Gregory E. Maurer

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Research interests

- Terrestrial biogeochemistry and ecohydrology, including hydroclimatic controls on the carbon cycle, and climate change effects on the structure, function, and distribution of ecosystems.
- Application of GIS, stable isotope, and radioisotope methods in ecology and earth system science.

Education

Ph.D., Biology, University of Utah, May 2014

- *Dissertation:* Ecosystem responses to seasonal snowpack variation in the western United States
- *Committee:* David Bowling (chair), Thure Cerling, James Ehleringer, Thomas Painter, John Sperry

Certificate in Applied Geographic Information Science, University of Utah, 2007

B.S., cum laude, Biological Sciences, University of Alaska Fairbanks, 2001

Selected coursework:

Ameriflux Data and Tech Workshop, Lawrence Berkeley National Lab, 2015

Radiocarbon in Ecology and Earth System Science, University of California, Irvine, 2008

Advanced Statistical Modeling for Biologists, University of Utah, 2012

Peer-reviewed publications

(see also http://greg.pronghorns.net/publications.html)

Maurer, G.E., and D.R. Bowling. 2014. Dust effects on snowpack melt and related ecosystem processes are secondary to those of forest canopy structure and interannual snowpack variability, *Ecohydrology*, doi: 10.1002/eco.1558.

Hall, S.J., **G.E. Maurer**, S.W. Hoch, R. Taylor, D.R. Bowling. 2014. Impacts of anthropogenic emissions and cold air pools on urban to montane gradients of snowpack ion concentrations in the Wasatch Mountains, Utah. *Atmospheric Environment*, doi:10.1016/j.atmosenv.2014.08.076

Maurer, G.E. and D.R. Bowling. 2014. Seasonal snowpack characteristics influence soil temperature and water content at multiple scales in interior western U.S. mountain ecosystems, *Water Resources Research*, 50, 5216–5234, doi:10.1002/2013WR014452

Ruess, R.W., R.L. Hendrick, A.J. Burton, K. S. Pregitzer, B. Sveinbjornsson, M.F. Allen, **G.E. Maurer**. 2003. Coupling fine root dynamics with ecosystem carbon cycling in black spruce forests of interior Alaska, *Ecological Monographs* 74: 643-662, doi:10.1890/02-4032

Publications in preparation or review

Maurer, G.E., A.M. Chan, N.A. Trahan, D.J.P. Moore, and D.R. Bowling. Carbon isotopes of forest soil respiration in the decade following bark beetle and stem girdling disturbances in the Rocky Mountains. (Submitted to *Plant, Cell, & Environment*)

Maurer, G.E. and D.R. Bowling. Forest soil carbon stocks and isotopic composition along mountain climate gradients of the interior western United States. (To be submitted to *Ecosystems*)

Presentations

AmeriFlux Principal Investigators Meeting 2015 – Seasonal and interannual variability in available water and coupled CO2, H2O, and energy fluxes along the New Mexico Elevation Gradient. (Poster)

AGU Fall Meeting 2014 – Soil carbon cycle ^{13}C resoponses in the decade following bark beetle and stem girdling forest disturbance. (Poster)

AGU Fall Meeting 2013 – Dust and canopy effects on snowpack melt and ecosystem processes in a Utah subalpine forest. (Poster)

Fusion seminar (UU Biology Dept. Fall 2012) – The Weather Underground: The influence of seasonal snowcover on soil temperature and water content in the western U.S. (Oral presentation)

AGU Fall Meeting 2012 – Sensitivity of soil temperature and soil moisture to seasonal snowpack variability in western U.S. mountain ecosystems. (Oral presentation)

AGU Fall Meeting 2011 – Sources of variability in winter soil temperature moderation by mountain snowpacks. (Poster)

AGU Fall Meeting 2010 – Influence of dust deposition on snowpack melt rate and ecohydrological processes in a subalpine forest. (Oral presentation)

Research and travel grants

UU Graduate School and Dept. of Biology travel funding (AGU Fall meeting), 2012

ASUU and Dept. of Biology travel funding (AGU Fall Meeting), 2011

UU Global Change and Sustainability Center Research Grant, 2011

NSF Research Experience for Undergraduates (publication above), 1999

Teaching and mentoring

Courses taught

Plant Identification, Lifelong Learning, University of Utah. Spring/Summer 2007 and 2008

Teaching assistantships at University of Utah, Dept. of Biology:

Evolution and Diversity of Life, Biology 2010, Drs. Lynn Bohs & Franz Goller. Spring 2012

Biophysical Ecology, Biology 5495, Dr. David Bowling. Fall 2011

Ecosystem Ecology, Biology 5490, Dr. David Bowling. Fall 2010

Evolution and Diversity of Life, Biology 2010, Drs. Lynn Bohs & David Carrier. Spring 2010

Comparative Vertebrate Morphology, Biology 3310, Dr. Colleen Farmer. Fall 2009

Evolution and Diversity of Life, Biology 2010, Drs. John Sperry and David Carrier. Spring 2009

Ecosystem Ecology, Biology 5490, Dr. David Bowling. Fall 2008

Plant Ecology, Biology 5460, Dr. James Ehleringer. Fall 2007

Undergraduates supervised:

2010: Raili Taylor

2011: Richard Malyn, Davis Unruh (high school student)

2012: Tasha Heilweil (high school student)

2013: Lori Long

Professional and research positions

Postdoctoral Fellow: **August 2014–present**
Department of Biology, University of New Mexico, Albuquerque, NM

- Original carbon cycle and ecohydrological research using data from the New Mexico Elevation Gradient cluster of Ameriflux eddy covariance towers. I am also the lead data manager for this cluster.

Postdoctoral Fellow: **January 2014–June 2014**
Department of Biology, University of Utah, Salt Lake City, UT

- Carbon concentration and stable isotope analysis of soil and soil respiration samples, data analysis, and writing for a DOE funded project on belowground carbon cycling in beetle-impacted sub-alpine forest ecosystems.

Research Assistant: **July 2012–December 2013**
Department of Biology, University of Utah, Salt Lake City, UT

- This position continued as a postdoctoral appointment. See above.

Research Assistant: **December 2010–June 2011**
Department of Biology, University of Utah, Salt Lake City, UT

- Method development, field collection, and laboratory analysis (major ions in snow) for a study of winter atmospheric deposition in the Salt Lake City area. Study occurred in collaboration with the Persistent Cold Air Pool study by the UU Dept. of Atmospheric Sciences (Winter 2010–11).

Field Botanist: **Summers 2007 & 2008**
Cottonwood Canyons Foundation, Salt Lake City, UT

- Conducted surveys for threatened, endangered, and sensitive plant species in the central Wasatch Mountains. Coordinated efforts with and provided data to the Uinta-Wasatch-Cache National Forest and Utah Native Plant Society. (Summers only)

Field Botanist: **Summers 2006 & 2007**
Red Butte Garden and Arboretum, Salt Lake City, UT

- Lead collector for Red Butte Garden's team in the Seeds of Success project (BLM/Millenium Seed Bank). Researched native plant species, located populations, then made large seed collections utilizing volunteer assistance. Coordinated efforts with regional botanists and land managers.

GIS Analyst: **October 2006–May 2007**
DIGIT Lab, Department of Geography, University of Utah, Salt Lake City, UT

- Conducted spatial data analysis, GIS application development, and provided technical support for University of Utah Geography Dept. projects and other public or private sector clients. Maintained the University of Utah Spatial Database.

Port Sampler: **June 2004–September 2004**
Marine Resources Program, Oregon Department of Fish and Wildlife, Salem, OR

- Ocean Recreational Boat Survey. Conducted boat counts and interviews with returning fishermen to determine fishing effort, target locations and species, catch and release rates. Inspected catches, collecting hatchery tags and biological data/samples from species of interest. Made weekly reports to Newport office.

Research Assistant: **May 2001–October 2001**
Environment and Natural Resources Institute, University of Alaska, Anchorage, AK

- Installed and maintained experimental spruce seedling populations and research equipment at remote timberline field sites. Collected data on root & mycorrhizal activity, nutrient cycling, tree growth, soil processes, and climate.

Research Assistant: **May 1999–January 2001**
Institute of Arctic Biology, University of Alaska, Fairbanks, AK

- Ruess Plant Ecology laboratory. Field and lab support for a multi-year study of belowground carbon and nitrogen cycling in forest ecosystems in Alaska, N.Carolina, and Michigan. Treated study plots, collected samples, measured plant and soil physiological processes at remote field sites. Laboratory processing of samples for nutrient and stable isotope analyses.

Internships

The Nature Conservancy, Conservation GIS intern, Salt Lake City, UT, 2006

Alaska Bird Observatory, Nesting field study intern, Fairbanks, AK, 2001

Volunteer

Wasatch Community Gardens, Salt Lake City, UT, 2010–present

Lowell-Bennion Community Service Center (Univ. of Utah), 2006–2007

Red Butte Garden and Arboretum, Salt Lake City, UT, 2005–2007

Swaner Nature Preserve, Kimball Junction, UT, 2005

Columbia River Estuary Study Taskforce, Astoria, OR, 2004

Computing skills

(**Bold** indicates proficiency)

Applications: **MS Office**, **ArcGIS**, LaTeX, GRASS GIS

Programming: **Python**, **R**, **MATLAB**, Java

Numerical, statistics, and spatial packages:

- MATLAB: **Stats toolbox**
- Python: **NumPy**, **SciPy**, **pandas**, **matplotlib**, statsmodels
- R: **ggplot2**, **nlme**, **lme4**, **maps**, raster, sp
- ArcGIS: **Spatial analyst extension**

Web: **HTML & CSS**, wiki & website administration

Operating systems: **Unix/Linux**, **Windows**, Mac OSX

Technical, field, and laboratory skills

Plant/soil/ecosystem CO_2 & H_20 exchange measurements (Li-Cor 6200, 6400, 7000)

Stable isotope and nutrient analysis of plants, soils, waters, and gases

CO_2 to graphite reduction for AMS analysis of ^{14}C

Major ion analysis of water/snow samples

Datalogger (and sensor) setup and programming (Campbell EDLOG or CRBasic dataloggers)

Weather station setup, maintenance, and quality assurance

Wireless radio and internet networks (Sierra Wireless modems, MaxStream and Digi Xbee radios)

Plant identification in Utah and neighboring states

Avalanche safety (Level 1)

Professional affiliations

Member, American Geophysical Union (AGU)

Member, Ecological Society of America (ESA)