

ANNE W. NOLIN

Professor, College of Earth, Ocean, and Atmospheric Sciences (CEOAS) and
Head, Mountain Hydroclimatology Research Group
104 CEOAS Administration Building
Oregon State University, Corvallis, OR 97331
Phone: 541-737-8051, E-mail: nolina@science.oregonstate.edu
Website: <http://ceoas.oregonstate.edu/profile/nolin/>

Professional Preparation

University of Arizona	Anthropology	B.A., 1980
University of Arizona	Soils, Water & Engineering	M.S., 1987
University of California-Santa Barbara	Geography	Ph.D. 1993
University of Colorado	CIRES Visiting Fellow	1993 – 1994

Appointments

Professor, College of Earth, Ocean, and Atmospheric Sciences, 2012 – present
Associate Professor, Department of Geosciences, Oregon State University, 2006 – 2012
Landolt et Cie Endowed Chair for Sustainable Futures, École Polytechnique Fédérale
de Lausanne, Switzerland 2009 – 2010
Erskine Fellow, University of Canterbury, Christchurch, New Zealand, 2009
Associate Director, Water Resources Graduate Program, Oregon State University, 2006 –
2009
Assistant Professor, Department of Geosciences, Oregon State University, 2002 – 2006
Research Scientist, Cooperative Institute for Research in Environmental Sciences,
National Snow and Ice Data Center, University of Colorado, Boulder 1996 – 2002

Currently Funded Research Projects

National Science Foundation, “Anticipating water scarcity and informing integrative
water system response in the Pacific Northwest”, \$4.6M, 2010-2016, PI.
National Science Foundation, “EAGER PROPOSAL: IceTrendr: An Automated
Visualization and Analysis Tool for Mapping Changes in Glacier Extent from
Landsat”, \$179.3K, 2015-2017, PI.
National Science Foundation, “Flows of the future: Capitalizing on an extreme weather
year to evaluate future summer streamflows in the Cascades”, \$47.4K, 2015-2016, PI.
National Science Foundation, “CNH-RCN: Bridging communities and scales through a
global mountain transdisciplinary sustainability network”, \$500K, 2014-2019, Co-PI.
NASA, “Assessing Alpine Ecosystem Vulnerability to Environmental Change Using Dall
Sheep as an Iconic Indicator Species”, \$362K, 2016-2020, Co-I.
NASA, “New Metrics for Snow in a Warming World: Indicators for the National Climate
Assessment”, \$475K, 2016-2019, PI.
NASA, “Cryosphere activities in support of the Multi-angle Imaging SpectroRadiometer
(MISR)”, \$481K, 2006-2016, OSU PI.
USGS/NW Climate Science Center, “Forest Management Tools to Maximize Snow
Retention Under Climate Change”, \$199.8K, 2014-2016, Co-I.

Publications

43. Cooper, M. G., A. W. **Nolin**, and S. Mohammad. Testing the recent snow drought as an analog for climate warming sensitivity of Cascades snowpacks. *Environmental Research Letters*, in revision.
42. Sproles, E. A., T. R. Roth, and A. W. **Nolin**. Future Snow? A Spatial-Probabilistic Assessment of the Extraordinarily Low Snowpacks of 2014 and 2015 in the Oregon Cascades, *The Cryosphere Discussion*, doi:10.5194/tc-2016-66, in review, 2016.
41. Gleason, K. E. and A. W. **Nolin**. Charred forests accelerate snow albedo decay: parameterizing the post-fire radiative forcing on snow for three years following fire, *Hydrological Processes*, DOI: 10.1002/hyp.10897, 2016.
40. Drake, S. A., H. Huwald, M. B. Parlange, J. S. Selker, A. W. **Nolin**, and C. W. Higgins. Attenuation of wind-induced pressure perturbations in alpine snow, *Journal of Glaciology*, doi:10.1017/jog.2016.53, 2016.
39. Safeeq, M. S. Shukla, I. Arismendi, G. E. Grant, S. L. Lewis, and A. **Nolin**. Influence of winter season climate variability on snow-precipitation ratio in the western United States, *International Journal of Climatology*, DOI: 10.1002/joc.4545, 2015.
38. Coons, L., A. W. **Nolin**, K. E. Gleason, E. J. Mar, K. Rittger, T. R. Roth, and T. H. Painter, Seeing the snow through the trees: towards a validated canopy adjustment for satellite snow-covered area, In: Remote Sensing of the Terrestrial Water Cycle, V. Lakshmi (ed.), AGU Geophysical Monograph Series, Wiley & Sons, 2015.
36. Levy, J. S., A. W. Nolin, A. G. Fountain, and J. W. Head. Hyperspectral measurements of wet, dry, and saline soils from the McMurdo Dry Valleys: Soil moisture properties from remote sensing. *Antarctic Science*, 565-572, doi:10.1017/S0954102013000977, 2014.
35. Gleason, K. E., A. W. **Nolin**, and T. R. Roth. Charred forests increase snowmelt: Effects of burned woody debris and incoming solar radiation on snow ablation, *Geophysical Research Letters*, 40, 1-8, doi:10.1002/grl.50896, 2013.
34. Sproles, E., A. W. **Nolin**, K. Rittger, and T. Painter, Climate change impacts on maritime mountain snowpack in the Oregon Cascades, *Hydrology and Earth System Science*, 9, C5856–C5856, 2013.
33. Burns, P. and A. W. **Nolin**, Using atmospherically corrected Landsat imagery to measure glacier area change in the Cordillera Blanca, Peru from 1987 to 2010. *Remote Sensing of Environment*, 140, 165-178, 2013.
32. Jaeger, W.K., A.J. Plantinga, H. Chang, G. Grant, D. Hulse, J. McDonnell, H. Moradkhani A.T. Morzillo, P. Mote, A. **Nolin**, M. Santelmann, J. Wu. Toward a formal definition of water scarcity in natural-human systems, *Water Resources Research*, 49, 1–12, doi:10.1002/wrcr.20249, 2013.
31. **Nolin**, A. W. Perspectives on Climate Change, Mountain Hydrology, and Water Resources in the Oregon Cascades, USA, *Mountain Research and Development*, 32(S1), 35-46, 2012.

30. **Nolin**, A. W., E. Sproles, and A. Brown, *Climate Change Impacts on Snow and Water Resources in the Columbia, Willamette, and McKenzie River Basins, USA: A Nested Watershed Study*, In: Transboundary River Governance In The Face Of Uncertainty: The Columbia River Treaty, B. Cosens (Ed.), Oregon State University Press, 2012.
29. Lancaster, S. T., A. W. **Nolin**, E. A. Copeland, and G. E. Grant. Periglacial debris flow hazard determined from satellite imagery, airborne LiDAR and ground-based mapping, *Geosphere*, 8;417-430, 2012.
28. Chopping, M. J., C. B. Schaaf, F. Zhao, Z. Wang, A. W. **Nolin**, G. Moisen, J. V. Martonchik, M. Bull, Forest Structure and Aboveground Biomass in the Southwestern United States from MODIS and MISR, *Remote Sensing of Environment*, doi:10.1016/j.rse.2010.08.031, 2011.
27. **Nolin**, A. W., Recent advances in remote sensing of seasonal snow, *Journal of Glaciology*, 56(200), 1141-1150, 2010.
26. **Nolin**, A. W., J. Phillippe, S. L. Lewis, and A. Jefferson, Present-day and future contributions of glacier runoff to summertime flows in a Pacific Northwest Watershed: Implications for water resources, *Water Resources Research*, 46, W12509, doi:10.1029/2009WR008968, 2010.
25. Chopping, M. J., A. W. **Nolin**, G. G. Moisen, J. V. Martonchik, and M. Bull, Forest canopy height from the Multi-angle Imaging SpectroRadiometer (MISR) assessed with high resolution discrete return lidar, *Remote Sensing of Environment*, 113, 2172-2185, 2009.
24. Dozier, J., R. O. Green, A. W. **Nolin**, and T. H. Painter, Interpretation of snow properties from imaging spectrometry, *Remote Sensing of Environment*, doi:10.1016/j.rse.2007.07.029, 2009.
23. Jefferson, A., A. W. **Nolin**, S. Lewis, and C. Tague, Hydrogeologic controls on streamflow sensitivity to climate variability, *Hydrological Processes*, DOI: 10.1002/hyp.7041, 2008.
22. Barry, R. G., R. Armstrong, J. Cherry, S. Gearhead, A. **Nolin**, D. Russell, and C. Zockler, Chapter 4: Snow in *Global Outlook for Ice & Snow*, United Nations Environment Programme, UNEP Job No. DEQ/0924/NA, UNEP/GRID, Arendal, Norway, 2007.
21. **Nolin**, A. W. and M. Payne, Classification of glacier zones in western Greenland using albedo and surface roughness from the Multi-angle Imaging SpectroRadiometer (MISR), *Remote Sensing of Environment*, 107, 264-275, 2007.
20. **Nolin**, A. W. and C. Daly, Mapping “at-risk” snow in the Pacific Northwest, U.S.A., *Journal of Hydrometeorology*. 7, 1166-1173, 2006.
19. **Nolin**, A. W. and E. Hall-McKim, Characteristic frequencies of monsoon precipitation in Arizona and New Mexico, *Monthly Weather Review*, 12, 3774-3781, 2006.
18. Diner, D. J., B. H. Braswell, R. Davies, N. Gobron, J. Hu, Y. Jin, R. A. Kahn, Y. Knyazikhin, N. Loeb, J-P.Muller, A. W. **Nolin**, B. Pinty, C. B. Schaaf, G. Seiz, and J. Stroeve. The value of multiangle measurements for retrieving structurally and radiatively consistent properties of clouds, aerosols, and surfaces, *Remote*

- Sensing of Environment*, 97, 495-518, 2005.
17. Stroeve, J., J. Box, F. Gao, S. Liang, A. **Nolin**, and C. Schaaf, Accuracy Assessment of the MODIS 16-day albedo product for snow: Comparisons with Greenland in situ Measurements. *Remote Sensing of Environment*, 94, 46-60, 2005.
 16. **Nolin**, A. W., Towards retrieval of forest cover density over snow using the Multi-angle Imaging SpectroRadiometer (MISR), *Hydrological Processes*, 18, 3623-3636, 2004.
 15. Marshall, S., R. J Oglesby and A. W. **Nolin**, The predictability of winter snow cover over the western United States, *Journal of Climate*, 16, 1062-1073, 2003.
 14. **Nolin**, A. W., F. M. Fetterer, and T. A. Scambos, Surface roughness characterizations of sea ice and ice sheets: Case studies with MISR data, *IEEE Transactions on Geoscience and Remote Sensing*, 40, 1605-1615, 2002.
 13. Stroeve, J. C. and A. W. **Nolin**, Comparison of snow albedo from MISR with ground-based observations on the Greenland ice sheet, *IEEE Transactions on Geoscience and Remote Sensing*, 40, 1616-1625, 2002.
 12. **Nolin**, A. W. and A. Frei, Remote Sensing of Snow and Snow Albedo Characterization for Climate Simulations, In: Beniston, M. and M. M. Verstraete (Eds.), *Remote Sensing and Climate Simulations: Synergies and Limitations, Advances in Global Change Research*, Kluwer Academic Publishers, Dordrecht and Boston, pp. 159-180, 2001.
 11. Barrett, A., G. Leavesley, R. L. Viger, A. W. **Nolin**, and M. P. Clark, A comparison of satellite- and model-derived snow covered area of a mountain watershed, In M. Owe, K. Brubaker, J. Ritchie and A. Rango (Eds.), *Remote Sensing and Hydrology 2000*, IAHS Publ. no. 267, 87-92, 2001.
 10. Marshall, S., R. J Oglesby and A. W. **Nolin**, Effect of western U.S. snow cover on climate, *Annals of Glaciology*, 32, 82-86, 2001.
 9. **Nolin**, A. W. and J. Dozier, A hyperspectral method for remotely sensing the grain size of snow, *Remote Sensing of Environment*, 74, 207-216, 2000.
 8. **Nolin**, A. W. and S. Liang, Progress in bidirectional reflectance modeling and applications for surface particulate media: Snow and soils, *Remote Sensing Reviews*, 18, 307-342, S. Liang and A.H. Strahler (Eds.) *Land Surface Bidirectional Reflectance Distribution Function (BRDF): Recent Advances and Future Prospects*, 2000.
 7. Diner, D. J., G. P. Asner, R. Davies, J-P. Muller, A. W. **Nolin**, B. Pinty, C. B. Schaaf, and J. Stroeve, New directions in Earth observing: Scientific applications of multi-angle remote sensing, *Bulletin of the American Meteorological Society*, 80, 2209-2228, 1999.
 6. **Nolin**, A. W., Mapping the Martian polar caps: Applications of terrestrial optical remote sensing methods, *Journal of Geophysical Research*, 103, 25851-25864, 1998.
 5. **Nolin**, A. W. and J. Stroeve, The changing albedo of the Greenland ice sheet: Implications for climate modeling, *Annals of Glaciology*, 25, 51-57, 1997.

4. Stroeve, J., A. **Nolin**, and K. Steffen, Comparison of AVHRR-derived and in situ surface albedo over the Greenland Ice Sheet, *Remote Sensing of Environment*, 62, 262-276, 1997.
3. **Nolin**, A. W. and J. Dozier, Estimating snow grain size using AVIRIS data, *Remote Sensing of Environment*, 44, 231-238, 1993.
2. **Nolin**, A. W., J. Dozier, and L. A. K. Mertes, Mapping alpine snow using a spectral mixture modeling technique, *Annals of Glaciology*, 17, 121-124, 1993.
1. Davis, R. E., A. W. **Nolin**, R. Jordan, and J. Dozier, Forecasting temporal changes of the spectral signature of snow in visible and near-infrared wavelengths, *Annals of Glaciology*, 17, 143-148, 1993.

Current Professional Activities

Board of Directors, Protect Our Winters

Past-president, Cryosphere Focus Group/American Geophysical Union

NASA Advisory Council, Earth Science Subcommittee

NASA Science Team Member, Multi-angle Imaging SpectroRadiometer (MISR)

Users' Working Group, NASA Distributed Active Archive Center at the National Snow and Ice Data Center

Science Leadership Council, Mountain Research Initiative

Users' Working Group Member, National Snow and Ice Data Center

Chair, Oregon State University Research Council

Current Teaching

Climatology (GEO 323, Writing Intensive Course, 4 cr.)

Snow Hydrology (GEO 483/583, 3cr.)

Remote Sensing of the Environment (GEO 444/544, 4 cr.)

Digital Image Processing (GEO 466/566, 4 cr.)

Mountain Geography (GEOG 299, 3 cr)