

## GALEN A. MCKINLEY

University of Wisconsin - Madison  
Department of Atmospheric and Oceanic Sciences  
and Center for Climatic Research  
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### EDUCATION

- June 2002 **Massachusetts Institute of Technology** Cambridge, MA  
*Ph.D. Climate Physics and Chemistry*  
Thesis: *Interannual Variability of Air-Sea Fluxes of Carbon Dioxide and Oxygen*
- May 1995 **Rice University** Houston, TX  
*B.S. Civil Engineering*

### RESEARCH AND PROFESSIONAL EXPERIENCE

- 2004 to present **University of Wisconsin - Madison** Madison, WI  
*Professor of Atmospheric and Oceanic Sciences; Faculty Affiliate, Center for Climatic Research*  
*2011-present: Associate Professor; 2004-2011: Assistant Professor*  
I study the coupling of physics and biogeochemistry in the world oceans and the Great Lakes in order to understand the role of these aquatic bodies in the global carbon cycle. I am particularly interested in spatial and temporal variability of air-water carbon fluxes, quantification of carbon sinks, terrestrial-aquatic biogeochemical coupling, and ocean and Great Lake biogeochemical modeling.
- August 2003 to May 2004 **Princeton University / University of Wisconsin - Madison** Princeton, NJ  
*Visiting Research Staff / Anna Julia Cooper Postdoctoral Fellow*  
Studied Ar and N<sub>2</sub> in a ocean and atmospheric models; worked on refining the global air-sea exchange rate with <sup>14</sup>C and inverse techniques; and continued work on variability of air-sea CO<sub>2</sub> and O<sub>2</sub> fluxes.
- September 2002 to August 2003 **Instituto Nacional de Ecología (National Institute of Ecology)** Mexico City, Mexico  
*Consultant*  
Analyzed potential public health co-benefits from the simultaneous control of air pollutant and greenhouse gas emissions in Mexico City; capacity building for integrated environmental protection.
- May 2002 to August 2002 **Massachusetts Institute of Technology** Cambridge, MA  
*Postdoctoral associate*  
Extended thesis work and developed collaborations for continuing projects.
- September 1996 to May 2002 **Research assistant**  
Studied the impacts of physical variability on ocean biogeochemical cycles, particularly air - sea fluxes of CO<sub>2</sub> and O<sub>2</sub>, using ocean general circulation models. Made preliminary estimates of the impact on air-sea tracer fluxes of the assimilation of sea-surface height data into an ocean model.
- June 1995 to July 1996 **Brown and Root Environmental** Houston, TX  
*Environmental specialist*  
Assisted industrial clients with environmental compliance; duties included water and soil sampling, hazardous waste abatement, and air pollution modeling.
- Summer 1993 **Clivius Multrum, USA** Newton, MA  
*Project consultant*

## GALEN A. MCKINLEY

### PUBLICATIONS (\* = McKinley students, + = McKinley postdoc)

Vasys, V.N.\*, A.R. Desai, G.A. McKinley, V. Bennington\*, A.M. Michalak, and A.E. Andrews (2011). Influence of large lake carbon exchange on regional tracer transport inversions. *Envi. Res. Lett.*, **6** 034016.

McKinley, G.A., A. Fay\*, T. Takahashi and N. Metzl (2011) Convergence of atmospheric and North Atlantic CO<sub>2</sub> trends on multidecadal timescales. *Nature Geoscience*, doi:10.1038/ngeo1193.

Atilla, N.<sup>+</sup>, G. A. McKinley, V. Bennington\*, M. Baehr, N. Urban, M. DeGrandpre, A. Desai and C. Wu (2011), Observed variability of Lake Superior pCO<sub>2</sub>, *Limnol. Oceanogr.*, 56(3), 775–78doi:10.4319/lo.2011.56.3.0775.

Bennington, V.\*, G. A. McKinley, N. Kimura<sup>+</sup> and C. Wu (2010) The general circulation of Lake Superior: Mean and interannual variability from 1979-2008, *J. Geophys. Res.* 115, C12015, doi:10.1029/2010JC006261.

Saba, V. S., M. A. M. Friedrichs, M.-E. Carr, D. Antoine, R. A. Armstrong, I. Asanuma, O. Aumont, N. R. Bates, M. J. Behrenfeld, V. Bennington\*, L. Bopp, J. Bruggeman, E. T. Buitenhuis, M. J. Church, A. M. Ciotti, S. C. Doney, M. Dowell, J. P. Dunne, S. Dutkiewicz, W. Gregg, N. Hoepffner, K. J. W. Hyde, J. Ishizaka, T. Kameda, D. M. Karl, I. Lima, M. W. Lomas, J. Marra, G. A. McKinley, F. Mélin, J. K. Moore, A. Morel, B. Salihoglu, M. Scardi, T. J. Smyth, S. Tang, J. Tjiputra, J. Uitz, M. Vichi, K. Waters, T. K. Westberry, and A. Yool (2010) The challenges of modeling marine primary productivity through multidecadal climate shifts: A case study at BATS and HOT, *Global Biogeochem. Cycles*. 24, GB3020, doi:10.1029/2009GB003655.

Illari L., J. Marshall, P. Bannon, J. Botella, R. Clark, T. Haine, A. Kumar, S. Lee, K. J. Mackin, G.A. McKinley, M. Morgan, R. Najjar, T. Sikora, and A. Tandon (2009) Weather in a Tank: Exploiting laboratory experiments in the teaching of meteorology, oceanography and climate. *Bull. Amer. Meteorol. Soc.* 90(11), doi:10.1175/2009BAMS2658.1

Desai, A., J. Austin, V. Bennington\* and G.A. McKinley (2009) Stronger winds over a large lake in response to a weakening air to lake temperature gradient. *Nature Geoscience*, doi:10.1038/ngeo693.

Ullman, D.\*, G.A. McKinley, V. Bennington\*, and S. Dutkiewicz (2009) Trends in North Atlantic carbon sink: 1992-2006. *Global Biogeochem. Cycles*, 23, GB4011, doi:10.1029/2008GB003383.

Bennington, V.\*, G. A. McKinley, D. Ullman\* and S. Dutkiewicz (2009) What does chlorophyll variability tell us about export and CO<sub>2</sub> flux variability? *Global Biogeochem. Cycles.*, 23, GB3002, doi:10.1029/2008GB00341.

Koch, J.\*, G. A. McKinley, V. Bennington\*, and D. Ullman\* (2009), Do hurricanes cause significant interannual variability in the air-sea CO<sub>2</sub> flux of the subtropical North Atlantic?, *Geophys. Res. Lett.*, 36, L07606, doi:10.1029/2009GL037553.

Cassar, N., G.A. McKinley, M.L. Bender, R. Mika, and M. Battle (2008) Comparison of atmospheric Ar/N<sub>2</sub> time-series and paired ocean-atmosphere model predictions, *J. Geophys. Res.* 113, D21122, doi:10.1029/2008JD009817.

Nevison, C. D., N. M. Mahowald, S. C. Doney, I. D. Lima, G. R. van der Werf, J. T. Randerson, D. F. Baker, P. Kasibhatla, and G. A. McKinley (2008), Contribution of ocean, fossil fuel, land biosphere, and biomass burning carbon fluxes to seasonal and interannual variability in atmospheric CO<sub>2</sub>, *J. Geophys. Res.*, 113, G01010, doi:10.1029/2007JG000408.

Sweeney, C., E. Gloor, A.R. Jacobson, R.M. Key, G.A. McKinley, J. L. Sarmiento, R. Wanninkhof (2007) Constraining global air-sea gas exchange for CO<sub>2</sub> with recent bomb <sup>14</sup>C measurements, *Global Biogeochem. Cycles* 21, GB2015, doi:10.1029/2006GB002784.

McKinley, G.A., T. Takahashi, E. Buitenhuis, F. Chai, J. R. Christian, S. C. Doney, M.-S. Jiang, C. LeQuere, I. Lima, K. Lindsay, J.K. Moore, R. Murtugudde, L. Shi, P. Wetzel (2006) North Pacific carbon cycle response to climate variability on seasonal to decadal timescales, *J. Geophys. Res.* 111, C07S06, doi:10.1029/2005JC003173.

## GALEN A. MCKINLEY

McKinley, G.A., M. Zuk, M. Höjer, M. Avalos, I. Gonzalez, R. Iniestra, I. Laguna, M.A. Martinez, P. Osnaya, and J. Martinez (2005) Quantification of local and global benefits from air pollution control in Mexico City. *Envi. Sci. Technol.* 39, 1954-1961, doi:10.1021/es035183e.

Peylin, P., P. Bousquet, C. LeQuere, S. Sitch, P. Friedlingstein, G.A. McKinley, N. Gruber, P. Rayner and P. Ciais (2005) Multiple constraints of regional CO<sub>2</sub> flux variations over land and oceans, *Global Biogeochem. Cycles* 19, GB1011, doi: 10.1029/2003GB002214.

McKinley, G.A., C. Rödenbeck, M. Gloor, S. Houweling and M. Heimann (2004) Pacific dominance to global air-sea CO<sub>2</sub> flux variability: A novel atmospheric inversion agrees with ocean models, *Geophys. Res. Lett.* 31, L22308, doi: 10.1029/2004GL021069.

McKinley, G.A., M. J. Follows, and J. Marshall (2004) Mechanisms of CO<sub>2</sub> air-sea flux variability in the Equatorial Pacific and North Atlantic with implications for atmospheric inversions, *Global Biogeochem. Cycles* 18, GB2011, doi:10.1029/2003GB002179.

McKinley, G.A., M. J. Follows, J. Marshall, and S. Fan (2003) Interannual variability of air-sea O<sub>2</sub> fluxes and the determination of CO<sub>2</sub> sinks using atmospheric O<sub>2</sub>/N<sub>2</sub>, *Geophys. Res. Lett.* 30(3), 1101, doi: 10.1029/2002GL016044.

Battle, M., M. Bender, M.B. Hendricks, D.T. Ho, R. Mika, G.A. McKinley, S. Fan, T. Blaine, and R. Keeling (2003) Measurements and models of the atmospheric Ar/N<sub>2</sub> ratio, *Geophys. Res. Lett.* 30(15), 1786, doi:10.1029/2003GL017411.

McKinley, G.A., M. J. Follows, and J. Marshall (2000) Interannual variability of the air-sea flux of oxygen in the North Atlantic, *Geophys. Res. Lett.* 27, 2933-2936.

### PUBLICATIONS IN REVIEW AND IN PREPARATION

McDonald, C.P., V. Bennington\*, N. Urban and G.A. McKinley (2011) Test-bed calibration of a Lake Superior biogeochemical model, *in prep. for Ecol. Modeling*.

V. Bennington\*, G.A. McKinley, N. Urban, C. McDonald (2011) Can spatial heterogeneity explain the perceived imbalance in Lake Superior's carbon budget? a model study, *in prep. for J. Geophys. Res.*

Mouw C.B.<sup>+</sup>, H. Chen<sup>\*</sup>, G.A. McKinley, S. Effler, D. O'Donnell, M.G. Perkins, C. Strait (2011) Evaluation and optimization of bio-optical inversion algorithms for remote sensing of Lake Superior's optical properties, *in prep. for J. Geophys. Res.*

Kitchell, J.F., T. Cline, V. Bennington\*, G.A. McKinley, E.K. Moody, B.C. Weidell (2011) Sea lamprey response to host abundance and climate change in Lake Superior, *in preparation*.

Mouw, C.B.<sup>+</sup>, H. Chen<sup>\*</sup>, and G.A. McKinley, Surface chlorophyll in Lake Superior, *in preparation*.

A. Fay\* and G.A. McKinley, Global trends in surface ocean pCO<sub>2</sub> from in situ data, *in preparation*.

### AWARDS AND HONORS

2011	Class of 1955 Distinguished Teaching Award, University of Wisconsin - Madison
2010	Faculty teaching award from AOS Graduate Student Association
2008 - 2011	NASA New Investigator
2003 - 2004	Anna Julia Cooper Postdoctoral Fellow, from University of Wisconsin - Madison
2000 - 2001	Martin Fellow for Sustainability, MIT
1999 - 2002	Earth System Science Fellowship, NASA
1999	Teaching Assistant Prize, MIT Department of Earth, Atmospheric and Planetary Sciences

## GALEN A. MCKINLEY

### PROFESSIONAL ACTIVITIES AND SERVICE

- 2011 to present **Global Biogeochemical Cycles**, Associate Editor
- 2011 to present **Carbon Cycle Science Scientific Steering Group (CCSSG)**  
The CCSSG offers scientific input to the Carbon Cycle Interagency Working Group (CCIWG)
- 2011 to present **Nelson Institute Director Search and Screen Committee**, University of Wisconsin
- 2011 to present **Defense Science Study Group (DSSG)**  
Appointee for the 2012-2013 DSSG class.
- 2010 to present **Regional Carbon Cycle Assessment and Processes (RECCAP)**, co-lead, Arctic and Atlantic
- 2009 to present **Lead for Carbon and Climate educational website, with interactive carbon budget applet**  
English version: carboncycle.aos.wisc.edu (18,026 unique hits Dec'09-Apr'11)  
Spanish version: es.carboncycle.aos.wisc.edu (2,206 unique hits Feb'11-Apr'11)
- 2008 to present **North American Carbon Program / Ocean Carbon and Biogeochemistry Coastal Carbon Synthesis**, Leader: Great Lakes Working Group
- 2002 to present **Reviewer**  
Proposals: NASA, NOAA, NSF, ArcticNet, NSERC  
Papers: AGU, BG/BGD, DSR, EST, EI, EOS, GBC, GRL, Inland Waters, JGR, L&O, OS/OSD, Prog. Oceanog., PUP, Science, Springer, Tellus B
- 2010 to 2011 **Co-chair for Undergraduate Education**, Atmospheric and Oceanic Sciences, UW-Madison
- 2008 to 2011 **Carbon Cycle Science Working Group (CCS-WG)**  
The CCS-WG wrote the New US Carbon Cycle Science Plan (2011)
- December 2010 **NACP/OCB Coastal Carbon Synthesis Workshop**, San Francisco, CA  
Co-organizer
- March 2010 **Caltech Keck Institute for Space Studies (KISS)**, Pasadena, CA  
Invited participant in study program "Quantifying the Sources and Sinks of Atmospheric CO<sub>2</sub>"
- February 2010 **AGU/ASLO/TOS Ocean Sciences 2010**, Portland, OR  
Co-convenor and session chair: "Carbon Cycling in the Coastal Oceans"
- May 2009 **International Association of Great Lakes Research Annual Meeting**, Toldeo, OH  
Co-convenor and session chair: "Carbon Cycling in the Laurentian Great Lakes"
- 2005 to 2008 **Ocean Carbon and Biogeochemistry Scientific Steering Committee (OCB-SSC)**  
Committee member, tasked to advise NSF, NASA and NOAA on research directions
- 2005 to 2008 **Earth Science Women's Network (ESWN)**  
Leadership Board member
- 2004 to 2008 **Review Panel Member**  
NASA - Ocean and Ice (2004)  
NSF - Chemical Oceanography (2008)
- December 2008 **American Geophysical Union Fall Meeting**, San Francisco, CA  
Co-convenor and session chair: "Ocean Carbon Cycle: Decadal Trends in the Global Ocean and Autonomous Observations of the North Atlantic Spring Bloom"
- July 2007 **Ocean Carbon and Biogeochemistry Summer Workshop**, Woods Hole, MA  
Co-organizer and session chair for "Changing ocean biogeochemistry: The prediction challenge"
- September 2005 **North American Coastal Margins: The Coastal CO<sub>2</sub> Workshop**, Boulder, CO  
Invited participant and session leader
- November 2004 **UW System Women & Science, Opening Workshop for STEM Faculty**, Wisconsin Dells, WI  
Participant
- June 2004 **NOAA GCC Workshop: Understanding North Pacific Carbon-cycle Changes**, Seattle WA  
Invited speaker and participant
- June 2004 **UCAR/NCAR Junior Faculty Forum on Future Scientific Directions**, Boulder, CO  
Co-organizer and co-chair for "The role of coastal zones in global biogeochemical cycles"
- December 2003 **American Geophysical Union Fall Meeting**, San Francisco, CA  
Co-convenor and session chair for Union session: "Health, Air Pollution and Climate"
- March 2003 **Dissertations Initiative for the Advancement of Climate Change Research**, Guanica, PR  
Participated in a one-week symposium for recent PhDs in climate change.
- May 2002 **Carbon Cycle Data Assimilation Institute**, Boulder, CO  
Participated in the design of an optimal global CO<sub>2</sub> measurement network.
- June 2001 **American Meteorological Society Summer Policy Colloquium**, Washington, DC

## **GALEN A. MCKINLEY**

January 1999      Attended a 10-day symposium introducing scientists to the US policy-making process.  
**JGOFS Training Course on Biogeochemical Modeling of the Ocean**, Bangalore, India  
Participated in a two-week workshop on ocean biogeochemical modeling.

### **PROFESSIONAL MEMBERSHIPS**

American Geophysical Union (1998-present)  
American Society of Limnology and Oceanography (2011-present)  
International Association of Great Lakes Research (2008-present)  
The Oceanography Society (2008-present)

## GALEN A. MCKINLEY

### PRESENTATIONS

- August 2011 **Gordon Research Conference**, Andover, NH  
Poster, “Convergence of atmospheric and North Atlantic CO<sub>2</sub> trends on multidecadal timescales”
- July 2011 **Ocean Carbon and Biogeochemistry Workshop**, Woods Hole, MA  
Poster, “Convergence of atmospheric and North Atlantic CO<sub>2</sub> trends on multidecadal timescales”
- July 2011 **Woods Hole Oceanographic Institution**, Woods Hole, MA  
Seminar, “Convergence of atmospheric and North Atlantic CO<sub>2</sub> trends on multidecadal timescales”
- February 2011 **North American Carbon Program Meeting**, New Orleans, LA  
Poster, “Lake Superior’s influence on regional carbon budgets”
- December 2010 **American Geophysical Union, Fall Meeting**, San Francisco, CA  
Poster, “The carbon cycle of Lake Superior: Balancing the budget with spatial heterogeneity”
- December 2010 **NACP/OCB Coastal Carbon Synthesis Workshop**, San Francisco, CA  
Oral, “Modeling carbon in the coastal zone”
- November 2010 **Environmental Chemistry and Technology Program, U. Wisconsin**, Madison, WI  
Invited seminar, “Spatio-temporal variability in the carbon cycle of Lake Superior”
- October 2010 **Michigan Technological University**, Houghton, MI  
Invited seminar, “Spatio-temporal variability in the carbon cycle of Lake Superior”
- October 2010 **Duke University**, Durham, NC  
Invited seminar, “Decadal variability and multidecadal trends in the North Atlantic carbon sink”
- July 2010 **Ocean Carbon and Biogeochemistry Workshop**, La Jolla, CA  
Poster, “Decadal variability and multidecadal trends in the North Atlantic carbon sink”
- June 2010 **JASON Study on Carbon Treaty Verification**, La Jolla, CA  
Invited talk, “Carbon in water: Open ocean, coastal zone and inland waters”
- June 2010 **Scripps Institution of Oceanography**, La Jolla, CA  
Talk, “Understanding recent variability in the North Atlantic carbon sink”
- May 2010 **Aquatic Ecosystem Health and Management: Ecology of Lake Superior**, Duluth, MN  
Talk, “Carbon cycle variability in Lake Superior and impacts on the regional carbon budget”
- May 2010 **Subpolar North Atlantic Workshop**, Durham, NC  
Invited talk, “North Atlantic carbon uptake from biogeochemical models and data”
- March 2010 **Caltech Keck Institute for Space Studies (KISS)**, Pasadena, CA  
Invited talk, “Air-sea CO<sub>2</sub> fluxes: Climatology, variability and land-ocean links”
- February 2010 **AGU/ASLO/TOS Ocean Sciences 2010**, Portland, OR  
Invited oral, “Reconciling observed and modeled trends in the North Atlantic carbon sink”
- November 2009 **North American Carbon Program 2<sup>nd</sup> Joint Workshop**, Oak Ridge, TN  
Invited oral, “Carbon cycling in North American coastal waters”
- August 2009 **Biogeochemistry and Carbon Cycle of Lake Superior**, Woodruff, WI  
Oral, “Biogeochemical variability in Lake Superior – A modeling perspective”
- July 2009 **Ocean Carbon and Biogeochemistry Workshop**, Woods Hole, MA  
Poster, “Understanding the carbon budget of Lake Superior”
- May 2009 **International Association of Great Lakes Research Annual Meeting**, Toledo, OH  
Oral, “The magnitudes and mechanisms determining the carbon budget of Lake Superior”
- May 2009 **NASA Ocean Color Research Team Meeting**, New York, NY  
Poster, “Do hurricanes drive variability of the air-sea CO<sub>2</sub> flux in the subtropical North Atlantic?”
- December 2008 **American Geophysical Union, Fall Meeting**, San Francisco, CA  
Oral, “The changing North Atlantic carbon sink: 1992-2006”
- December 2008 **University of Wisconsin - Madison**, Madison, WI  
Colloquium, “Variability in the ocean carbon cycle: A North Atlantic perspective”
- October 2008 **Colorado State University**, Fort Collins, CO  
Invited seminar, “Variability in the ocean carbon cycle: A North Atlantic perspective”
- July 2008 **Ocean Carbon and Biogeochemistry Workshop**, Woods Hole, MA  
Invited plenary talk, “Carbon sink trends in the Northern Oceans”
- June 2008 **Workshop on Teaching Weather and Climate Using Laboratory Experiments**, Chicago, IL  
Poster, “Rotating tank experiments in an atmospheric and oceanic science undergraduate curriculum”
- May 2008 **Effects of Climate Change on the World’s Oceans**, Gijon, Spain  
Talk, “Trends in the North Atlantic carbon sink”
- April 2008 **NASA Ocean Color Research Team Meeting**, Adelphi, MD

## GALEN A. MCKINLEY

- March 2008 Poster, "The changing North Atlantic carbon cycle"  
**Princeton University**, Princeton, NJ
- March 2008 Talk, "Trends and variability in the carbon cycle of the North Atlantic"  
**AGU/ASLO/TOS Ocean Sciences 2008**, Orlando, FL
- January 2008 Talk, "Carbon cycle variability and trends at Bermuda and across the North Atlantic"  
**American Meteorological Society Annual Meeting**, New Orleans, LA
- October 2007 Co-author on one talk and 2 posters on undergraduate teaching with the 'Weather in a tank' project  
**Stony Brook University**, Stony Brook, NY
- July 2007 Invited public lecture, "The oceans and the climate system"  
**Ocean Carbon and Biogeochemistry Workshop**, Woods Hole, MA
- April 2007 Poster, "Carbon cycle variability in the North Atlantic: Timescales of change"  
**Johns Hopkins University**, Baltimore, MD
- April 2007 Invited seminar, "Air-sea CO<sub>2</sub> flux variability: Physical and ecological drivers"  
**Surface Ocean CO<sub>2</sub> Variability and Vulnerability Workshop**, UNESCO, Paris, France
- April 2007 Talk, "North Atlantic CO<sub>2</sub> flux variability: Physical and ecological drivers"  
**NASA Ocean Color Research Team Meeting**, Seattle, WA
- April 2007 Poster, "Physical and biological drivers of carbon cycle variability in the North Atlantic"  
**Michigan Technological University**, Houghton, MI
- December 2006 Invited seminar, "Air-sea CO<sub>2</sub> flux variability: Physical and ecological drivers"  
**American Geophysical Union, Fall Meeting**, San Francisco, CA
- July 2006 H. Brix, G.A. McKinley, C. Deustch, N. Gruber: Talk, "Mode and intermediate waters in models"  
**Ocean Carbon and Biogeochemistry Workshop**, Woods Hole, MA
- June 2006 Poster, "Modeling the seasonal cycle of pCO<sub>2</sub> in the North Atlantic"  
**The Art of Climate Modeling, NCAR/ASP Summer School**, Boulder, CO
- February 2006 Summer School Lecture, "Modeling ocean biogeochemistry"  
**AGU/ASLO/TOS Ocean Sciences 2006**, Honolulu, HI
- February 2006 Talk, "North Pacific carbon cycle response to climate variability on seasonal to decadal timescales"  
**Old Dominion University**, Norfolk, VA
- November 2005 Invited seminar, "Air-sea CO<sub>2</sub> flux variability on seasonal, interannual and decadal timescales"  
**University of Maryland**, College Park, MD
- November 2005 Invited seminar, "Air-sea CO<sub>2</sub> flux variability on seasonal, interannual and decadal timescales"  
**Great Lakes Environmental Research Laboratory**, Ann Arbor, MI
- September 2005 Invited seminar, "Air-sea CO<sub>2</sub> flux variability on seasonal, interannual and decadal timescales"  
**Seventh International Carbon Dioxide Conference**, Broomfield, CO
- August 2005 Invited plenary talk, "Pacific dominance to global air-sea CO<sub>2</sub> flux variability"  
**Ocean Carbon Cycle and Climate Change Workshop**, Woods Hole, MA
- March 2005 Poster "North Pacific carbon cycle response to climate variability on seasonal to decadal timescales"  
**The Pennsylvania State University**, State College, PA
- March 2005 Invited seminar, "CO<sub>2</sub> air-sea flux variability: Ocean models and atmospheric inversions"  
**Princeton University**, Princeton, NJ
- December 2004 Talk, "Argon as a tracer of physical processes in the atmosphere and ocean"  
**American Geophysical Union, Fall Meeting**, San Francisco, CA
- November 2004 Poster, "Testing ocean models with argon and nitrogen"  
**University of Wisconsin, Sustainability and the Global Environment (SAGE)**, Madison, WI
- October 2004 Talk, "Local and global benefits of air pollution control in Mexico City"  
**University of Wisconsin, Chaos and Complexity Seminar Series**, Madison, WI
- October 2004 Talk, "CO<sub>2</sub> air-sea flux variability: Ocean models and atmospheric inversions"  
**SOLAS Science 2004**, Halifax, Canada
- June 2004 Poster, "Atmospheric Ar/N<sub>2</sub>: A Tool for Constraining Atmosphere and Ocean Models"  
**NOAA GCC Workshop: Understanding North Pacific Carbon-cycle Changes**, Seattle WA
- May 2004 Invited plenary talk, "Modeled North Pacific carbon cycle variability"  
**Geophysical Fluid Dynamics Laboratory**, Princeton, NJ
- March 2004 Talk, "CO<sub>2</sub> air-sea flux variability: Ocean models and atmospheric inversions"  
**Princeton Environmental Institute Postdoctoral Colloquium**, Princeton, NJ
- January 2004 Talk, "Local and global benefits of air pollution control in Mexico City"  
**AGU/ASLO/TOS Ocean Sciences 2004**, Portland, OR

## GALEN A. MCKINLEY

- Sweeney, C., E. M. Gloor, A. J. Jacobson, R. M. Key, G.A. McKinley, J.L. Sarmiento,  
Poster, "Estimating air-sea gas exchange using bomb  $^{14}\text{C}$ : Revisited"
- December 2003 **American Geophysical Union, Fall Meeting**, San Francisco, CA  
Talk, "Local and global benefits of air pollution control in Mexico City"
- June 2003 **World Congress on Risk**, Brussels, Belgium  
Poster, "Mexico City Co-Benefits: Air pollution health risk reduction from GHG emission controls"
- June 2003 **MIT, Department of Earth, Atmospheric & Planetary Sciences**, Cambridge, MA  
Talk, "Mexico City Co-Benefits: Air pollution health risk reduction from GHG emission controls"
- May 2003 **University of Wisconsin, Department of Atmospheric and Oceanic Sciences**, Madison, WI  
Talk, "CO<sub>2</sub> air-sea flux variability: ocean models and atmospheric inversions"
- May 2003 **JGOFS Open Science Conference**, Washington, DC  
Poster, "Mechanisms of CO<sub>2</sub> air-sea flux variability in the North Atlantic and Equatorial Pacific"
- April 2003 **National University of Mexico, Center for Atmospheric Sciences**, Mexico City  
Talk, "Carbon sink variability from ocean models and atmospheric inversions" (in Spanish)
- July 2002 **Princeton University, Atmosphere and Ocean Sciences Program**, Princeton, NJ  
Talk, "Interannual variability of air-sea fluxes of carbon dioxide and oxygen"
- February 2002 **AGU/ASLO/TOS Ocean Sciences 2002**, Honolulu, HI  
Poster, "Interannual variability in air-sea fluxes of CO<sub>2</sub> and O<sub>2</sub>"
- December 2000 **American Geophysical Union, Fall Meeting**, San Francisco, CA  
Talk, "A novel approach to export parameterization with application to air-sea fluxes of O<sub>2</sub> and CO<sub>2</sub>"
- February 2000 **American Geophysical Union, Ocean Sciences**, San Antonio, TX  
Talk, "Interannual variability of the air-sea flux of oxygen in the North Atlantic"
- January 1999 **JGOFS Arabian Sea Symposium**, Bangalore, India  
Poster, "Interannual variability of the air-sea flux of oxygen in the North Atlantic" (best poster award)

## GALEN A. MCKINLEY

### TEACHING

**University of Wisconsin - Madison**

Madison, WI

#### Semester Courses

- Fall 2004-10  
Spring 2008  
Spring 09-11  
Fall 07, Sp10-11  
Spring 2005,06
- Global Climate Processes (ATM OCN 425)*  
Course for senior undergraduates and graduate students covering global energy balance, general circulation of the atmosphere and ocean, climate feedbacks, climate modeling, and global change.
- Rotating Tank Laboratory (ATM OCN 801)*  
Used rotating tank and data analysis to elucidate key principles of geophysical fluid dynamics.
- Introduction to Physical Oceanography (ATM OCN 660)*  
Graduate introduction to the physical structure and dynamical processes in the ocean.
- Dynamics of the Atmosphere and Ocean II (ATM OCN 311)*  
Course for junior undergraduates on intermediate geophysical fluid dynamics. Basic equations of motion and key balances, thermal wind, vorticity, frictional effects, and basic wave concepts.

#### Semester Seminars

- Spring 2008  
Fall 2006  
Spring 2005,06  
Spring 2006  
Fall 2005  
Fall 2005
- Threats to Wildlife from Global Warming (ATM OCN 980)*  
Graduate seminar on the science and policy important to the listing of polar bears as endangered.
- The Ocean Carbon Cycle (ATM OCN 925)*  
Graduate seminar covering key ocean carbon cycle processes and their importance to climate.
- Senior Capstone Seminar (ATM OCN 405)*  
Undergraduate seminar on atmospheric and oceanic research, and on writing and presentation skills
- Climate Change: Science and Impacts (ATM OCN 980)*  
Graduate seminar illuminating the variety of climate change research being done at Wisconsin.
- Chemical Transport Modeling in the Atmosphere and Ocean (ATM OCN 915)*  
Graduate seminar focusing on current research in chemical transport modeling
- Independent Study – “Understanding Climate Change” (ATM OCN 699)*  
Advisor for undergraduate independent study. Reading books, papers, and a term paper.

### ADVISING

**University of Wisconsin - Madison**

Madison, WI

#### Graduate Students

- 2010-present  
2010-present  
2010-present  
2009-present  
2008-2010  
2005-2010  
2005-2007
- Darren Pilcher, MS student, AOS  
Haidi Chen, PhD student, AOS  
Jenn Phillips, MS student, Environment & Resources  
Jesse Roberts, MS student, AOS  
Amanda Fay, MS, December 2010 (now research intern with McKinley)  
Valerie Bennington, PhD, November 2010 (now Postdoc with Drs. Notaro and McKinley, UW CCR)  
David Ullman, MS, January 2008 (Best AOS MS thesis 07-08, now PhD candidate UW Geoscience)

#### Postdoctoral Scholars

- 2009-2010  
2007-2009  
2007
- Dr. Colleen Mouw (now at UW-Madison Space Science and Engineering Center)  
Dr. Nazan Atilla (now at UW-Madison Department of Zoology)  
Dr. Nobuaki Kimura (now at National United University of Taiwan)

#### Undergraduate Student Researchers

- 2009-2010  
2007-2008
- Victoria Vasys  
Jennifer Koch (US EPA 2008-2011, Portland State University 2011-present)

#### Visiting Students

- 2008-2009
- Nsikak Benson, Fulbright Scholar (Nigeria)

## GALEN A. MCKINLEY

### INTERVIEWS AND OUTREACH

- September 2011 **WORT**, Perpetual Notion Machine, Madison WI  
Interview on air September 1, 2011 ([archive.wort-fm.org/mp3/wort\\_110901\\_190001science.mp3](http://archive.wort-fm.org/mp3/wort_110901_190001science.mp3))
- July 2011 **Voice of America**, Washington DC  
“Study: Ocean Less Able to Mitigate Climate Change” R. Skirble
- July 2011 **CNN International, Voice of America**, London, UK  
“Ocean carbon sinks feeling the heat” M. Knight
- June 2011 **In Common, Nelson Institute for Environmental Studies**, UW-Madison, Madison, WI  
“Illuminating water’s role in the carbon cycle and future climate” M. Lepisto
- Jan-Aug 2011 **Mini Workshop for Carbon Cycle Applet Lesson Plans**, Madison WI  
Organizer. Detailed G6-12 lesson plans developed to accompany [carboncycle.aos.wisc.edu](http://carboncycle.aos.wisc.edu)
- January 2011 **Climate Ambassadors Workshop, University of Wisconsin - Madison**, Madison WI  
Lecturer, “Climate and Climate Change: Science Basics”
- December 2010 **NASA Television**, <http://www.youtube.com/watch?v=hXg4ugCajkE>  
“NASA Science on the Road: Oceans, Carbon, and Climate” S. Cole
- August 2010 **Chicago Tribune**, Chicago, IL  
“Sink or source? Figuring Great Lakes’ role in climate change” and “Could acidification threaten Great Lakes?” D. Lockwood
- June 2010 **Climate Ambassadors Workshop, University of Wisconsin - Madison**, Madison WI  
Lecturer, “Climate and Climate Change: Science Basics”
- April 2010 **Whiteside Forum**, Morrison, IL  
Invited panelist for community forum on the oceans
- November 2009 **New York Times, Wisconsin Week, Science Daily, Bloomberg Reports**, interviews on Nature Geoscience paper, Desai et al. (2009)
- November 2009 **Wisconsin Public Radio**, Superior WI  
“Increasing winds over the Great Lakes” M. Simonson
- September 2009 **Badger Herald, University of Wisconsin - Madison**, Madison WI  
“2050: Temperature to increase by 4 degrees” K. Mianulli
- July 2009 **AOS & CIMSS, University of Wisconsin - Madison**, Madison WI  
Organizer and lead lecturer, Carbon Cycle and Climate Modeling - A Teacher’s Workshop
- July 2008 **CIMSS, University of Wisconsin - Madison**, Madison WI  
Invited lecturer, Geosciences Time Scales and Global Climate Change Teacher’s Workshop
- April 2008 **Daily Cardinal, University of Wisconsin - Madison**, Madison WI  
“Report finds public transit key to curb global warming in state”, C. Brace
- January 2008 **“The Pulse” WTDY 1670AM**, Madison WI  
Interview with host S. Wisniewski on the science of global climate change (on air 1/20/08)
- October 2007 **Wisconsin State Journal**, Madison WI  
“Why is The Ocean Salty”, J. Sakai. Also appeared in Science Daily
- October 2007 **Second Annual Wisconsin Climate Change Forum**, Madison, WI  
Invited panelist
- July 2007 **CIMSS, University of Wisconsin - Madison**, Madison WI  
Invited lecturer, Remote Sensing Applications in the Geosciences Teacher’s Workshop
- June 2007 **Capital Times**, Madison WI  
“Local scientist calls global warming theory ‘hooley’”, S.K. Derby
- February 2007 **Capital Times**, Madison WI  
“City lakes offer lesson in climate change – The winter’s freeze was second latest”, A. Weier
- October 2006 **First Annual Wisconsin Climate Change Forum**, Madison, WI  
Invited panelist
- September 2005 **The Why Files**, Madison WI  
“Hurricanes: The Heat is On”, D. Tannebaum
- March 2005 **Capital Times**, Madison WI  
“Global warming debate is over, UW prof says – Calls new study as solid proof as that smoking causes cancer”, A. Nathans
- March 2005 **Daily Cardinal, University of Wisconsin - Madison**, Madison WI  
“Greenhouse gases further implicated in global warming”, P. Dohnal