ANGELA F. DICKENS

9501 West Devon Ave, Ste 701 Tel: (847) 720-7883
Rosemont, IL 60018 dickens@ladco.org

PROFESSIONAL EXPERIENCE

Data Scientist 2020-present
Lake Michigan Air Directors Consortium, Rosemont, IL.

- Conducted analyses of air quality data, including ozone, fine particle, regional haze/visibility, air toxics and hazardous air pollutants, and meteorological data.
- Advised air quality monitoring studies.
- Managed contractor work related to the analysis of air quality data.
- Supported data analysis and monitoring activities by the LADCO States.
- Worked with other organizations (e.g., U.S. Environmental Protection Agency, EPA, and other multi-jurisdictional organizations).
- Prepared technical reports and presented analysis results.

Air Policy Analyst 2013-2020
Wisconsin Department of Natural Resources, Madison, WI.

- Analyzed air quality and emissions data to inform and support air quality management decisions and documents, primarily using R for data analysis and visualization.
- Co-organizer of the 2017 Lake Michigan Ozone Study, a collaborative, multi-agency research study involving NASA, NOAA, EPA and university scientists. Primary data analyst of the study's aircraft-based air quality measurements.
- Evaluated new EPA air quality policies, assessed implementation options and implications for Wisconsin, and recommended policy revisions.
- Developed plans for state compliance with Clean Air Act requirements.
- Frequently described complex technical and policy information and its implications to DNR managers, staff and external stakeholders, both orally and in writing.
- Served as staff lead on state work on EPA's National Ambient Air Quality Standards for ozone and former co-lead on EPA's Clean Power Plan addressing CO_2 emissions from existing power plants.

AAAS Science and Technology Policy Fellow 2011-2013
EPA Office of Transportation and Air Quality, Transportation and Climate Division, Washington, DC.

- Conducted greenhouse gas lifecycle analyses of biofuels, developed policy based on the technical findings, analyzed policy options and impacts, and presented analysis and recommendations to management.
- Developed regulations determining the eligibility of biofuels for participation in the Renewable Fuel Standard under the Clean Air Act.
- Established working relationships with stakeholders from industry, governments, and NGOs.

- Organized a cross-agency group of AAAS fellows working on biofuels-related issues.

Visiting Scientist Winter 2011
Swiss Federal Institute of Technology-Zurich (ETH-Zurich), Zurich, Switzerland.

- Prepared manuscripts for publication in collaboration with an ETH colleague.

Clare Booth Luce Assistant Professor of Chemistry 2007-2011
Mount Holyoke College, South Hadley, MA.

- Established, managed, and procured funding for a laboratory dedicated to carbon cycle research. Led students in conducting intensive geochemical studies of sedimentary samples to determine carbon sources and processes, primarily using isotopes and biomarker compound tracers.
- Published results in journals and presented research at scientific conferences.
- Designed and taught courses on climate change, biogeochemistry, and general and instrumental chemistry.
- Supervised research students, student laboratory assistants, graders, and tutors.
- Served on the college Environmental Studies Committee and Faculty Grants Committee.

NOSAMS Postdoctoral Scholar 2005-2007
Woods Hole Oceanographic Institution, Woods Hole, MA.

- Initiated, developed, and carried out research projects in geochemistry investigating how carbon moves through river systems.
- Published results in journals and presented research at scientific conferences.
- Served as secretary of the WHOI Postdoctoral Association and as postdoctoral representative to the Women's Committee.

Visiting Assistant Professor of Chemistry Winter 2005
Carleton College, Northfield, MN.

- Designed and taught a General Chemistry course and laboratory

Graduate Research Assistant 1999-2004
University of Washington, Seattle, WA.

- Expanded and implemented research projects studying organic carbon in the oceans.
- Published results in journals and presented research at scientific conferences.

Post-Graduate Researcher in Soil Microbial Ecology 1998-1999
University of California at Davis, Davis, CA.

- Collected and analyzed atmospheric and soil samples weekly from California rice paddies.

Tutor 1997-1998
Engelman-Becker Learning Center and The Learning Center, Eugene, OR.

- Tutored K-12 and university students in a variety of subjects.

EDUCATION

Ph.D. December 2004, Chemistry, University of Washington, Seattle, WA
Advisor: John Hedges (deceased), then Paul Quay and Richard Gammon
Dissertation: *Sources, cycling and preservation of black carbon in sediments from the Washington Margin.*

B.A. June 1997, Chemistry (*Magna Cum Laude*), Carleton College, Northfield, MN
Senior Thesis: *Humification and cultivation: the chemistry of two conversions of organic matter in soils*.

GRANTS, FELLOWSHIPS AND AWARDS

Wisconsin DNR Leadership Academy, selected participant (2020).

Wisconsin DNR Environmental Management Division Employee of the Year (2019).

Wisconsin Women in Government Leadership Seminar, selected participant (2016).

AAAS Science & Technology Policy Fellow (2011-2013).

Petroleum Research Foundation Grant # 48656-GB2, *Understanding the formation of a major terrestrial carbon sink: A molecular isotopic study of an Andean watershed*. $50,000, September 2008-August 2010.

Clare Boothe Luce Assistant Professorship (2007-2011).

Subaru Outstanding Women in Science Award finalist (2006)

National Ocean Sciences Accelerator Mass Spectrometry Facility (NOSAMS) Postdoctoral Scholarship (2005-2007)

Dissertations Symposium on Chemical Oceanography, selected participant (2005)

NSF Graduate Research Fellowship (1999-2002)

Clare Boothe Luce Scholarship (full scholarship, 1995-1997)

Robert C. Byrd Honors Scholarship (1993-1995)

Dow Chemical Scholarship (1993-1995)

NSF National Science Scholarship (1993-1995)

PUBLICATIONS

Stanier C.O., Pierce R.B., Abdi-Oskouei M., Adelman Z.E., Al-Saadi J., Bertram T.H., Carmichael G., Christiansen M.B., Cleary P.A., Czarnetzki A., Dickens A.F., Fuoco M.A., Hughes D.D., Hupy J.P., Judd L.M., Kenski D., Millet D.B., Roozitalab B., Shaw S.L., Stone E.A., Wagner T. (submitted) Overview of the Lake Michigan Ozone Study 2017. Submitted to the *Bulletin of the American Meteorological Society*.

Doak A.G., Christiansen M.B, Alwe H.A., Bertram T.H., Carmichael G., Cleary P., Czarnetzki A.C., Dickens A.F., Janssen M., Kenski D., Miller D.B., Novak G., Pierce R.B., Stone E.A., Szykman J., Vermeuel M., Wagner T.J., Valin L., Stanier C.O. (submitted) Characterization of ground-based atmospheric pollution and meteorology sampling stations during the Lake Michigan Ozone Study 2017. Submitted to the *Journal of the Air and Waste Management Association*.

Eglinton T.I., Galy V.V., Hemingway J.D., Feng X., Bao H., Blattman T.M., Dickens A.F., Gies H., Giosan L., Haghipour N., Hou P., Lupker M., McIntyre C.P., Montlucon D.B., Peucker-Ehrenbrink B., Ponton C., Schefuss E., Schwab M.S., Voss B., Wacker L., Wu Y., Zhao M. (in revision) Basin-scale climate control on terrestrial biospheric carbon turnover. In revision for *Proceedings of the National Academy of Sciences*.

Hughes D.D., Christiansen M., Milani A., Vermeuel M.P., Novak G.A., Alwe H.D., Dickens A.F., Pierce R.B., Millet D.B., Bertram T.H., Stanier C.O., and Stone E.A. (2021) $PM_{2.5}$ chemistry, organosulfates, and SOA formation during the 2017 Lake Michigan Ozone Study. *Atmospheric Environment*, 244, 117939.

Vermeuel M.P., Novak G.A., Alwe H.D., Hughes D.D., Kaleel R., Dickens A.F., Kenski D., Czarnetzki A.C., Stone E.A., Stanier C.O., Pierce R.B., Millet D.B., and Bertram T.H. (2019) Sensitivity of ozone production to NO_x and VOC along the Lake Michigan coastline. *Journal of Geophysical Research: Atmospheres*, 124, 10,989-11,006.

Vonk J.E., Dickens A.F., Giosan L., Hussain Z.A., Kim B., Zipper S.C., Holmes R.M., Montlucon D.B., Galy V. and Eglinton T.I. (2016) Arctic deltaic lake sediments as recorders of fluvial organic matter deposition. *Frontiers in Earth Science*, 4:77.

Dickens A.F., Baldock J., Kenna T.C., and Eglinton T.I. (2011) A depositional history of particulate organic carbon in a floodplain lake from the lower Ob' River, Siberia. *Geochimica et Cosmochimica Acta*. 75: 4796–4815.

Veilleux M.-H., Dickens A.F., Brandes J., and Gélinas Y. (2009) Density separation of combustion-derived soot and petrogenic graphitic black carbon: Quantification and isotopic characterization. *IOP Conference Series: Earth and Environmental Science*. 5 012010.

Conedera M., Tinner W., Neff C., Meurer M., Dickens A.F., and Krebs P. (2009) Reconstructing past fire regimes: Methods, applications, and relevance to fire management and conservation. *Quaternary Science Reviews.* 28: 435-456.

Dickens A.F., Gudeman J.A., Gélinas Y., Baldock J.A., Tinner W., Hu F.S. and Hedges J.I. (2007) Sources and distribution of CuO-derived benzene carboxylic acids in soils and sediments. *Organic Geochemistry*. 38: 1256-1276.

Coppola L., Gustafsson Ö., Andersson P., Eglinton T.I., Uchica M., and Dickens A.F. (2007) The importance of ultrafine particles as a control on the distribution of organic carbon in Washington Margin and Cascadia Basin sediments. *Chemical Geology*. 243: 142-156.

Dickens A.F., Baldock J.A., Smernik R.J., Wakeham S.G., Arnarson T.S., Gélinas Y., and Hedges J.I. (2006) Solid-state ^{13}C NMR analysis of size and density fractions of marine sediments: Insight into organic carbon sources and preservation mechanisms. *Geochimica et Cosmochimica Acta*. 70: 666-686.

Haberstroh P.R., Brandes J.A., Gélinas Y., Dickens A.F., and Wirick S. (2006) Chemical

composition of the graphitic black carbon fraction in riverine and marine sediments at sub-micron scales using carbon X-ray spectromicroscopy. *Geochimica et Cosmochimica Acta.* 70: 1483-1494.

Dickens A.F., Gélinas Y., Masiello C.A., Wakeham S.G., and Hedges J.I. (2004) Reburial of fossil organic carbon in marine sediments. *Nature*. 427: 336-339.

Keil R.G., Dickens A.F., Arnarson T.S., Nunn B.L., and Devol A.H. (2004) What is the oxygen exposure time of laterally transported organic matter along the Washington margin? *Marine Chemistry*. 92: 157-165.

Dickens A.F., Gélinas Y., and Hedges J.I. (2004) Physical separation of combustion and rock sources of graphitic black carbon in sediments. *Marine Chemistry.* 92: 215-223.

Macalady J.L., McMillan A.M.S., Dickens A.F., Tyler S.C., and Scow K.M. (2002) Population dynamics of type I and II methanotrophic bacteria in rice soils. *Environmental Microbiology*. 4 (3): 148-157.

Dickens A., Soucy L., and Valiela I. (1996) Particulate and dissolved nitrogen: A laboratory study of transformations in groundwater and estuarine samples of the Waquoit Bay estuarine system. *Biological Bulletin.* 191: 331-332.

MANUSCRIPTS IN PREPARATION

Cleary P., Dickens A.F., Geib K., McIlquham M., Sanchez M., Valin L. (in preparation) Evidence for steep gradients in ozone concentrations along the western Lake Michigan shoreline: The 2017 Lake Michigan Ozone Study as a case study. For submission to *Atmosphere*.

PRESENTATIONS (external, last fifteen years)

University of Wisconsin – Madison, Introduction to Air Quality course invited lecture (annually since 2014), Madison, WI. Federal and State Regulation of Air Pollution.

TEMPO Satellite Science Team Meeting invited panelist (June 2019), Madison, WI. Science Panel: Aircraft Profiling Perspective.

University of Wisconsin – Madison, Government and Natural Resources course invited lecture (June 2019), Madison, WI. Federal and State Regulation of Air Pollution.

Wisconsin Science Festival invited panelist (November 2017), Madison, WI. Making a Difference: Science Policy for Scientists. Included leading a workshop on "Writing for a Policy Audience".

LMOS 2017 Data Workshop (September 2017), Chicago, IL. Putting LMOS 2017 ozone episodes in a historical context (with Donna Kenski).

LMOS 2017 Planning Team Meeting (March 2017), Madison, WI. Analysis of Ozone, NOx and VOC Monitoring Data Along Wisconsin's Lake Michigan Lakeshore.

Weston Roundtable Seminar Series invited lecture (February 2015), Madison, WI. Keeping Wisconsin's Air Clean: Meeting EPA's New Ozone Standard.

University of Wisconsin – Madison, Endocrinology and Reproductive Physiology invited lecture (March 2014), Madison, WI. Working at the Science-Policy Interface: Using the AAAS Science Policy Fellowship as a Bridge.

University of Wisconsin – Madison, Introduction to Air Quality course invited lecture (December 2013), Madison, WI. *EPA regulation of greenhouse gas emissions.*

Wisconsin Department of Natural Resources Continuing Legal Education seminar invited talk (October 2013), Madison, WI. *EPA regulation of CO_2 emissions from power plants*.

University of Wisconsin – La Crosse Biology Department invited seminar (October 2013), La Crosse, WI. *A Scientist goes to Washington (and Madison): Using science to make better environmental policy*.

American Biogas Council invited webinar (June 2013), Washington, DC and online. *The Renewable Fuel Standard (RFS2): What biogas companies need to know.*

Swiss Federal Institute of Technology Zürich (ETH-Zürich), invited seminar (March 2011) Zürich, Switzerland. *Particulate organic carbon export from the Mackenzie River: the response of an arctic river to a warming world.*

Graduate School of Oceanography, University of Rhode Island invited seminar (April 2010), Narragansett, RI. *Organic carbon cycling in Siberian and Canadian arctic rivers*.

Ocean Sciences Meeting (February 2010), Portland, OR. *Particulate organic carbon export from the Mackenzie River: the response of an arctic river to a warming world.*

Smith College Chemistry Department invited seminar (October 2009), Northampton, MA. *Organic carbon cycling in Siberian and Canadian arctic rivers*.

Mer Bleue Annual Workshop: 10 years of being bogged down (February 2009), Montreal, Quebec. Talk: *Changes in soil chemistry in Mer Bleue bog in response to fertilization: Insight from analysis of lignin phenols*.

Gordon Research Conference on Organic Geochemistry (August 2008), Plymouth, NH. Poster: *A historical record of particulate organic carbon exported from the Ob River, Siberia*.

Ocean Sciences Meeting (March 2008), Orlando, FL. Invited talk: *A historical record of particulate organic carbon exported from the Ob River, Siberia*.

Third Conference on Mechanisms of Organic Matter Stabilisation and Destabilisation in Soils and Sediments (September 2007), Adelaide, Australia. Invited talk: *Organic matter cycling in aquatic systems: Timescales of riverine export of organic carbon to the oceans and preservation mechanisms in marine sediments*.

American Geophysical Union Fall Meeting (December 2006), San Francisco, CA. Talk: *A historical record of particulate organic carbon export from the Ob River, Siberia.*

Massachusetts Institute of Technology (MIT) Earth, Atmospheric and Planetary Sciences Department invited seminar (October 2006), Cambridge, MA. *Residence times of plant-derived organic carbon in watersheds: a preliminary study.*

NSF Margins Teleconnections Between Source and Sink in Sediment Dispersal Systems Theoretical and Experimental Institute (September 2006), Eel River Basin, CA. Poster: *Residence times of plant-derived organic carbon in watersheds: A compound-specific radiocarbon approach*.

Massachusetts Institute of Technology (MIT) Department of Civil and Environmental Engineering invited seminar (March 2006), Cambridge, MA. *Sources, cycling and preservation of black carbon in marine sediments from the Washington Margin.*

Ocean Sciences Meeting (February 2006), Honolulu, HI. Talk: *A comparative study of timescales of organic carbon export from river systems*.

TEACHING EXPERIENCE

Mount Holyoke College, Courses taught:

How Hot? Understanding Global Climate Change (first-year seminar; Spring 2010)
General Chemistry I (with laboratory; Fall 2008 and 2009)
Global Biogeochemistry (Fall 2007 and 2009)
Experimental Methods (with laboratory; Spring 2008 and 2009)
Chemistry Senior Seminar (Spring 2010)
On sabbatical Fall 2010-Spring 2011

Seven Research students mentored (6 in Chemistry and 1 in Environmental Studies)

Carleton College, Course taught:

General Chemistry (with laboratory; Winter 2005)

University of Washington, Teaching Assistant for:

Marine Chemistry (graduate course; Fall 2000 and 2003)
General Chemistry II (Winter 2002)

FIELD EXPERIENCE

Mer Bleue Bog (Ottawa, ON). Lead investigator: Collection of peat samples from bog, accompanied by one undergraduate student, August 2008.

Mackenzie River Delta (Canadian Arctic). Lead investigator: Sampling of river water from flooding river, accompanied by two undergraduate students, May-June 2008.

Mackenzie River Delta (Canadian Arctic). Coring of deltaic lakes to collect sediment profiles and collection of river water, April 2007.

Black Sea Cruise (from Varna, Bulgaria). Collection of water and sediment samples aboard the R/V *Akademik*, August-September, 2006.

North Atlantic Cruise (Woods Hole, MA to Station W). Collection of water, suspended and sinking particles and sediment samples aboard R/V *Oceanus*, June 2006.

North Pacific Cruise (San Francisco, CA to San Diego, CA). Collection of sediment samples aboard R/V *New Horizon*, May-June 2001.

Karelia, Russia. Collection of soil and rock samples, September 2000.

North Pacific Cruise (Seattle, WA to Juan de Fuca Ridge). Field experiments and sample collection aboard R/V *Thompson* with JASON, August-September 1999.

Maxwell, California. Weekly collection of atmospheric and soil samples, Summer 1998 and 1999.

Waquoit Bay, Massachusetts. Weekly collection of estuarine water samples, Summer 1996.

OTHER PROFESSIONAL ACTIVITIES

American Geophysical Union Member (2002-present)

American Association for the Advancement of Science (2011-present)

Reviewer for National Science Foundation, Petroleum Research Fund, *Environmental Science and Technology, Geochimica et Cosmochimica Acta*, *Geoderma, Geology, Global Biogeochemical Cycles, Limnology and Oceanography*, *Marine Chemistry* and *Organic Geochemistry.*

SERVICE

Frequent speaker/volunteer with the UW-Madison graduate student group Catalysts for Science Policy (2015-2018)

Wisconsin Women in Natural Resources Co-Founder and Co-Chair (2014-2017).

AAAS Science Policy Fellows Biofuels Affinity Group Founder and Chair (2011-2013).

Faculty Grants Committee, Mount Holyoke College (2009-2010).

Environmental Studies Committee, Mount Holyoke College (2008-2010).

Secretary of the Postdoctoral Association, Woods Hole Oceanographic Institution (2006-2007).

Postdoctoral Representative on the Women's Committee, Woods Hole Oceanographic Institution (2006-2007).