Brenda Ekwurzel, Ph.D.

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OVERVIEW

Senior climate scientist and the director of climate science for the Climate & Energy Program at the Union of Concerned Scientists (UCS). In her role, she ensures that program analyses reflect robust and relevant climate science, and researches the influence of major carbon producers on rising global average temperatures and sea level. Co-author of the fourth National Climate Assessment (NCA4) Volume II. She presents frequently to a range of audiences on climate science, educating the public on practical, achievable solutions for climate change. Leads UCS climate science education work. Serves on the leadership team of the Climate and Energy Program; Leads Climate Research and Analysis Team, co-leads Climate Campaign; ensures scientific integrity of climate-related research. Publication topics include climate variability and fire, isotopic dating of groundwater, Arctic Ocean tracer oceanography, paleohydrology, and coastal sediment erosion and climate science communication. Media spokesperson in print, online, radio and TV including CNN, Fox News Channel, The Colbert Report, Washington Post, USA Today, and New York Times.

EDUCATION

1998	Ph.D. Geochemistry, Lamont-Doherty Earth Observatory of Columbia University, NY
1988	M.S. Geology, Rutgers University, New Jersey
1985	B.A. Geology, Smith College (*cum laude*, Dean's List), Massachusetts

EMPLOYMENT

2016-Present	Director of Climate Science, Senior Climate Scientist, UCS DC
2013-2016	Climate Analytics Lead, Senior Scientist, UCS, DC
2010-2012	Assistant Director of Climate Research & Analysis, UCS, DC
2004-2010	Climate Scientist, UCS, Washington, DC
2001-2004	Assistant Professor, Joint Faculty Appt., Geosciences, University of Arizona
2000-2004	Assistant Professor, Hydrology and Water Resources, University of Arizona
1998-2000	Post Doctoral Researcher, Lawrence Livermore National Laboratory, California
1990-1997	Research/Teaching Assistant, Columbia University, New York
1988-1990	Hydrologist, Connecticut Department of Environmental Protection, Connecticut
1985-1987	Research/Teaching Assistant, Rutgers University, New Jersey

HONORS, AWARDS, ELECTED ROLES, AND SELECT APPOINTMENTS

2018	Top downloaded Climate Article in Springer Climate Journals
2016	Named an American Association for the Advancement of Science (AAAS) fellow cited for her "distinguished contributions to analysis and outreach aimed at strengthening support for sound U.S. climate policies, and making the science of climate change accessible to diverse audiences."
2015-2016	U.S. National Research Council's "Arctic Matters" Symposium, Committee appointment
2012-2015	Elected as a member of the Electorate Nominating Committee (ENC) for the American Association for the Advancement of Science (AAAS) Section on Geology & Geography
2007	Hitchon Award of the International Association of GeoChemistry (IAGC) recognizes the most significant paper published in 2006 in the IAGC journal *Applied Geochemistry*.
2003	Excellence at the Student Interface – College of Engineering and Mines, University of Arizona – chosen by the graduate students of the department of Hydrology and Water Resources in recognition of excellence in teaching and student guidance.
2000	Achievement Award for Leadership, Lawrence Livermore National Laboratory Chemistry and Materials Science Directorate
1998	Award for Arctic Research Excellence, Arctic Research Consortium of the United States (ARCUS) (4 awarded that year)
1997	DISCO XIV, Dissertations Symposium on Chemical Oceanography, sponsored by NSF, ONR, and NOAA, (25 honored that year)
1995	Sigma Xi**,** inducted into the national scientific research society, Columbia University
1992	S. F. Langer Prize, Department of Earth and Environmental Sciences, Columbia University
1985	Phi Beta Kappa, inducted into the national honor society, Smith College
1985	*Cum Laude*, Smith College

PUBLICATIONS

Book

Cooler Smarter: Practical Steps for Low-Carbon Living, Seth Shulman, Jeff Deyette, Brenda Ekwurzel, David Friedman, Margaret Mellon, John Rogers and Suzanne Shaw, published by Island Press, Washington DC, 1st edition (April 25, 2012) 336 pp. ISBN 13 9781610911924

Peer-reviewed Publications (** Denotes graduate students under direct supervision.)*

Martinich, J., B.J. DeAngelo, D. Diaz, B. Ekwurzel, G. Franco, C. Frisch, J. McFarland, and B. O'Neill, 2018: Reducing Risks Through Emissions Mitigation. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA. doi: 10.7930/NCA4.2018.CH29.

B. Ekwurzel, B., J. Boneham, M. W. Dalton, R. Heede, R. J. Mera, M. R. Allen, P. C. Frumhoff. 2017. The rise in global atmospheric CO2, surface temperature, and sea level from emissions traced to major carbon producers. *Climatic Change* doi:10.1007/s10584-017-1978-0.

White-Newsome J.L, B. Ekwurzel, M. Baer-Schultz, K.L. Ebi, M.S. O'Neill, and G.B. Anderson (2014) Survey of county-level heat preparedness and response to the 2011 summer heat in 30 U.S. States, *Environmental Health Perspectives* **122**:573–579; http://dx.doi.org/10.1289/ehp.1306693

Ekwurzel B., P.C. Frumhoff, and J.J. McCarthy (2011) Climate uncertainties and their discontents: increasing the impact of assessments on public understanding of climate risks and choices, *Climatic Change*, **108**:791-802, DOI 10.1007/s10584-011-0194-6.

Desilets*, S.L.E., T.P.A. Ferré, and B. Ekwurzel (2008) Flash flood dynamics and composition in a semiarid mountain watershed, *Water Resources Research*. **44**, W12436, doi:10.1029/2007WR006159.

Wahi*, A.K., J.F. Hogan, B. Ekwurzel, M.N. Baillie, C.J. Eastoe (2008) Geochemical quantification of semiarid mountain recharge, *Ground Water*, doi: 10.1111/j.1745-6584.2007.00413.x

Desilets*, S.L.E., B. Nijssen, B. Ekwurzel, and T.P.A. Ferré (2007) Post-wildfire changes in suspended sediment rating curves: Sabino Canyon, Arizona, *Hydrological Processes*, **21**:1413-1423.

Baillie*, M. N., J. F. Hogan, B. Ekwurzel, A. K. Wahi, and C. J. Eastoe (2007), Quantifying water sources to a semiarid riparian ecosystem, San Pedro River, Arizona, *J. Geophys. Res.*, **112**, G03S02, doi:10.1029/2006JG000263.

Winner of the Hitcheon Award for the most significant Applied Geochemistry publication in 2006: Moore*, K. B., B. Ekwurzel, B. K. Esser, G. B. Hudson, J. E. Moran (2006) Sources of Groundwater Nitrate Revealed Using Residence Time and Isotope Methods, Applied Geochemistry, 21:1016-1029.

Ekwurzel, B. (2005) Role and Importance of Paleohydrology in Study of Climate Change and Variability *in* Encyclopedia of Hydrological Sciences, M. G. Anderson (Editor-in-Chief), J. J. McDonnell (Advisory Editor), S. Sorooshian (Climate Change Section Editor)., John Wiley & Sons, Ltd., pp. 3051-3072.

Van der Loeff, M. R., S. Kühne, M. Wahsner, H. Höltzen, M. Frank, B. Ekwurzel, M. Mensch, and V. Rachold (2003) ^{288}Ra and ^{226}Ra in the Kara and Laptev seas, *Continental Shelf Research*, **23**:113-124.

Schlosser, P., R. Newton, B. Ekwurzel, S. Khatiwala, R. Mortlock, and R. Fairbanks (2002) Decrease of river runoff in the upper waters of the Eurasian Basin, Arctic Ocean, between 1991 and 1996: Evidence from δ^{18}O data, *Geophysal Research Letter*s, **29**(9), 10.1029/2001GL013135

Ekwurzel, B., J. E. Moran, C. J. Koester, M. L. Davisson, and G. F. Eaton. (2001) Nonpoint source MTBE movement through the environment: Ultra low level (ppt) measurements in California in *Oxygenates in Gasoline Environmental Aspects*, A. F. Diaz and D. L. Drogos eds., American Chemical Society, 17-27.

Ekwurzel, B., P. Schlosser, J. H. Swift, R. A. Mortlock, and R. G. Fairbanks (2001) River runoff, sea ice meltwater, and Pacific water distribution and mean residence times in the Arctic Ocean, *Journal of Geophysical Research*, **106**:9075-9092.

Schlosser, P., R. Bayer, G. Bönisch, L. W. Cooper, B. Ekwurzel, W. J. Jenkins, S. Khatiwala, S. Pfirman, W. M. Smethie (1999) Pathways and mean residence times of dissolved pollutants in the ocean derived from transient tracers and stable isotopes., *The Science of the Total Environment*, **237/238**:15-30.

Plummer, L. N., E. Busenberg, S. Drenkard, P. Schlosser, J. B. McConnell, R. L. Michel, B. Ekwurzel, R. Weppernig (1998) Flow of river water into a karstic limestone aquifer --2. Age-dating the young fraction in groundwater mixtures in the Upper Floridan aquifer near Valdosta, Georgia., *Applied Geochemistry*, **13**(8):1017-1043.

Schlosser, P., B. Kromer, B. Ekwurzel, G. Bönisch, A. McNichol, R. Schneider, K. von Reden, H. G. Östlund, J. H. Swift (1997) The first trans-Arctic ^{14}C section: comparison of the mean ages of the deep waters in the Eurasian and Canadian basins of the Arctic Ocean. *Nuclear Instruments and Methods in Physics Research*, **B 123**:431-437.

Schlosser, P., B. Kromer, G. Östlund, B. Ekwurzel, G. Bönisch, H. H. Loosli, and R. Purtschert (1994) On the ^{14}C and ^{39}Ar distribution in the central Arctic Ocean: implications for deep water formation. *Radiocarbon*, **36**(3):327-343.

Ekwurzel, B., P. Schlosser, W. M. Smethie Jr., L. N. Plummer, E. Busenberg, R. L. Michel, R. Weppernig, and M. Stute (1994) Dating of shallow groundwater: Comparison of the transient tracers $^{3}H/^{3}He$, chlorofluorocarbons, and ^{85}Kr. *Water Resources Research*, **30**(6):1693-1708.

Ekwurzel, B. (1990) A complex bayside beach: Herring Cove Beach, Cape Cod, Massachusetts, USA. *Journal of Coastal Research*, **6**(4):879-891.

Ashley, G.M., B. Ekwurzel and C. Vassallo (1987) Hydraulics and geomorphology of Townsend's and Hereford Inlets in *New Jersey Geological Survey Geologic Report 16*, D.P. Harper ed., Trenton, NJ

UCS Publications *(informal external expert review)*

Holtz D., A. Markham, K. Cell and B. Ekwurzel (2014) National Landmarks at Risk: How Rising Seas, Floods, and Wildfires Are Threatening the United States' Most Cherished Historic Sites, Report published by the Union of Concerned Scientists, 72 pp.

SERVICE (Since October 2000)

Hearing Testimony

7/17/2015 **Committee on Energy and Commerce, U.S. House of Representatives**, The Honorable Frank Pallone, Jr. Chairman, Democratic Field Forum "Climate Change at the Water's Edge" at the United States Naval Academy, Annapolis, MD

2/25/2009 Hearing on Scientific Objectives for Climate Change Legislation; **Committee on Ways and Means U.S. House of Representatives**; Witnesses James Hansen, Adjunct Professor, The Earth Institute at Columbia University, New York, New York, Brenda Ekwurzel, Climate Scientist, Union of Concerned Scientists, John Christy, Distinguished Professor of Atmospheric Science and Director of the Earth System Science Center, Univ of Alabama in Huntsville, Huntsville, Alabama; Washington, DC

2/22/2007 February 22, 2007. Testified before the **Minnesota Senate Committee on Energy, Utilities, Technology, and Communications**, in support of legislation setting emissions reductions targets. Minnesota legislature later passed the "Global Warming Mitigation Act of 2007" on May 20, 2007. This law aims to reduce global warming emissions below 2005 levels by 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050 (Article 5 of S.F. 145, the Next Generation Energy Act of 2007).

University of Arizona Hydrology and Water Resources Committees

2001- 2004 Graduate Affairs/Admissions
2001- 2004 Graduate Affairs/ Policy Committee
2001- 2002 Water Chemistry Curriculum sub-committee of Graduate Policy Committee
2001- 2004 Harshbarger Fellowship Review Committee
2002-2003 Backup representative for HWR at the College Advisory Committee (CAC) meetings

University of Arizona Committees

2003- 2004 Member of the Earth Science and Environmental Programs (ESEP) Focused Excellence Study Team advisory committee for the Provost and President of the University of Arizona. After a series of community meetings, the ESEP study team is producing a "Vision of Opportunities" report for the Provost and President in winter 2004. There are eight members of the study team.

2002- 2004 Advisory Committee for the Earth Surface Processes Research Institute (ESPRI) which is a planned partnership between USGS and U. of Arizona. I was asked to be a co-convener for a summer 2003 meeting for the "Quantitative Hydrogeology" section of ESPRI. We prepared a "white paper" for the science direction that may guide future strategy for the ESPRI center based at the Tucson office of the USGS.

2002 Participant as non-permanent committee member in the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) Science Plan Workshop, February 2002.

ACADEMIC COURSES TAUGHT

Taught undergraduate (Environmental Hydrology, Arizona Water Issues) and graduate (Environmental Isotope Hydrology and Low Temperature Geochemistry, Fundamentals of Water Quality, Forensic Isotope Hydrology, and Isotope Seminar) courses at the University of Arizona.

GRADUATE STUDENTS SUPERVISED

Primary advisor providing research support for five M.S. students, one Ph.D. student and graduate committee advisor for seven M.S. students and fourteen Ph.D. students between 2000 and 2004 at the University of Arizona.

Graduate Students Awards and Honors

Name	Degree	Award or Honor
Keara Moore	M.S.	2007 Hitchon Award of the International Association of GeoChemistry (IAGC) recognizes the most significant paper published in the IAGC journal, *Applied Geochemistry*.
Arun Wahi	M.S.	Best Poster at SAHRA annual meeting ($300). Judges were stakeholders (public or private sector) associated with SAHRA. October 2004
Sharon E. Desilets	Ph.D.	El Dia del Agua 14th Annual Department of Hydrology and Water Resources (U. of Arizona) Conference: Hargis Prize for second best poster ($400), 2004
Jason Dadakis	M.S.	Graduate College Fellow Award for Research Excellence 2003-2004.
Keara Moore	M.S.	Scientist and Engineer/Technical Scholar award from Lawrence Livermore National Laboratory (~$6,000); June 18 - August 8 of 2003.
Jason Dadakis	M.S.	Best poster award at the SAHRA annual meeting. Judges were stakeholders (public or private sector) associated with SAHRA; October 2003
Matthew Baillie and Arun Wahi	M.S.	Best oral introduction for a poster at the SAHRA annual meeting. Judges were stakeholders (public or private sector) associated with SAHRA. October 2003
Matthew Baillie	M.S.	University of Arizona, Technology and Research Initiative Fund (TRIF), Water Sustainability Program (WSP), Graduate Student Fellowship Award. This award is to recognize and support outstanding students pursuing studies related to water resources. ($16,800 for 2004-2005 academic year).

FIELD RESEARCH EXPERIENCE

Conducted scientific research aboard 5 ships (IB ODEN, CSS HUDSON, USCGC POLAR STAR, CCGS LOUIS S. ST-LAURENT, FS POLARSTERN) primarily to the Arctic Ocean for a combined total of over a year at sea. Field research primarily for hydrology or coastal processes in Souss Basin, Agadir Morocco, Delmarva Peninsula, Valdosta Georgia, Connecticut, Herring Cove Beach and Nauset Inlet, Cape Cod, Massachusetts and Hereford Inlet, New Jersey.

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

Phi Beta Kappa
Sigma Xi, The Scientific Research Society
American Association for the Advancement of Science
American Geophysical Union
American Meteorological Society