



Faculty Employment Application

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Job Number: 44727	Job Title: Assistant or Associate Professor	Date: Mar 2 2010 3:13PM
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References

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Thompson Webb III	Brown University	Department of Geological Sciences Brown University 324 Brook Street Box 1846 Providence, RI 02912	Professor Emeritus	401-836-3128	Thompson_Webb_III@brown.edu

Other Information

Are you legally authorized to work in the U.S.?

Yes

What is your current employment status with the University of Arizona?

Not a University of Arizona employee

If you are a current employee enter your Employee Identification Number (EID) in the space to the right. If you never worked for the University, worked as a student, or terminated your employment prior to July of 2001 enter N/A. Note: Please do not enter hyphens in the EID field. Your 9-digit EID number (Ex: 120001234) may be found by logging into the Employee Link website. Your EID number is located in the "Current Employment" tab. You may also find your EID number on your pay stub. Note: Your Employee ID number is NOT your Social Security Number.

N/A

Supplemental Questions

Where did you first learn about this position?

National on-line job board (Enter name below)

Enter the specific name of any referral source, or the code printed on the business card you received from The University of Arizona career fair booth:

Eco-Log listserv

Have you ever been convicted of or plea bargained to a misdemeanor offense?

No

If yes, you must provide criminal conviction information and dates: (*You are responsible for knowing if traffic violations or other citations received were classified as a misdemeanor*).

Have you ever been convicted of or plea bargained to a felony offense?

No

If yes, you must provide criminal conviction information and dates: (*You are responsible for knowing if traffic violations or other citations received were classified as a felony*).

By indicating 'Yes' below, I affirm that my responses above are true, complete and accurate. I understand that if I accept a job offer, I will be asked to give my written consent for the University of Arizona to conduct a check of my criminal conviction history, motor vehicle record, educational credentials and work history.

I further understand that a 'yes' response will not automatically disqualify me from consideration. However, falsifying, misrepresenting, or omitting criminal conviction information on any application document will likely result in a withdrawal of any job offer and termination of any subsequent employment with the University.

Yes, I affirm that my responses above are true, accurate and complete to the best of my knowledge.

Can you perform the essential functions (job duties) of this position with or without accommodation?

Yes

What is your current employment status with The University of Arizona?

Not a University of Arizona employee

If you have never worked for the University or terminated your employment prior to July 2001, please enter N/A in the space to the right. If you are a current, former, or retired UA employee and were issued an EmplID please enter your number in the space to the right. Your EmplID can be found by logging in to UAccess Employee and viewing your paycheck. Please do not enter hyphens in the EmplID field. Note: Your EmplID is not your Social Security Number.

N/A

Agreement

I certify the statements made by me in this application are true and complete to the best of my knowledge and belief and are made in good faith. I understand that any false statement made herein will void this application and any actions based upon it, and I agree to revise this application should any of the information change. I understand that this application and all attachments are the property of The University of Arizona. I authorize The University of Arizona or any of its agents to make reference checks relating to my employment and I also authorize all prior employers to provide full details concerning my past employment. I authorize the University of Arizona to request and obtain records to determine the accuracy of my responses. I understand that employment in certain positions may be conditional upon a background verification including but not limited to criminal records. I certify that I am or will be legally authorized to work in the United States at the time of hire.

BY SIGNING BELOW, I certify that I have read and agree with these statements.

John (Jack) Warren Williams

Applicant's Name

Applicant's Signature

Date

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RESEARCH STATEMENT

John (Jack) W. Williams

Overview

I am an earth system scientist who studies vegetation responses to climate variations at timescales ranging from decades to millennia. In my research, I use the late Quaternary as a model system for understanding the ecological impacts of climate change. The late Quaternary is well-suited for this purpose because 1) it includes large and often abrupt changes in climate, atmospheric CO₂, and other environmental variables, 2) there are massive shifts in the distribution and abundance of plant species, scaling upward to changes in the distribution and composition of plant associations, and 3) all these changes are well-documented by dense and varied networks of paleoecological and paleoclimatic data. More generally, paleoecological approaches are fundamental to climate-impact research because the ecological impacts of recent warming are just beginning to emerge; we must study past events in order to observe the full range of ecological dynamics.

Both my training and research approach are broad: I received a PhD in geology at Brown University, was a postdoctoral fellow at NCEAS, and am now an associate professor at the Department of Geography at UW-Madison. I enjoy integrative science and publish with a variety of collaborators. My research program combines three approaches:

- 1) **Data mining and data assimilation** of large paleoecological, neoecological, and climatic datasets, especially from the Neotoma paleoecological database, global climate models, and synoptic remote sensors.
- 2) **Primary data collection**, in which I and my students collect lake-sediment cores and analyze the fossil pollen, charcoal, and other paleoecological and paleoclimatic proxies for insights into past vegetational and climatic changes.
- 3) **Vegetation modeling and data-model comparisons**, in which mechanistic vegetation models such as BIOME4 or LPJ are driven by paleoclimate simulations from global and regional climate models and the vegetation simulations are checked against data-based vegetation reconstructions.

Within this context, my research group is pursuing several interrelated research topics: 1) vegetational responses to climates with no modern analog, 2) land-cover change and vegetation-atmosphere feedbacks, 3) hydrological variability and abrupt rates of vegetation change, and 4) the joint floristic and faunal responses to late-Quaternary climate change.

1. No-Analog Communities and Novel Climates: Past and Future

Paleoecologists and global-change ecologists face a common problem: we study ecosystems that no ecologists have ever seen, for states of the climate system that are very different from the present. This forces us to extrapolate beyond our current observations and personal experiences, and raises the risk that our models may perform poorly for earth-system states outside the current observational domain (Williams and Jackson, 2007).

My colleagues and I have assembled strong circumstantial evidence that the late-glacial no-analog plant communities grew in response to climates also without modern counterpart (Jackson and Williams, 2004; Williams and Jackson, 2007; Williams et al., 2001). This work has primarily focused on the late-glacial plant communities (ca. 17,000 to 12,000 years before present) in the upper Midwest. We

then analyzed the IPCC AR4 models to show that end-21st-century climates may also

include globally novel climates (Williams et al., 2007). These future novel climates are likely to result in new communities of species, and other ecological surprises. I am pursuing several on-going lines of research. First, with funding from NSF Ecology, my student Leila Gonzales and I have been developing methods for extending species-climate response surfaces into climates outside the modern observational domain, and are testing whether these extended niche models better predict species responses to past and future no-analog climates (Gonzales et al., 2009; Gonzales et al., in press). Second, in a second NSF-Ecology-funded project, my student Jacquelyn Gill and I are testing the hypothesis that late-glacial no-analog plant communities were maintained in part by the diverse suite of large mammalian herbivores present during the late-glacial period. Surprisingly, our results indicate that the no-analog plant communities developed *after* the megafaunal extinction, suggesting that release from herbivory pressure may have been a key factor in the formation of the no-analog plant communities (Gill et al., in press). Third, I am collaborating with Conservation International to overlay my 21st-century maps of novel and disappearing climates against their databases of endemic and threatened species, to identify areas of particular vulnerability to climate change (Tabor and Williams, in press).

2. Quantitative Land Cover Reconstructions and Vegetation-Atmosphere Feedbacks Mapped syntheses of fossil pollen have provided profound insights into the complexity of past climate-driven species migrations, but have always been limited by a fundamental problem in paleoecology: how can we translate our raw observations (percent abundances of pollen grains in sediments) into ecologically relevant information (e.g. distributions and densities of plant species across landscapes)?

Much of my research has focused on developing rigorous and quantitative techniques for inferring past land cover from fossil pollen data. My dissertation work applied fuzzy-logic techniques to map past biomes (Williams et al., 1998; Williams et al., 2000) but this work was unsatisfactory because the reconstructed biome maps masked substantial within-biome variations in composition and vegetation structure (Williams et al., 2004). I then pioneered the synthesis of AVHRR and MODIS land-cover with modern pollen databases to calibrate nonparametric statistical models of pollen-vegetation

relationships (Williams and Jackson, 2003). These models have been applied to reconstruct late-Quaternary changes in fractional tree cover and leaf area index (LAI) in North America (Gonzales et al., 2008; Williams, 2003; Williams et al., 2008; Williams et al., 2009) and Asia (Tarasov et al., 2007) and we are working on papers for Europe (Brewer et al. in prep.) and a Northern Hemisphere synthesis (Williams et al. in prep.).

With NSF-Earth System History support, my colleagues and I used these landcover maps to test whether vegetation feedbacks amplified mid-Holocene aridity in the mid-continental US. Experiments with the RegCM regional climate model in which the model was forced with 0ka and 6ka land cover maps (based on the fossil pollen data) indicated that the mid-Holocene eastward shift of the prairie-forest border amplified regional aridity by reducing evaporative recycling of moisture to the atmosphere (Diffenbaugh et al., 2006; Shuman et al., in review).

3. Hydrological Variability and Abrupt Rates of Vegetation Change

The early-2000's drought and resultant increase in tree mortality in the western US has highlighted the sensitivity of forest ecosystems to hydrological variability. The large hydrological variations of the early to middle Holocene offer an opportunity to

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study the impacts of hydrological variability on forest ecosystems, at magnitudes

beyond 20th-century variations (Williams et al., 2009; Williams et al., in press). In the Great Plains, the early Holocene drying triggered dune mobilization, eastward movement of the prairie-forest border, and a shift from C₃ to C₄ grasslands. In New England, the well-known abrupt decline of *Tsuga canadensis* populations during the mid-Holocene is closely linked to a series of large-magnitude centennial-scale droughts (Shuman et al., 2009), suggesting that drought, perhaps in association with an outbreak of hemlock looper (Davis, 1981), triggered the *Tsuga* decline.

We have just published papers showing that in the Great Plains, shifts in the prairie-forest ecotone were asymmetrical, with rapid declines in tree populations (a few centuries or less) during the early Holocene and gradual regrowth (thousands of years) during the middle to late Holocene. A second paper {Williams, 2010 #2424} has shown that the abrupt responses of plant communities to early Holocene drying was not synchronous, but with a cluster around ca 8ka. This pattern suggests that abrupt forest change was driven both by abrupt climate change (the 8.2 event) and by nonlinear ecological responses to progressive drying in the Great Plains. My colleagues and I plan to resubmit a grant to NSF-Ecosystems and NSF-Climate Dynamics to model vegetation responses to early Holocene variability, using a new fully transient GCM simulation of late-Quaternary climates (Liu et al., 2009) and the vegetation models LPJ and Landis-II to model the vegetation responses.

4. Joint Floristic and Faunal Responses to Late-Quaternary Climate Change

Although many authors have speculated about the interactions between vegetational and faunal responses to late-Quaternary climate change, there have been no rigorous syntheses of the rich fossil pollen and vertebrate datasets. Previously, the primary barrier to joint syntheses was informatic, i.e. the difficulty of extracting data from different paleoecological databases with varying data structures and metadata standards. This barrier has been largely overcome by the establishment of the Neotoma database, which combines into a single database structure the Global Pollen Database, the Faunmap vertebrate database, the North American Plant Macrofossil Database, and others. Now, the largest barriers to synthesis are intersite and interdataset differences in depositional environment, temporal resolution, and chronological accuracy. These factors blur the temporal relationships between fossil pollen records (collected from lakes and mires) and vertebrate records (collected from caves, archaeological sites, etc.), and thus hinder our understanding of cause-and-effect relationships.

We are pursuing two lines of research. First, we are collecting new lakesediment records from seven lakes in a transect from Minnesota to Missouri and analyzing the cores for pollen, *Sporormiella*, and charcoal. *Sporormiella* is a dung fungus, and its spores in sediments are increasingly used as an indicator of megaherbivore extinctions (Gill et al., in press; Robinson, 2005; Burney, 2003 #2024). The great advantage of *Sporormiella* is that it is preserved in the same sediments as pollen and charcoal and so we can precisely establish lead/lag relationships between megaherbivore decline and vegetation change, and shifts in fire regime. Second, with funding from NSF-Sedimentary Geology and Paleobiology, I am beginning a new project with postdoc Jessica Blois to jointly analyze the fossil pollen and vertebrate records stored in Neotoma. This project includes funds to redate key vertebrate fossils, and we will be developing a new generation of species range maps for mammal species for the late Quaternary, at a temporal resolution comparable to the 1ka vegetation maps already developed (Williams et al., 2004). We will use these datasets and generalized dissimilarity modeling (Ferrier et al., 2007) as the foundation for joint continental Research

scale syntheses of floral and faunal community responses to climate change.

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CURRICULUM VITAE

1. PERSONAL INFORMATION

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3. EDUCATION

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Assistant Professor 2004-2008

Department of Geography

University of Wisconsin - Madison

Research Associate 2003-2004

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Department of Geology and Geophysics

University of Minnesota Twin Cities Campus

Postdoctoral Fellow 1999-2003

National Center for Ecological Analysis and Synthesis

University of California, Santa Barbara

Visiting Scholar 1997

Department of Ecology

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Doctoral Student 1994-1999

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Brown University

2

5. PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

1. Notaro, M., Liu, Z., Gallimore, R. G., **Williams, J. W.**, and Gutzler, D. (in review). The complex seasonal cycle of ecohydrology in the southwest United States. *Global Change Biology*.

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35. **Williams, J. W.**, Shuman, B. N., Webb III, T. (2001) Dissimilarity analyses of late-Quaternary vegetation and climate in eastern North America. *Ecology*. 82: 3346-3362. (*Editor's Choice in Science (2002) 295: 409. Winner of Ecological Society of America's Cooper Award.*)
36. **Williams, J. W.**, Webb III, T., Richard, P. J. H., Newby, P. (2000) Late Quaternary biomes of Canada and the eastern United States. *Journal of Biogeography* 27: 585-607.
37. Edwards, M. E., Anderson, P. M., Brubaker, L. B., Ager, T., Andreev, A. A., Bigelow, N. H., Cwynar, L. C., Eisner, W. R., Harrison, S. P., Hu, F.-S., Jolly, D., Lozhkin, A. V., McDonald, G. M., Mock, C. J., Ritchie, J. C., Sher, A. V., Spear, R. W., **Williams, J. W.**, and Yu, G. (2000) Pollen-based biomes for Beringia 18,000, 6000, and 0 14C yr. B.P. *Journal of Biogeography* 27: 521-554.
38. **Williams, J. W.**, Bartlein, P. J., and Webb III, T. (2000) Data-model comparisons for eastern North America - inferred biomes and climate values from pollen data. *Proceedings of the 3rd Paleoclimate Modeling Intercomparison Project Workshop*, Oct. 4-

8, 1999. Montreal, Canada. Edited by P. Braconnot. WCRP-111, WMO/TD-No. 1007, pp. 77-86.

39. **Williams, J. W.**, Webb III, T., Shuman, B. N., and Bartlein, P. J. (2000) Do low CO₂ concentrations affect pollen-based reconstructions of LGM climates? A response to „Physiological significance of low atmospheric CO₂ for plant-climate interactions“ by Cowling and Sykes. *Quaternary Research* **53**: 402-404.

40. Jackson, S. T., Webb, R. S., Anderson, K. H., Overpeck, J. T., Webb III, T., **Williams, J. W.**, and Hansen, B. C. S. (2000) Vegetation and environments in eastern North America during the last glacial maximum. *Quaternary Science Reviews* **19**: 489-508.

41. **Williams, J. W.**, Summers, R., and Webb III, T. (1998) Applying plant functional types to construct biome maps from eastern North American pollen data: comparisons with model results. *Quaternary Science Reviews* **17**: 607-627.

42. **Williams, J. W.** (1995) Factors controlling the formation of fossiliferous beds in the Devonian Columbus limestone at Marblehead Quarry, Marblehead, Ohio. *Ohio Journal of Sciences* **95**: 325-330. (*OJS Paper of the Year*)

NON-PEER-REVIEWED ARTICLES

1. Sax, D. F. and **Williams, J. W.** (2007) Assisted migration – evaluating the merits of a newly proposed conservation strategy. *International Biogeography Society Newsletter* **5**: 2-5.

2. Mode, W. M., Panyushkina, I. P., Leavitt, S. W., **Williams, J. W.**, Santiago, A., Gill, J., Edwards, C., Gertz, H. (2007) Stop 9: Late-glacial and early Holocene paleoecology: Schneider Farm, Calumet County in *Guide Book for the 53rd Midwest Friends of the Pleistocene Field Conference: Late-Glacial History of East-Central Wisconsin*. (ed. by Hooyer, T. S.) May 18-20, 2007. Oshkosh, WI.

3. Shurin, J., Gergel, S., Kaufman, D., Post, D., Seabloom, E., **Williams, J.** (2001) In **5**

Defense of Ecology. *The Scientist* **15**: 6.

4. Leduc, P. L., **Williams, J. W.**, and Webb III, T. (1998) Programs for site selection, tabular display, and interpolation of data from Paradox-based pollen databases. *INQUA Newsletter* **17**

BOOK CHAPTERS

1. Lorenz, D. J., Vavrus, S. J., Vimont, D. J., **Williams, J. W.**, Notaro, M., Young, J. A., DeWeaver, E. T., and Hopkins, E. J. (2009). Wisconsin's changing climate: temperature. *Understanding Climate Change: Climate Variability, Predictability, and Change in the Midwestern United States*. Edited by S. C. Pryor. Indiana University Press, Bloomington, IN, pp. 76-87.

2. Lorenz, D. J., Vavrus, S. J., Vimont, D. J., **Williams, J. W.**, Notaro, M., Young, J. A., DeWeaver, E. T., and Hopkins, E. J. (2009). Wisconsin's changing climate: hydrologic cycle. *Understanding Climate Change: Climate Variability, Predictability, and Change in the Midwestern United States*. Edited by S. C. Pryor. Indiana University Press, Bloomington, IN, pp. 135-144.

3. **Williams, J. W.** (2009) Quaternary Vegetation Distributions. *Encyclopedia of Paleoclimatology and Ancient Environments*. Edited by V. Gornitz. Springer-Verlag.

4. Cook, E.R. Bartlein, P. J., Duffenbaugh, N. S., Seager, R., Shuman, B., Webb, R. S., **Williams, J. W.**, Woodhouse, C. A. (2008) Hydrological variability and change, *Abrupt Climate Change, A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research*, Washington, DC.

5. **Williams, J. W.** (2006) Postglacial pollen records of northeastern North America. *Encyclopedia of Quaternary Science*. Edited by S. A. Elias. Elsevier, Amsterdam.

6. Grimm, E. C., Keltner, J., Cheddadi, R., Hicks, S., Lézine, A.-M., Berrio, J. C., and **Williams, J. W.** (2006) Pollen databases and their application. *Encyclopedia of Quaternary Science*. Edited by S. A. Elias. Elsevier, Amsterdam.

7. Webb, T., Shuman, B. N., **Williams, J. W.** (2004) Climatically forced vegetation dynamics in North America during the late Quaternary period. *The Quaternary Period in the United States*. Edited by Gillespie, A. R., Porter, S. C., Atwater, B. F. Elsevier, pp. 459-478.

BOOKS

Williams, J. W., B. Shuman, P. J. Bartlein, J. Whitmore, K. Gajewski, M. Sawada, T. Minckley, S. Shafer, A. E. Viau, T. Webb, III, P. M. Anderson, L. B. Brubaker, C. Whitlock, and O. K. Davis. (2006) *An Atlas of Pollen-Vegetation-Climate Relationships for the United States and Canada*. American Association of Stratigraphic Palynologists Foundation, Dallas, TX. 273p.

BOOK REVIEWS

"Old Forests and Fire" Review of America's Ancient Forests: From the Ice Age to the Age of Discovery by T. M. Bonnicksen. *Conservation Ecology*, 2000

WEBSITES, PUBLICLY AVAILABLE DATASETS, AND OTHER ELECTRONIC RESOURCES

1. Globally Downscaled Future Climate Projections.

URL: <http://ccr.aos.wisc.edu/model/ipcc10min/>

Developers: Tabor, K., **Williams, J. W.**

Year of Initial Development: 2008

Last Updated: 2009

Description: In a collaboration with the Land Tenure Center, Center for Climate Research, Dept. of Geography, and Conservation International, we have generated 10-minute gridded climate projections for 2050 AD (2041-2060) and 2090 AD(2081-

2100) for all 23 climate models and 3 scenarios in the IPCC Fourth Assessment Report and have made these debiased and downscaled projections publicly available.

2. North American Modern Pollen Dataset.

URL: <http://www.geography.wisc.edu/faculty/williams/lab/Downloads.html> (mirrored at the University of Ottawa)

Developers: Whitmore, J., Gajewski, K., Sawada, M., **Williams, J. W.**, Shuman, B., Bartlein, P. J., Minckley, T., Viau, A. E., Webb, T., III, Anderson, P. M., and Brubaker, L. B.

Year of Initial Development: 2006

Last Updated: 2008

Description: This dataset archives pollen surface samples from North America, along with attributed climatic and vegetational data for each location. A full description of the dataset and its compilation is provided by Whitmore et al. (2005). This data is the foundation for a new atlas of modern pollen-climate and pollen-vegetation relationships (Williams et al., 2006).

3. Pollen Viewer.

URL: <http://www.ncdc.noaa.gov/paleo/pollen/viewer/webviewer.html>

Developers: Leduc, P., **Williams, J. W.**, Shuman, B., Bartlein, P. J., Webb, T.

Year of Initial Development: 2003

Last Updated: 2003

Description: Pollen Viewer presents animated maps of pollen distributions in North America since the last glacial maximum, which can be used to study how plant distributions responded to late-Quaternary environmental change. Pollen Viewer was created by Phil Leduc of Brown University. The data and maps underlying Pollen Viewer are described by Williams et al. (2004). Pollen Viewer has become a widely used tool in classrooms and public presentations on ecological responses to climate change.

6. CONTRACTS AND GRANTS

RECENTLY FUNDED

1. NSF Geoinformatics (2010-2015) Collaborative Research: Neotoma Paleoecology Database, Pliocene-Quaternary (PI: Graham, Grimm, Ashworth, Jackson Williams, Booth, Charles, Miller, Smith, Thompson). **\$1,511,707**

2. World University Network (2010) "NEOTOMA: A community database for ecological responses to climate changes of the recent past." (PI: Williams, Graham, Edwards)

\$16,000

ACTIVE

1. Wisconsin Focus on Energy Environmental Research Program (2009-2011) "Identifying

climatic analogs and potential shifts in forest composition and extent for southern Wisconsin under 21st-century climate-change scenarios." (PI: Williams, Notaro, Lorenz) **\$196,447**

2. NSF Sedimentary Geology and Paleobiology Program (2009-2012) "Collaborative Research: Floral and faunal community responses to late-Quaternary climate change." (PI: Williams, Grimm, Graham, Jackson). **\$743,229**

3. NSF Ecology Program (2007-2011) "Collaborative Research: Integrated analysis of lateglacial vegetation and environments in eastern North America: How do novel plant associations arise?" (PI: Williams, Jackson) **\$682,235**

4. DOE National Center for Climate Change Research (2007-2010) "Ecosystem response to future climate change and the impact of vegetation feedbacks in the Southwest United States" (PI: Notaro, Huxman, Thompson, Vimont, Williams) **\$349,075**.

5. International Biogeographical Society (2009-present) "Membership and Meetings

7

Coordinator" (PI: Williams) **\$18,327**

PREVIOUSLY FUNDED

1. NSF Ecology Program (2006-2009) "Collaborative Research: A Late-Glacial Model System for Studying Fine-Scale Vegetational Responses to Abrupt Climate Change" (PI: Grimm, Curry, Williams) **\$748,417**

2. NSF Division of Environmental Biology (2009) "U.S. Graduate Student Travel to International Biogeography Society Meeting" (PI: Williams) **\$66,200**

3. Conservation International (2008) Assessing Climate Change Impacts for the Tropical Andes (PI: Williams). **\$15,000**

4. NSF REU Supplement (Summer, 2008) (PI: Williams) **\$7,000**

5. NSF Geoinformatics (2006-2008) "Collaborative Research: Late Neogene Terrestrial Database" (PI: Grimm, Graham, Jackson, Ashworth, Williams) **\$435,010**

6. NSF Paleoclimate Program (2003-2007) "Collaborative Research: Surface-Atmosphere Feedbacks and Holocene Climate Variations in Eastern North America: Linkages, Impacts, and Governing Mechanisms" (PI: Williams, Diffenbaugh, Shuman, Bartlein, Sloan) **\$745,902**

7. National Center for Ecological Analysis and Synthesis, Postdoctoral Fellowship (1999-2001) "Integrating satellite and pollen data with biogeochemical modeling to reconstruct longterm trends in the productivity and carbon sequestration of terrestrial ecosystems" **\$86,000**

8. NSF Bioinformatics, Postdoctoral Fellowship (1999-2001) "Reconstructing millennial-scale trends in terrestrial productivity and carbon sequestration" **\$100,000** (*declined by investigator*)

7. HONORS AND AWARDS

Kavli Fellow, National Academy of Sciences (2009)

Phillip Certain College of Letters & Science Dean's Distinguished Faculty Award (2008) *Awarded to a single representative from each year's set of newly-tenured faculty within the UW College of Letters and Science.*

Reid Bryson Distinguished Professor of the Climate, People, and Environment Program (2008-present) *"The Bryson Professor carries out research, teaching, and public service in the socially relevant environmental and climate sciences in the spirit of the integrative approach pioneered by Reid A. Bryson."*

William Skinner Cooper Award, Ecological Society of America (2004)

Awarded to "an outstanding contributor to the fields of geobotany, physiographic ecology, plant succession, or the distribution of plants along environmental gradients"

Corinna Borden Keen Dissertation Fellowship, Brown University (1999)

Paper of the Year, Ohio Journal of Sciences (1995)

Brown University Fellowship (1994-1995)

Oberlin Geology Wharton Award (1993)

Phi Beta Kappa (1992)

8. TEACHING EXPERIENCE

Assistant/Associate Professor, University of Wisconsin 2004-

Courses taught:

120 Introduction to Physical Geography.

8

331 Environments of the Past.

332 The Global Warming Debate.

523 Quaternary Vegetation Dynamics.

920 Quaternary Environments Seminar.

980 Earth System Science Seminar.

Lecturer, University of Minnesota Twin Cities. 2003-2004

Earth System Science and History 431

Individual Teaching Consultant, Brown University. 1998-1999

At the Center for the Advancement of College Teaching, observed other graduate students' lectures, labs, or discussion sessions, and provided feedback. Covered disciplines ranging from the sciences and humanities.

Departmental Teaching Liaison, Brown University 1997-1998

Organized teaching orientation sessions for department, and served as information conduit between the Geology Department and the Center. Led follow-up discussions to university-wide teaching seminars

Teaching Assistant, Brown University. 1996-1998

a. Advanced sedimentology class. On my own initiative, raised funds, organized, and led 15-person field trip to Florida Keys to study modern carbonate platform sedimentary systems.

b. Introductory geology class. Ran labs and graded homework and tests.

9. MENTORING ACTIVITIES

Postdoctoral Researchers

1. Sam Veloz (2009-present)

2. Jessica Blois (2009-present)

PhD Students

1. Karen Russ (2005-present)

2. Jacquelyn Gill (2007-present)

3. Leila Gonzales (PhD 2009) *Reconstructing late-glacial no-analogue climates in northeastern Illinois with expanded pollen-climate relationships: A case study at Crystal Lake, McHenry County, Illinois.*

Master's Students

1. Nancy Parker (2009-present)

2. Jacquelyn Gill (MSc 2007) *Investigating biotic drivers of Quaternary landscape change: Late-glacial no-analog communities and the North American megafaunal extinction.*

3. Ben Johnson (2005-2006; did not finish)

4. Sherry Stuart (MSc 2006) *The relationship between SOI index and QBO phase to precipitation variability for the Mississippi River basin for 1898 through 1938 and 1958 through 1999.*

Graduate Student Committees

1. Ian Orland (Geology) 2009-

2. Michelle Gooch (Botany) 2009-

3. Feng He (Atmospheric and Oceanic Sciences) 2008-

4. Brad Brewster (Rural Sociology) 2008-2009

5. Libby Obbink (Geology) 2008-2009

6. John-Paul Argenti (Atmospheric and Oceanic Sciences) 2007-2008

7. David Ullman (Atmospheric and Oceanic Sciences) 2007-2008

8. Colin Walling (Geology) 2007-2008

9. Paul Reyerson (Geography) 2006-

9

10. Shelley Crausbay (Botany) 2006-

11. Colin Belby (Geography) 2006-2009

12. Feihua Yang (Geography) 2006-2009
13. Donna Lee (Atmospheric and Oceanic Sciences) 2005-2006
14. Kendra Millam (Botany) 2005-2006
15. Lucas Moyer-Horner (Zoology) 2004-
16. Aaron Feggestad (Geography) 2004-2005
17. Gordon Robertson (Geography) 2004-2006
18. Devon Liss (Geography) 2004-2005
19. Kevin Spigel (Geography) 2004-2006
20. Xiaodong Miao (Geography) 2004-2006

Undergraduate Honors Theses

1. Katie Lininger (2007) *A late Pleistocene/early Holocene fire record from Appleman Lake, Indiana: The use of charcoal analysis in investigating landscape change.*
2. Susanne Ehlers (2007) *The contribution of global transport on North American carbon monoxide concentrations.* (co-advised with Tracey Holloway, Dept. Civil Engineering)

Undergraduate Research Assistants

1. Chad Zirbel 2009-
2. Grace Schellinger 2008-
3. Jenna Bonavia (Undergraduate Research Scholar) 2008-
4. Luming (Lucy) Xue (Undergraduate Research Scholar) 2008-2009
5. Luke Straka 2008-2009
6. David Silverman 2008
7. Maria A. Rosario Mejias (Summer Research Program) Summer 2008
8. Jeremiah Marsicek (Pathways Scholars Program) 2007-2009
9. Dominique Alhambra 2006-2007
10. Shannon Hernandez 2006-2007
11. Adianez Santiago (Summer Research Program) Summer 2006
12. Samuel Lucas (Summer Research Program) Summer 2006
13. Tenley Banik 2005-2006
14. Rebecca Wolff 2004-2005

10. EDUCATION, MEDIA, AND OUTREACH

EDUCATION

Undergraduate Research Scholars. URS at the University of Wisconsin 2008- provides research experiences for freshman and sophomores interested in exploring a career in the sciences.

EdGCM: Classroom Applications. Presentation to the Play@Pyle group 2006 at the University of Wisconsin on recent work adapting the EdGCM climate model for use by undergraduate students studying paleoclimatology. Includes examples of classroom exercises and term paper project.

Summer Research Program. SRP at the University of Wisconsin provides 2006- research experiences for minority, first-generation college students, women and other underrepresented populations.

Kids Do Ecology, National Center for Ecological Analysis and Synthesis. 1999-2000 Introduced 5th grade students to basic ecological concepts and helped them design and perform their own scientific experiment.

ScienceLine, National Center for Ecological Analysis and Synthesis. 2000-2003 Served as an on-line expert who responded to questions posted by K-12 students.

MEDIA

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Big 10 Network 2008

Gave a 5-minute lecture on climate change for airing on the Big 10 Network.

Letter to Capital Times. In reply to article „Is Global Warming 2007 a bunch of hooley?“ June 18, 2007.

Media Interviews for the PNAS Paper. 2007

On Air Interviews: NBC Nightly News, NPR All Things Considered, BBC World News, German Public Radio, WORT News.

Science Magazines: Discover Magazine, Science Magazine

Wire Services: AP, Reuters (picked up by newspapers worldwide)

Letter to Wisconsin State Journal. June 22, 2005. 2005

Global warming: Not if, how much? Opinion article published in *Santa-Barbara News-Press* July 23, 2000.

PUBLIC LECTURES

Responses Wisconsin Initiative on Climate Change Impacts (WICCI) seminar series: "Bracing for Impact: Climate Change Adaptation in Wisconsin." This talk and others were televised on Wisconsin Public television. April 9, 2009

Joint Seminar on the Effects of Global Climate Change on Fish and Wildlife Resources in the Midwest. Co-Sponsored by Indiana University and U.S. Fish and Wildlife Service. Bloomington, IN (Virtual attendee). September, 2008.

Verona Senior Center. Verona, WI. Arbor Day, April, 2008.

Wisconsin Energy Conservation Corporation. Madison, WI. January, 2008.

OTHER OUTREACH

Video Consultant. Conservation International, Washington DC.

Summer/Fall, 2008. Provided data and advice for a video on climate change impacts on biodiversity.

Museum Exhibition Consultant, Field Museum, Chicago. January, 2007

Provided data, images, and advice for „Ancient Americas“ exhibit.

11. PROFESSIONAL AFFILIATIONS, ACTIVITIES, AND SERVICE

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Geophysical Union

American Quaternary Association

Association of American Geographers

Ecological Society of America

International Biogeography Society

REVIEWING

Journal Reviewer: Biosciences, Boreas, Diversity and Distributions, Ecological Indicators, EOS, Journal of Biogeography, Journal of Ecology, The Open Ecology Journal, Quaternary Science Reviews.

Guest Editor: Proceedings of the National Academy of Sciences

Grant Reviewer: Reviewed proposals for NSF and DOE.

SERVICE - EXTERNAL

Associate Editor, Journal of Biogeography 2008-

11

Secretary, International Biogeographical Society 2007-

Cooper Awards Committee, Ecological Society of America 2006-
(Chair 2009-present)

North American Pollen Database Advisory Board 2004-

Chair, Paleoecology Section, Ecological Society of America 2001-2002

Vice-Chair, Paleoecology Section, Ecological Society of America 2000-2001

NCEAS Open House Coordinator 2000-2001

Departmental Student Representative, Brown University 1998-1999

Geoclub President, Brown University 1995-1996

SERVICE - UNIVERSITY

L&S Student Appeals Committee 2008-

L&S Scholarship Committee 2008-

SERVICE - DEPARTMENTAL

Chair, Graduate Admissions Committee 2008-

Budget Committee 2008-

Advisory Committee (Advises Chair regarding departmental policy) 2008-2009
Ad-Hoc Committee on 2-1 Teaching 2008-2009
Co-Chair, Speakers Committee 2005-2008
Undergraduate Advisor (and Honors Advisor for Dept.) 2005-2009
Undergraduate Committee 2005-2009
Future Directions Committee 2006-2007
Student Paper Committee 2005-2006
Science Hall Open House Committee Fall 2006

SERVICE – NELSON INSTITUTE FOR ENVIRONMENTAL STUDIES

Center for Climatic Research: Endowment Committee 2005-2006
Climate, People, and Environment: Seminar Organizer 2004-2005, 2008-
SYMPOSIA AND MEETINGS ORGANIZED

Williams, J. W., Jackson, S. T., Smith, F. A. (2009) The Biogeography of
Extinction. *International Biogeography Society*. Mérida, Mexico.

Williams, J. W. (2009) *Global Change and Paleoecology: Assessing
Ecological Responses to Environmental Change*. American Association
for the Advancement of Science (AAAS) Annual Meeting. Chicago, IL.

Gill, J. L. and Williams, J. W. (2007) Ancient Extinctions & Modern
Experiments: The Ecological Effects of Adding & Removing
Megaherbivores from the Landscape. *Ecological Society of America
Annual Meeting*. San Jose, CA.

McLachlan, J. and Williams, J. W. (2005) Species range dynamics: past,
present, and future. *Ecological Society of America Annual Meeting*.
Tucson, AZ.

Williams, J. W. and Shuman B. (2004) World Pollen Databases:
Applications. *XI Meeting of International Palynological Congress*.
Granada, Spain.

Williams, J. W. and Cowling, S. (2002) Gasping for CO₂: Ecological
impacts of past variations in atmospheric carbon dioxide. *Ecological
Society of America Annual Meeting*. Tucson, AZ.

12. MEETINGS, SEMINARS, AND CONFERENCES

PLENARY SYMPOSIA

Chinese-American Kavli Frontiers of Science. Kunming, China. September, 2009
Danish Biodiversity Informatics Forum (DanBIF), University of Aarhus. Aarhus, Denmark.

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April, 2008. (*Keynote Lecture*)

University of Milwaukee Conference on Climate Change and Sustainable Development.
Milwaukee, WI. April, 2008.

DEPARTMENTAL SEMINARS

Washington University, Dept. of Earth and Planetary Sciences. St. Louis, MO. February,
2010

Columbia University, Lamont-Doherty Earth Observatory. Palisades, NJ. January, 2010

Wisconsin Initiative on Climate Change Impacts Seminar Series. Madison, WI. April,
2009

Northern Illinois University, Dept. of Geography. DeKalb, IL. January, 2009.

University of Wisconsin, Dept. of Atmospheric and Ocean Sciences. Madison, WI.
October, 2008

University of Wisconsin, Dept. of Zoology. Madison, WI. October, 2008

Duke University, Dept. of Biology. Durham, NC. April, 2008

University of British Columbia, Department of Geography. Vancouver, British Columbia,
Canada. March, 2008.

University of Wisconsin, Dept. of Geography. Madison, WI. November, 2007

Institute of Ecosystem Studies. Millbrook, NY. September, 2007

University of Wisconsin, SAGE. Madison, WI. February, 2007

University of Illinois, Urbana-Champaign, Department of Plant Biology and Department of
Atmospheric Sciences. Urbana-Champaign, IL. October, 2006

University of Wisconsin, Chaos Seminar. Madison, WI. September, 2006
Wake Forest University, Winston-Salem, NC. March, 2006
University of Wisconsin, Department of Soil Science. Madison, WI. February, 2006
University of Wisconsin, Madison Ecology Group. Madison, WI. August, 2005
University of Illinois at Chicago, Dept. of Biological Sciences, Chicago, IL. October, 2005
Indiana State University, Department of Geography, Geology, and Anthropology, Terre Haute, IN. January, 2005.
University of Wisconsin, Center for Limnology. Madison, WI. October, 2004
University of Wisconsin, Turner Lab. Madison, WI. November, 2004
University of Wisconsin, SAGE. Madison, WI. November, 2004
University of Minnesota, Department of Geology and Geophysics, Minneapolis, MN. February, 2004.
University of Chicago, Department of Geophysical Sciences, Chicago, IL. January, 2004.
University of Iowa, Department of Geoscience, Iowa City, IA. January, 2004.
University of Wisconsin, Department of Geography, Madison, WI. December, 2003.
Antioch University, Environmental Studies Department, Keene, NH. May, 2003.
University of California Santa Barbara, Department of Geography, Santa Barbara, CA. January, 2003.
University of Utah, Department of Geography, Salt Lake City, CA. January, 2003.
University of California Santa Cruz, Department of Earth Sciences, Santa Cruz, CA. May, 2002.

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American Meteorological Society, Central Coast Chapter, Santa Barbara, CA. April, 2002.
DePaul University, Department of Geography, Chicago, IL. January, 2002.
Washington State University, Environmental Science and Regional Planning Program, Pullman, WA. March, 2001.
Denver University, Department of Geography, Denver, CO. February, 2001.
Lehigh University, Department of Earth and Environmental Sciences, Lehigh, PA. January, 2001.
University of Alberta, Department of Earth and Atmospheric Sciences, Edmonton, AB. January, 2001.
University of South Carolina, Department of Geological Sciences, Charleston, SC. January, 2001.
University of Minnesota, Department of Ecology, Evolution, and Behavior, Minneapolis, MN. November, 2000.
University of Chicago, Department of Geophysical Sciences, Chicago, IL. October, 2000.
University of California Santa Barbara, Department of Ecology, Evolution, and Marine Biology, Santa Barbara, CA. October, 2000.
Brown University, Department of Ecology and Evolutionary Biology, Providence, RI. March, 1997.

INVITED CONFERENCE PAPERS

Williams, J. W. (2008) One of three panelists and presenters at a special Climate Forum. *Society for Vertebrate Paleontologists*, Cleveland, OH.

Williams, J. W., Shuman, B. N., Bartlein, P. J., and Diffenbaugh, N. S. (2008) Rapid and Time-Transgressive Responses to Early Holocene Drying in the North American Mid-Continent. *American Geophysical Union Fall Meeting*, San Francisco, CA.

Williams, J. W., Shuman, B. N., Bartlein, P. J., and Diffenbaugh, N. S. (2008) Abrupt but non-synchronous responses to early Holocene mid-continental drying in North America. *Association of American Geographers*, Boston, MA.

Kaufman, D. M., **Williams, J. W.** (2007) Geographic gradients in space and time: latitude, plants, and the late Pleistocene-Holocene of eastern North America. *International Biogeographical Society*, Tenerife, Spain.

Williams, J. W. (2005) Vegetational responses to novel climate regimes. *Workshop on Ecological Response to Climate Change: Scales of change, scales of observation*. Helsinki, Finland.

Williams, J. W., Shuman, B., Bartlein, P. J., Whitmore, J., Gajewski, K., Sawada, M., Minckley, T., Shafer, S., Viau, A. E., Webb, T., Anderson, P. M., Brubaker, L. B., Whitlock, C., and Davis, O. K. (2005) Modern Pollen-Climate-Vegetation Relationships in the US and Canada. *Association of American Geographers*, Denver, CO.

Williams, J. W. (2004) No-analog communities in the upper Midwest. *Northwoods Ecology Meeting*, Minocqua, WI.

Williams, J. W., Post, D. M., Cwynar, L. C., Lotter, A. F., Levesque, A. J. (2004) Rapid and widespread vegetation responses to late-glacial climate change in the North Atlantic region. *XI International Palynological Congress*, Granada, Spain.

Williams, J. W., Shuman, B., Bartlein, P. J. (2004) Holocene variations in tree cover and moisture availability in central North America. *American Quaternary Association Biennial Meeting*, Lawrence, KS.

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Williams, J. W. and Jackson, S. T. (2003) Quantitative reconstructions of late Quaternary tree cover from modern pollen-AVHRR calibrations. *International Union for Quaternary Research (INQUA)*, Reno, NV.

Williams, J. W. (2002) Vegetation-Atmosphere Interactions During the Late Quaternary: Current Advances and Future Directions. *American Geophysical Union Fall Meeting*, San Francisco, CA.

Williams, J. W. (2000) Land Cover Change in Boreal and Eastern North America Since the Last Glacial Maximum. *American Geophysical Union Fall Meeting*, San Francisco, CA.

Williams, J. W., Shuman, B. N., Webb III, T. (2000) No-Analog Biomes and Climate in Eastern North America. *American Geophysical Union Spring Meeting*, Washington, DC.

Williams, J.W., Bartlein, P. J., and Webb III, T. (1999) Data-model comparisons for eastern North America: Inferred biomes and climate values from pollen data. *3rd Paleoclimate Modeling Intercomparison Project Workshop*, Montreal, Canada.

Williams, J. W. (1998) Past biome distributions in boreal and eastern North America: observations and simulations. *Biome 6000 Workshop*, Jena, Germany.

Killilea, M., **Williams, J. W.**, Webb III, T., Hall., C., and Leopold., D. (1998) Community reconstruction and gradient analysis at varying spatial, temporal, and taxonomic resolutions: pollen and tree inventory data from New York State. *Geological Society of America Penrose Conference: Linking spatial and temporal scales in ecology and paleoecology*, Solomons Island, MD.

Williams, J. W., and Webb III, T. (1997) Reconstructing eastern North American biomes from pollen data for today and 6 rka. *European Science Foundation Conference*, Il Ciocco, Italy.

PANELS

Wisconsin Climate Forum (Oct. 28, 2007) The panel discussion followed a keynote address by Dr. Susan Solomon, co-chair of IPCC Working Group I.

Climate Change and Wisconsin's Future: Issues and Opportunities. (April 10, 2007) *Nelson Institute for Environmental Studies, University of Wisconsin*, Madison, WI. This panel included WI state senators, industry and agricultural representatives, scientists, and environmental advocates, and was open to the public.

Labors of Love: Perspectives on Gender and Reproduction in the Academy. (2007) *Association of American Geographers*, San Francisco, CA.

How to Succeed in Ecology: Advice from Current and Aspiring Eminent Ecologists. (2005) *Ecological Society of America*, Montreal, Canada. This two-hour session was sort of a „speed-dating“ for ecologists, in which professional ecologists rotated through tables and discussed career advice and options with sets of graduate students.

WORKSHOPS

Paleoecological Database Visualization and Analysis Tools. Umea, Sweden. October 5-11, 2009.

Paleoclimate Modeling and Intercomparison Project (PMIP). Estes Park, CO. Sept 15-17, 2008.

National Phenology Network. Aug 28-30, 2007. Milwaukee WI.

European Pollen Database. May 9-11, 2007. Aix-en-Provence, France.
Geophysical and statistical challenges in detection/attribution of regional climate change.
National Center for Atmospheric Research, Junior Faculty Forum. July 9-11, 2007.
Boulder, CO.
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Wisconsin Climate Change Assessment Project. June 12, 2007. Madison WI.
Integrated Late Neogene Database Workshop. Feb 17-20, 2007. State College PA.
World University Network – Arctic Climates and Environments. May 15-18, 2005. Bristol,
UK