists, artists, writers, and the Forest Director.

Support for the Andrews Forest

The Andrews Forest Program is dedicated to research and education about forests, streams, watersheds, and our engagement with the land.

The Andrews Forest needs your support for a special project! Plans for construction of the GREENHouse are progressing rapidly toward completion of the building before the end of 2012. The two-story, 2,200-sq-ft structure will have a studio and a one-bedroom apartment for visiting scientists, scholars, artists, and writers, as well as a residence for the Forest Director. Design and materials will yield a "green", energy-efficient facility that can be both a showpiece and an opportunity to learn about innovative approaches to housing at field stations and residences in mountain lands. The building will be incorporated into our environmental monitoring program at the Forest.

Grant funding is covering the building shell and donations to the Andrews Forest Fund have supported architectural and engineering work. We seek additional support to complete interior finish work and to outfit the facilities with furniture and appliances. Please be a part of this important addition to the Andrews Forest program by making a contribution. Call 541-737-8480 or make a donation online: *http://andrewsforest.oregonstate.edu/donate*