

Christopher A. Williams

Graduate School of Geography
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EDUCATION

2002-2004 Ph.D. awarded, School of the Environment and Earth Sciences (Summa Cum Laude), Duke Univ.
2000-2002 Ph.D. commenced, Dept. of Environmental Sciences (Magna Cum Laude), U. of Virginia
1998-2000 M.S. Dept. of Watershed Science, Colorado State Univ. (Summa Cum Laude)
1992-1996 B.A. Biology / Environmental Studies, Bucknell Univ. (Cum Laude)

PROFESSIONAL RECORD

2008-present Assistant Professor, Graduate School of Geography, Clark University
2007-2008 Res. Scientist, Goddard Earth Sciences and Technology, with Jim Collatz, via UMBC
2004-2007 Res. Scientist, Natural Resource Ecology Lab, with Niall Hanan, Colorado State U.
2002-2004 Res. Assistant, School of the Environment/CEE, John Albertson, Duke U.
2000-2002 Res. Assistant, Dept. of Environmental Sciences, John Albertson, U. of Virginia
1998-2000 Res. Assistant, Dept. of Earth Resources, David Cooper, Colorado State U.

RESEARCH INTERESTS

land-atmosphere exchange; ecohydrology; evapotranspiration; ecological modeling; global change;
plant water and carbon relations; scaling ecosystem processes; natural resource dynamics

HONORS & AWARDS

Robert Ellison Award for Excellence in Interdisciplinary Research, Univ. of Virginia, 2002
Dean's Reserve Fellowship (\$25,000), Univ. of Virginia, 2001
Outstanding Paper, Student Water Symposium, Colorado State Univ., 1999
Sigma Xi Induction, and Outstanding Service Award, Bucknell Univ., 1996
Knight Research Fellowship Recipient of (\$4,000), Bucknell Univ., 1995

PROFESSIONAL SERVICES

Reviewer, Global Biogeochemical Cycles, Global Change Biology, Remote Sensing of Environment
Reviewer, Journal of Climate, Agricultural and Forest Meteorology, J.G.R.- Atmospheres – Biogeosciences
Reviewer, Carbon Balance and Management; NSF Proposal Review Geography and Regional Science
Session Chair, AGU Meetings Spring 2002, Fall 2008; AAG Meeting Spring 2009
Co-Chair, Graduate Student Association, Dept. of Environmental Sciences, Univ. of Virginia, 2001-2002
Coordinator, Student Water Symposium, Colorado State Univ., 1999-2000

PROFESSIONAL AFFILIATIONS

American Geophysical Union : American Association of Geographers : Ecological Society of America :
Sigma Xi Scientific Research Society : US NSF/NCAR Earth Systems Scientist Early Career Network :
NCAR Junior Faculty Forum : CarboAfrica MIP : US NSF International, Sub-Saharan Africa Workshop :
La Thuile Fluxnet Synthesis : North American Carbon Program Synthesis Efforts

PERSONAL INTERESTS

World Travel : Cooking : Ultimate : Running : Hiking : French

TEACHING / MENTORING EXPERIENCE

Courses 2008-09: Weather and Climate : Introduction to Hydrology : Land-Atmosphere Interactions : Remote Sensing of Global Environmental Change
Keynote, "Atmospheric Effects of Land Cover Change", Swiss NCCR Climate Summer School, 2007
Lecturer, "Advanced Hydrologic Transport Processes" course, Duke University, 2004
Lecturer, "Field Methods in Hydrology" course, University of Virginia, 2002
Private Tutor, "Physical Hydrology" course (1 student), University of Virginia, 2002
Lecturer, "Physical Hydrology" course, University of Virginia, 2001
Research Mentor to Undergraduates (2 students), University of Virginia, 2001
Teaching Assistant, University of Virginia, "Hydrological Transport Processes" course, 2000
Instructor, "Ecology and Environment" (3 week intensive), Exploration Program, Wellesley College, 1998
Teaching Assistant, Bucknell University, "Population and Evolutionary Biology" course, 1994
Co-curricular support of undergraduate studies in Environmental Sciences, Bucknell Univ., 1994

RESEARCH SUPPORT

PI and author, US NSF Carbon and Water in the Earth System, \$539,840, "Carbon Dioxide and Water Flux Responses to Extreme Weather and Climate Anomalies: A Fluxnet Synthesis", Sep 2007 - Sep 2010

INVITED PRESENTATIONS

Invited Seminar, "Carbon consequences of forest disturbance and recovery across North America", Clark University Marsh Institute Spring 2009
Invited Talk, "Spatio-temporal variability of carbon fluxes across Africa and their connection to climate", AGU Fall Meeting, San Francisco, 2007
Invited Talk, "Ecohydrologic Hypotheses Revisited: Global Synthesis with Canopy-Scale FLUXNET Observations", AGU Fall Meeting, San Francisco, 2007
Invited Seminar, "Africa's role in global water and carbon cycles: Diagnosing ecosystem processes and connections to climate", Department of Atmospheric and Oceanic Sciences University of Maryland, College Park, 2007
Invited Seminar, "Diagnosing Sensitivity of Ecosystem-Atmosphere Exchanges of Water and Carbon from Local to Global Scales", School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, 2007
Invited Seminar, "Terrestrial Carbon and Water Cycle Sciences Spanning Leaf to Global Scales", Department of Environmental Sciences, ETH Zürich, 2006
Invited Seminar, "Water, People, and Global Change: An Ecohydrologic Perspective on Natural Resource Dynamics", School of the Environment, University of California, Santa Barbara, 2006
Invited Presentation, Session on incorporating ecological processes at many scales into global biogeochemical and climate change models, Ecological Society of America Meeting, Montreal, Canada, 2005
Invited Presentation/Participation, National Science Foundation Workshop for Enhancing Collaborative Research on the Environment in Sub-Saharan Africa, 2005
Invited Seminar, Department Series, Natural Resource Ecology Laboratory, Colorado State University, 2004

RESEARCH MANUSCRIPTS & BOOK CHAPTERS

Williams, C.A., N.P. Hanan, R.J. Scholes, (in review) "*How much complexity is needed to model water and carbon dioxide fluxes following rain pulses in an African savanna?*".

Williams, C.A., N.P. Hanan (in review) "*Teleconnections between remote climate indices and photosynthesis across Africa*".

Beer C, Ciais P, Reichstein M, Baldocchi D, Law BE, Papale D, Soussana J-F, Ammann C, Buchmann N, Frank D, Gianelle D, Janssens IA, Knohl A, Koestern B, Moors E, Rouspard O, Verbeeck H, Vesala T, **Williams CA**, Wohlfahrt G (2009) "*Temporal and among-site variability of inherent water-use efficiency at the ecosystem scale*", Biogeosciences Discussions 5: 4481–4519.

Williams, C.A., N.P. Hanan, I. Baker, A.S. Denning, G.J. Collatz, J.A. Berry, R.J. Scholes (2008) “*Interannual variability of photosynthesis across Africa and its attribution*”, Journal of Geophysical Research – Biogeosciences 113, G04015, doi:10.1029/2008JG000718.

Archibald S, Kirton A, van der Merwe M, Scholes RJ, **Williams CA**, Hanan N (2008) “*Drivers of interannual variability in net ecosystem exchange in a semi-arid savanna ecosystem, South Africa*”, Biogeosciences Discussion, 5, 3221-3266.

Kutsch, W.L., N.P. Hanan, R.J. Scholes, I. McHugh, W. Khubeka, H. Eckhardt, **C.A. Williams** (2008) “*Response of carbon fluxes to water relations in a savanna*”, Biogeosciences, 5, 1797-1808.

Williams, C.A., N.P. Hanan, R.J. Scholes, A.S. Denning, J.A. Berry, J. Neff (2007) “*Africa and the global carbon cycle*”, Carbon Balance and Management, 2:3.

Williams, C.A., T.M. Scanlon, and J.D. Albertson (2007) “*Influence of surface heterogeneity on scalar similarity in the canopy sublayer*”, Boundary-Layer Meteorology, 122(1), doi:10.1007/s10546-006-9091-3.

Teuling, A.J., S.I. Seneviratne, P.A. Troch, **C.A. Williams** (2006) “*Observed timescales of evapotranspiration response to soil moisture*”, Geophysical Research Letters, 33, L23403, doi:10.1029/2006GL028178.

Williams, C.A., and J.D. Albertson (2006) “*Dynamical effects of the statistical structure of annual rainfall on dryland vegetation*”, Global Change Biology, 12, 1-16.

Emanuel, R.E., J.D. Albertson, H.E. Epstein, **C.A. Williams** (2006) “*Carbon dioxide exchange in early old-field succession*”, Journal of Geophysical Research- Biogeosciences, 111, G01011, doi: 10.1029/2005JG000069.

Albertson, J.D., **C.A. Williams**, T.M. Scanlon, and N. Montaldo (2006) “*Soil moisture controls on water and carbon fluxes in semi-arid regions*”, In: Dryland Ecohydrology, eds. P. D’Odorico, A. Porporato, Springer, Netherlands, pp. 67-83.

Williams, C.A., and D.J. Cooper (2005) “*Mechanisms of riparian cottonwood decline along regulated rivers*”, Ecosystems, 8: 382-395, doi:10.1007/s10021-003-0072-9.

Williams, C.A., and J.D. Albertson (2005) “*Contrasting short- and long-timescale effects of vegetation dynamics on water and carbon fluxes in water-limited ecosystems*”, Water Resources Research 41, W06005, doi:10.1029/2004WR003750.

Williams, C.A., J.D. Albertson (2004) “*Soil moisture controls on canopy-scale water and carbon dioxide fluxes in an African savanna*”, Water Resources Research, 40:1-14, doi:10.1029/2004WR003208.

Williams, C.A. (2004) “*Hydrologic controls on vegetation function and structure in water-limited systems*”, Ph.D.Dissertation, Duke University, pp. 205.

Binkley, D., G.G. Ice, J. Kaye, and **C.A. Williams** (2004) “*Patterns of Nitrogen and Phosphorous concentrations in forest streams of the United States*”, Journal of the American Water Resources Association, 40(5):1277-1291.

Scanlon, T.M., J.D. Albertson, K.K. Caylor, and **C.A. Williams** (2003) “*Determining land surface fractional cover from NDVI and rainfall time series for a savanna ecosystem*”, Remote Sensing of Environment, 82(2-3): 376-388.

Prueger, J.H., W.P. Kustas, L.E. Hipps, J.L. Hatfield, A. Cahill, **C. Williams**, J.I. MacPherson, M. Wolde, J. Albertson, W.E. Eighinger, D.I. Cooper, N. Brunzell, and R. Gillies (2003) “*Spatial variability of turbulent fluxes across a corn/soybean production region in central Iowa*”, Abstract published, American Meteorological Society 17th Conference on Hydrology.

Williams, C.A. (2000) “*Comparison of floodplain hydrology and cottonwood water relations between a regulated and an unregulated river in northwestern Colorado*”, MS Thesis, Colorado State Univ.

RESEARCH PRESENTATIONS

Williams, C.A., G.J. Collatz, J. Masek, “*Forest disturbances as a driver of carbon sources and sinks*”, AAG Spring Meeting, Las Vegas, 2009.

- Williams, C.A.**, G.J. Collatz, J. Masek, "*Carbon consequences of forest disturbance and recovery across North America*", Oral, AGU Fall Meeting, San Francisco, 2008.
- Williams, C.A.**, N.P. Hanan, J.A. Berry, G.J. Collatz, A.S. Denning, J. Neff, R.J. Scholes, "*Spatio-Temporal Variability of Africa's Carbon Fluxes and Connection to Climate*", Oral, NOAA Global Carbon Cycle PI Meeting, Silver Spring, 2007.
- Williams, C.A. (invited)**, "*Diagnosing Sensitivity of Ecosystem-Atmosphere Exchanges of Water and Carbon from Local to Global Scales*", School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, 2007
- Williams, C.A.**, N.P. Hanan, J.A. Berry, G.J. Collatz, A.S. Denning, J. Neff, R.J. Scholes, "*Variability and Vulnerability of Carbon Cycling in Africa: Diagnosing Regional Controls with Forward and Inverse Approaches*", Oral, CarboEurope, Crete, Greece, 2006.
- Williams, C.A. (invited)**, "*Terrestrial Carbon and Water Cycle Sciences Spanning Leaf to Global Scales*", Oral, Department of Environmental Sciences, ETH Zürich, 2006
- Williams, C.A. (invited)**, "*Water, People, and Global Change: An Ecohydrologic Perspective on Natural Resource Dynamics*", School of the Environment, University of California, Santa Barbara, 2006
- Williams, C.A.**, N.P. Hanan, R.J. Scholes, "*Seasonal controls on water and carbon fluxes responding to pulse precipitation events in dryland systems: Examples from southern African savannas*", Oral, AGU Fall, San Francisco, 2005.
- Williams, C.A.**, N.P. Hanan, R.J. Scholes, A.S. Denning, J.A. Berry, J. Neff, J. Privette, "*Assessing the Role of Africa and the Global Carbon Cycle*", Poster, NSF Workshop, Enhancing Collaborative Research on the Environment in SubSaharan Africa, 2005.
- Williams, C.A.**, N.P. Hanan, R.J. Scholes, A.S. Denning, J.A. Berry, J. Neff, J. Privette, "*Africa and the Global Carbon Cycle: Field networks and modeling studies of African Carbon Exchange*", Oral, Kruger National Park Science Meeting, Skukuza, South Africa, 2005.
- Williams, C.A.**, "*Africa and the Global Carbon Cycle: Field networks and modeling studies of African Carbon Exchange*", Poster, Earth System Science Early Career Networking Meeting, NCAR, CO, 2005.
- Hanan, N.P. (invited), **C.A. Williams**, R.J. Scholes, A.S. Denning, J.A. Berry, J. Neff, J. Privette, "*(In and) Out of Africa: estimating the carbon exchange of a continent*", Oral, International Carbon Dioxide Conference 7, Boulder, CO, 2005.
- Williams, C.A. (invited)**, J.D. Albertson, "*Contrasting short- and long-timescale effects of vegetation dynamics on water and carbon fluxes in water-limited ecosystems*", Oral, ESA Annual Meeting, Montreal, Canada, 2005.
- Albertson, J.D. (invited), **C.A. Williams**, T.M. Scanlon, N. Montaldo, "*Hydrologic implications of vegetation dynamics*", Oral, Princeton University, Princeton, NJ, 2005.
- Williams, C.A. (invited)**, "*Ecohydrologic Controls on Vegetation Function and Structure in Water-Limited Systems*", Natural Resource Ecology Lab Seminar, 2004.
- Williams, C.A.**, A. Porporato, J.D. Albertson, "*Can water-limitation alone explain woody-herbaceous vegetation patterns along a large-scale rainfall gradient in southern Africa?*", Oral, ESA Annual Meeting, Portland, OR, 2004.
- Williams, C.A.**, "*On the use of unit response functions to expose environmental sensitivity of savanna vegetation*", Oral seminar, Environmental Sciences Seminar, Duke University, Durham, NC, 2003.
- Williams, C.A.**, J.D. Albertson, "*Predicting biomass and water use dynamics in a tree-grass savanna using a low dimensional model*", Poster, European Geophysical Society, AGU Joint Assembly, Nice, France, 2003.
- Williams, C.A.**, J.D. Albertson, H.E. Epstein, "*Carbon, water, and energy dynamics in a savanna mosaic: Results from an African field campaign*", Poster, American Geophysical Union Fall Meeting, San Francisco, 2002.
- Williams, C.A.**, "*On the role of rainfall variability in controlling temporal dynamics of biomass in a savanna ecosystem*", Oral, Nonlinear Dynamics Seminar, Duke University, Durham, NC, 2002.
- Williams, C.A.**, H.E. Epstein, J.D. Albertson, "*Measured and Modeled Land Surface States and Fluxes in a Successional Environment*", Poster, American Geophysical Union Fall Meeting, San Francisco, CA. 2001.
- Williams, C.A.**, H.E. Epstein, J.D. Albertson, "*Comparing Measured and Modeled Land Surface States and Fluxes in a Successional Environment*", Oral, Nat'l Inst' of Global Envi. Change, Southeast Regional Conference, Durham, NC, 2001.

Williams, C.A., D.J. Cooper, “*Water Relations and Biomass Adjustments of Cottonwood in Response to River Regulation*”, Oral, Ecological Society of America Annual Meeting, Madison, WI. 2001.

Williams, C.A., T.M. Scanlon, J.D. Albertson, “*Characterizing Turbulence and Mass and Energy Exchanges Within and Above a Forested Canopy*”, Oral, American Geophysical Union Fall Meeting, San Francisco, 2000.

Williams, C.A., J.D. Albertson, “*Eddy Covariance Measurements Above and Within a Forested Canopy*”, Poster, National Institute of Global Environmental Change Southeast Regional Conference, Gainesville, FL. 2000.

Williams, C.A., D.J. Cooper, “*Plant Water Relations and Xylem Architecture: A Crisis in the Science*”, Oral, American Geophysical Union Hydrology Section Meeting, Fort Collins, CO, 2000.

Williams, C.A., “*Comparison of Fremont Cottonwood Water Status on a Regulated and an Unregulated River*”, Oral, Student Ecology Symposium, Colorado State University. 2000.