

Andrew W. Ellis

Professor, Virginia Tech

Abbreviated CV

Department of Geography
Virginia Tech, MC 0115
295 West Campus Drive
Blacksburg, VA 24061

Email: awellis@vt.edu
Phone: (540) 231-8049
Internet: <https://geography.vt.edu/>
ORCID: 0000-0003-1900-4979

Professional Interests

Hydroclimatology: variability/change, water resources, drought, snow

Synoptic climatology: spatial/temporal variability, meteorological application

Education

Ph.D., Climatology, University of Delaware, 1997

M.S., Geography, University of Delaware, 1994

B.A., Geography, University of Delaware, 1991

Professional Positions

Virginia Tech, 2011-present

Graduate Program Director, 2022-present

Professor, 2020-present

Associate Professor, 2011-2020

Arizona State University, 1997-2011

Senior Sustainability Scientist, 2010-2011

Associate Professor, 2004-2011

Director, Office of Climatology, 2004-2006

State Climatologist for Arizona, 2001-2007

Assistant Professor, 1998-2004

Visiting Assistant Professor, 1997-1998

Research

Refereed Journal Articles

Van Tol Z, AW Ellis. 2022. Analysis of urban heat island intensity through air mass persistence: a case study of four United States Cities. *Urban Climate*.

<https://doi.org/10.1016/j.uclim.2022.101345>

Ellis AW, Z Suriano. 2022. A hybrid dataset of historical cool-season lake effects from the eastern Great Lakes of North America. *Frontiers in Water, Special Issue: Hydroclimatology of the Great Lakes Region of North America*.

<https://doi.org/10.3389/frwa.2022.788493>

- Ellis AW, SJ Keighton, SE Zick, AS Shearer, CE Hockenbury, A Silverman. 2022. Analysis of model thermal profile forecasts associated with winter mixed-precipitation within the United States mid-Atlantic region. *Journal of Operational Meteorology*. <https://doi.org/10.15191/nwajom.2022.1001>
- Mahdu O, AW Ellis. 2021. Perceptions and realities of hydroclimatic change affecting Guyanese rice farming. *Climate Risk Management*. <https://doi.org/10.1016/j.crm.2021.100341>
- Marston ML, AW Ellis. 2021. Regional-scale variability and change in daily precipitation across the contiguous United States, 1949-2018. *International Journal of Climatology*. <https://doi.org/10.1002/joc.7061>
- Marston ML, AW Ellis. 2020. Delineating precipitation regions of the contiguous United States from cluster analyzed gridded data. *Annals of the American Association of Geographers*. <https://doi.org/10.1080/24694452.2020.1828803>
- Ellis AW, ML Marston. 2020: Late 1990s cool season climate shift in eastern North America. *Climatic Change*. <https://doi.org/10.1007/s10584-020-02798-z>
- Ellis AW, ML Marston, J Bahret. 2020: Changes in the frequency of cool season lake-effects within the North American Great Lakes region. *Annals of the American Association of Geographers*. <https://doi.org/10.1080/24694452.2020.1785270>
- Marston ML, AW Ellis. 2019: Uniformity in the temporal distribution of precipitation through seasonal and annual timeframes across the Mid-Atlantic region of the United States, 1950-2017. *Climate Research*. <https://doi.org/10.3354/cr01561>
- Ellis AW, T Greene. 2019: Synoptic climate evidence of a late-twentieth century change to earlier spring ice-out on Maine lakes, USA. *Climatic Change*. <https://doi.org/10.1007/s10584-019-02398-6>
- Murphy KW, AW Ellis. 2019: An Analysis of Past and Present Megadrought Impacts Upon a Modern Water Resource System. *Hydrological Sciences Journal*. <https://doi.org/10.1080/02626667.2019/1571274>
- Marston ML, AW Ellis. 2018: Extreme reversals in successive winter season precipitation anomalies across the western United States, 1895-2015. *International Journal of Climatology*. <https://doi.org/10.1002/joc.5263>
- Ellis AW, M Marston, D Nelson. 2018: An air mass-derived cool season climatology of synoptically forced Appalachian cold-air damming. *International Journal of Climatology*. <https://doi.org/10.1002/joc.5189>

- Ellis AW, K Sauter. 2017: The significance of snow to surface water supply: An empirical case study from the southwestern United States. *Physical Geography*. <https://doi.org/10.1080/02723646.2017.1281014>
- Ellis AW, P Miller. 2016: The emergence of lightning in severe thunderstorm prediction and the possible contributions from spatial science. *Geography Compass*. <https://doi.org/10.1111/gec3.12265>
- Miller P, AW Ellis, S Keighton. 2015: The utility of total and cloud-to-ground lightning trends in diagnosing ordinary thunderstorm severity in the central Appalachians region. *Journal of Operational Meteorology*. <http://dx.doi.org/10.15191/nwajom.2015.0308>
- Miller P, AW Ellis, S Keighton. 2015: Spatial distribution of lightning associated with low-shear thunderstorm environments in the central Appalachians region. *Physical Geography*. <http://dx.doi.org/10.1080/02723646.2015.1011257>
- Miller P, AW Ellis, S Keighton. 2015: A preliminary assessment of using spatiotemporal lightning patterns for a binary classification of thunderstorm mode. *Weather and Forecasting*. <http://dx.doi.org/10.1175/WAF-D-14-00024.1>
- Murphy KW, AW Ellis. 2014: An Assessment of the stationarity of climate and stream flow in watersheds of the Colorado River Basin. *Journal of Hydrology*. <http://dx.doi.org/10.1016/j.jhydrol.2013.11.056>
- Ellis AW, NP Barton. 2012: Characterizing the North Pacific jet stream for understanding historical variability in western United States winter precipitation. *Physical Geography*. <https://doi.org/10.2747/0272-3646.33.2.105>
- Cervený RS, K DeBiaise, MB Pace, AW Ellis, RC Balling Jr. 2011: Reanalysis and Extension of Namias' climatological isentropic analysis: detection and evaluation of monsoonal, severe storm, drought, and flood events. *Annals of the Association of American Geographers*. <https://doi.org/10.1080/00045608.2011.584280>
- Gober PA, CW Kirkwood, RC Balling Jr, AW Ellis, S Deitrick. 2010: Water planning under climatic uncertainty in Phoenix: why we need a new paradigm. *Annals of the Association of American Geographers*. <https://doi.org/10.1080/00045601003595420>
- Svoma BM, RC Balling Jr, AW Ellis. 2010: Analysis of soil moisture trends in the Salt River watershed of central Arizona. *Theoretical and Applied Climatology*. <https://doi.org/10.1007/s00704-010-0255-1>

Hawkins TW, AW Ellis. 2010: The dependency of streamflow on antecedent subsurface moisture in an arid climate. *Journal of Arid Environments*. <https://doi.org/10.1016/j.jaridenv.2009.07.003>

Ellis AW, GB Goodrich, GM Garfin. 2010: A hydroclimatic index for examining patterns of drought in the Colorado River basin. *International Journal of Climatology*. <https://doi.org/10.1002/joc.1882>

Barton NP, AW Ellis. 2009: Variability in the wintertime position and strength of the North Pacific jet stream as represented by re-analysis data. *International Journal of Climatology*. <https://doi.org/10.1002/joc.1750>

Ellis AW, TW Hawkins, RC Balling Jr, P Gober. 2008: Estimating future runoff levels for a semi-arid fluvial system in central Arizona, USA. *Climate Research*. <https://doi.org/10.3354/cr00727>

Goodrich GB, AW Ellis. 2008: Climatic controls and hydrologic impacts of a recent extreme seasonal precipitation reversal in Arizona. *Journal of Applied Meteorology and Climatology*. <https://doi.org/10.1175/2007JAMC1627.1>

Hawkins TW, AW Ellis. 2007: A case study of the energy budget of a snowpack in the arid, subtropical climate of the southwestern United States. *Journal of the Arizona-Nevada Academy of Sciences*. 39, 1-13.

Goodrich GB, AW Ellis. 2006: Climatological drought in Arizona: an analysis of indicators for guiding the Governor's Drought Task Force. *The Professional Geographer*. <https://doi.org/10.1111/j.1467-9272.2006.00582.x>

Ellis AW, DA Brommer, RC Balling Jr. 2006: Climatic conditions linked to high PM₁₀ concentration in a bi-national airshed: Nogales, Arizona (USA) and Sonora (Mexico). *Climate Research*. <https://doi.org/10.3354/cr030113>

Ellis AW, JJ Johnson. 2004: Hydroclimatic analysis of snowfall trends associated with the North American Great Lakes. *Journal of Hydrometeorology*. [https://doi.org/10.1175/1525-7541\(2004\)005;0471:HAOSTA;2.0.CO;2](https://doi.org/10.1175/1525-7541(2004)005;0471:HAOSTA;2.0.CO;2)

Ellis AW, EM Saffell, TW Hawkins. 2004: A method for defining monsoon onset and demise in the southwestern USA. *International Journal of Climatology*. <https://doi.org/10.1002/joc.996>

Saffell EM, AW Ellis. 2002: Urban-rural humidity variations in Phoenix. *Journal of the Arizona-Nevada Academy of Science*. 34, 53-64. <https://www.jstor.org/stable/40024903>

- Hawkins TW, AW Ellis, JA Skindlov, D Reigle. 2002: Intra-annual analysis of the North American snow cover-monsoon teleconnection: seasonal forecasting utility. *Journal of Climate*. 15, 1743-1753.
- Ellis AW, JR Paul. 2001: Temporal patterns of diurnal snowmelt across the Northern Great Plains of the United States. *Physical Geography*.
<https://doi.org/10.1080/02723646.2001.10642730>
- Ellis AW, TW Hawkins. 2001: An apparent atmospheric teleconnection between snow cover and the North American monsoon. *Geophysical Research Letters*. <https://doi.org/10.1029/2000GL006125>
- Ellis AW, ML Hildebrandt, HJS Fernando. 2000: Evidence of lower atmospheric ozone “sloshing” in an urbanized valley. *Physical Geography*.
<https://doi.org/10.1080/02723646.1999.10642694>
- Ellis AW, ML Hildebrandt, WM Thomas, HJS Fernando. 2000: Analysis of the climatic mechanisms contributing to the summertime transport of lower atmospheric ozone within metropolitan Phoenix, Arizona, USA. *Climate Research*. <https://doi.org/10.3354/cr015013>
- Leathers DJ, AJ Grundstein, AW Ellis. 2000: An evaluation of growing season moisture deficits across the northeast United States. *Climate Research*.
<https://doi.org/10.3354/cr014043>
- Ellis AW, DJ Leathers. 1999: Analysis of cold air mass temperature modification across the U.S. Great Plains as a consequence of snow depth and albedo. *Journal of Applied Meteorology*.
[https://doi.org/10.1175/1520-0450\(1999\)038;0696:AOCATM;2.0.C\);2](https://doi.org/10.1175/1520-0450(1999)038;0696:AOCATM;2.0.C);2)
- Ellis AW, DJ Leathers. 1998: A quantitative approach to evaluating the effects of snow cover on cold air mass temperatures across the U.S. Great Plains. *Weather and Forecasting*.
[https://doi.org/10.1175/1520-0434\(1998\)013;0688:AQATET;2.0.CO;2](https://doi.org/10.1175/1520-0434(1998)013;0688:AQATET;2.0.CO;2)
- Ellis AW, DJ Leathers. 1998: The effects of a discontinuous snow cover on lower atmospheric temperature and energy flux patterns. *Geophysical Research Letters*, 25, 2161-2164.
- Ellis AW. 1996: Simulating the influence of Great Plains snow cover on the thermal characteristics of a cold air mass. *Middle States Geographer*. 29, 123-131.
- Leathers DJ, AW Ellis. 1996: Potential mechanisms associated with snowfall increases to the lee of Lakes Erie and Ontario. *International Journal of Climatology*. 16, 1117-1135.

Ellis AW, DJ Leathers. 1996: A synoptic climatological approach to the analysis of lake-effect snowfall: potential forecasting applications. *Weather and Forecasting*. 11, 216-229.

Leathers DJ, AW Ellis, DA Robinson. 1995: Characteristics of temperature depressions associated with snow cover across the northeast United States. *Journal of Applied Meteorology*. 34, 381-390.

External Grants

Ellis AW, SE Zick, SJ Keighton. 2019: Skill analysis of contemporary operational model forecasts of mixed-precipitation events: guidance for the National Weather Service in the mid-Atlantic region. National Oceanic and Atmospheric Administration, COMET Program. 12 months, \$19,325.

Ellis AW, SP Keighton. 2013: The utility of total lightning for warning of pulse-type thunderstorms within the central Appalachian Mountains region. University Corporation for Atmospheric Research COMET Program, National Weather Service. 12 months, \$19,500.

Ellis AW. 2011: Analysis of the sensitivity of the Salt River Project reservoir system to climate variability and change. Salt River Project. 2 months, \$28,842.

Gober PA, CL Redman, et al. (Ellis AW) 2010: Decision Center for a Desert City II: urban climate adaptation. National Science Foundation. 5 years, \$7,499,000.

Cervený RS, RC Balling Jr, AW Ellis. 2008: Spatial and temporal analysis of climatological variations in isentropic surfaces. National Science Foundation. 18 months, \$99,426.

Ellis AW, RC Balling Jr. 2008: Utilizing the hydroclimatic index in drought forecasting and climate scenario building for the Colorado River basin. Bureau of Reclamation. 24 months, \$65,079.

Ellis AW, GM Garfin. 2007: Instituting multi-scale hydroclimatic indices in drought monitoring and mitigation in Arizona. National Oceanic and Atmospheric Administration, Climate Transition Program. 36 months, \$172,646.

Castro CL, MA Crimmins, G Garfin, AW Ellis, F Dominguez. 2007: Arizona drought monitoring sensitivity and verification analyses. University of Arizona Water Sustainability Program – Technology and Research Initiative Fund. 12 months, \$50,000.

Garfin GM, AW Ellis, NJ Selover, D Anderson, A Tecle, M Crimmins, J Leeper, T Showa. 2006: Assessment of the Navajo Nation hydroclimate network. Arizona Water Institute. 12 months, \$58,906.

Ellis AW, RC Balling Jr, and RS Cerveny 2005: Development of an operational model series for forecasting runoff on the Salt, Tonto, and Verde watersheds. Salt River Project. 8 months, \$45,243.

Ellis AW. 2004: Development of a winter season precipitation forecast model for Arizona. Salt River Project. 7 months, \$41,472.

Ellis AW. 2003: Evaluating and modeling snow pack evolution in Arizona. Salt River Project. 12 months, \$19,743.

Ellis AW. 2002: Operationalization of the algorithms for seasonal monsoon intensity prediction (ASMIP). Salt River Project. 2.5 months, \$19,227.

Ellis AW. 2002: Development of the North American monsoon dataset. National Climatic Data Center (NCDC). 3 months, \$4,969.

Ellis AW, RC Balling Jr. 2001: Atmospheric, hydroclimatic, and anthropogenic causes of fugitive dust in the Nogales, Arizona/Sonora airshed. Southwest Center for Environmental Research and Policy (SCERP), Environmental Protection Agency (EPA). 12 months, \$57,044.

Ellis AW. 2001: Development of the 'algorithms for seasonal monsoon intensity prediction (ASMIP)' package for utilities planning and management. Salt River Project. 12 months, \$40,268.

Ellis AW, Fernando HJS 2000: Multi-scale atmospheric analysis of particulate concentration and flow in the Douglas-Agua Prieta airshed. Southwest Center for Environmental Research and Policy (SCERP), Environmental Protection Agency (EPA). 12 months, \$67,239.

Ellis AW. 2000: A potential forecasting tool for the Arizona monsoon: The North American snow cover teleconnection. Salt River Project. 8 months, \$18,523.

Teaching/Mentoring

Courses Taught

Introduction to Physical Geography

Introduction to Meteorology I, II

Introduction to Climatology

Meteorological Instrumentation & Measurement

Dynamic Meteorology I, II

Physical Meteorology

Climate Change

Hydroclimatology

Physical Climatology

Synoptic Climatology

Atmospheric Dynamics

Programming for Climate Science

Graduate Advising

Khatiwada M. PhD. Virginia Tech, Current.
 Samson B. MS. Virginia Tech, Current.
 Van Tol Z. MS. Virginia Tech, 2021.
 Whittemore A. MS. Virginia Tech, 2020.
 Marston M. PhD. Virginia Tech, 2020.
 Greene T. MS. Virginia Tech, 2018.
 Lindeman S. MS. Virginia Tech, 2018.
 Suggs J. MS. Virginia Tech, 2017.
 Murphy K. PhD. Arizona State University, 2016.
 Marston M. MS. Virginia Tech. 2016.
 Athey A. MS. Virginia Tech, 2015.
 Miller P. MS. Virginia Tech, 2014.
 White J. MA. Arizona State University, 2009.
 Paris B. MA. Arizona State University, 2009.
 Tompkins D. MA. Arizona State University, 2007.
 Colson H. MA. Arizona State University, 2007.
 Barton N. MA. Arizona State University, 2006.
 Gysberg S. MA. Arizona State University, 2006.
 Saffell E. PhD. Arizona State University, 2004.
 Hawkins T. PhD. Arizona State University, 2004.
 Johnson J. PhD. Arizona State University, 2003.
 Saffell E. MA. Arizona State University, 2001.
 Hawkins T. MA. Arizona State University, 2001.
 Johnson J. MA. Arizona State University, 2000.
 Thomas W. MA. Arizona State University, 1999.
 Hildebrandt M. PhD. Arizona State University, 1999.

Honors/Awards

Teaching Excellence Award. College of Natural Resources & Environment. Virginia Tech, 2018.

Member, Academy of Teaching Excellence. Virginia Tech, 2018-present.

Centennial Professorship. Associated Students of Arizona State University. Arizona State University, 2002, \$20,000.

Outstanding Faculty Mentor. Graduate Women's Association. Arizona State University, 2002.

Apple Polisher Award. Devil's Advocates. Arizona State University, 1997.

Professional ServiceDiscipline

Editor. Journal of Applied Meteorology and Climatology. American Meteorological Society, 2015-2021.

Associate Editor. Journal of Applied Meteorology and Climatology. American Meteorological Society, 2012-2014.

Co-President. Central Arizona Chapter of the American Meteorological Society. Tempe, Arizona, 2001-2002.

Community

Member. Blacksburg Climate Vulnerability Advisory Team. Town of Blacksburg, Virginia, 2019-2020.

Co-Leader. Climate Variability and Change Program. Arizona Water Institute, 2006-2008.

Member. Arizona Drought Monitoring Committee. State of Arizona, 2005-2007.

Member. Arizona Governor's Drought Task Force - Monitoring Group. State of Arizona, 2003-2005.

Member. Hazard Mitigation Plan Team. Division of Emergency Management, State of Arizona, 2001-2004.