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# **EDUCATION**

June 2002	Massachusetts Institute of Technology Ph.D. Climate Physics and Chemistry	Cambridge, MA
May 1995	Thesis: Interannual Variability of Air-Sea Fluxes of Carbon Dioxide of Rice University  B.S. Civil Engineering – Environmental option	and Oxygen  Houston, TX
RESEARCH A	ND PROFESSIONAL EXPERIENCE	
2017 to present	Columbia University / Lamont Doherty Earth Observatory.  Professor, Earth and Environmental Sciences  Affiliate Professor, Earth and Environmental Engineering  I study the ocean carbon cycle and its role in the global carbon cybiogeochemical drivers of carbon cycle variability and distinguishing a key interest. My primary tools are numerical models and machine leads to the columbia of the columb	this from anthropogenic trends is
2021 to present	Deputy Director, Learning the Earth with Artificial Intelligence and ILEAP's mission is to increase the reliability, utility, and reach of integration of climate and data science. As Deputy Director, my prima research portfolio.	climate projections through the
2017 to 2020 2016 to 2017 2011 to 2016 2004 to 2011	University of Wisconsin - Madison Adjunct Professor, Atmospheric and Oceanic Sciences Professor, Atmospheric and Oceanic Sciences and Bryson Professor, Associate Professor, Atmospheric and Oceanic Sciences Assistant Professor, Atmospheric and Oceanic Sciences	Madison, WI  Center for Climatic Research
summer 2011	Woods Hole Oceanographic Institution Institution Visiting Scholar in Physical Oceanography and Marine Co	Woods Hole, MA hemistry and Geochemistry
2003 to 2004	Princeton University / University of Wisconsin - Madison Visiting Research Staff / Anna Julia Cooper Postdoctoral Fellow Ar and N <sub>2</sub> in ocean and atmospheric models, ocean <sup>14</sup> C and inverse tea	Princeton, NJ chniques; and CO <sub>2</sub> and O <sub>2</sub> fluxes.
2002 to 2003	Instituto Nacional de Ecología (National Institute of Ecology)  Consultant  Analyzed potential public health co-benefits from the simultaneo greenhouse gas emissions in Mexico City; capacity building for integ	
1996 to 2002	Massachusetts Institute of Technology Graduate Research assistant and Postdoctoral associate	Cambridge ,MA
1995 to 1996	Brown and Root Environmental  Environmental specialist  Assisted industrial clients with environmental compliance; duties in hazardous waste abatement, and air pollution modeling.	Houston, TX acluded water and soil sampling,
summer 1993	Clivius Multrum, USA Project consultant	Newton, MA

PEER-REVIEWED PUBLICATIONS (McKinley group: grad\*, undergrad\*\*; postdoc<sup>+</sup>)

Bennington, V.S.\*+, L. Gloege\*, and <u>G.A. McKinley</u> (2022) Variability in the global ocean carbon sink from 1959-2020 by correcting models with observations, Geophys. Res. Lett., *GRL* e2022GL098632, doi:10.1029/2022GL098632. (70)

Olivarez, H., N.S. Lovenduski, R. Brady, A.R. Fay\*, M. Gehlen, L. Gregor, P. Landschützer, <u>G.A. McKinley</u>, K. McKinnon, and D. Munro (2022) Replaying the tape of history: Synthetic large ensembles of sea-air CO<sub>2</sub> flux, *Global Biogeochem. Cycles*, 36, e2021GB007174, doi:10.1029/2021GB007174. (69)

Crisp, D., H. Dolman, T. Tanhua, <u>G.A. McKinley</u>, J. Hauck, A. Bastos, S. Sitch, S. Eggleston, V. Aich (2022) How well do we understand the land-ocean-atmosphere carbon cycle? *Rev. Geophysics*, 60, e2021RG000736. doi:10.1029/2021RG000736. (68)

Gloege, L.\*, M. Yan, T. Zheng and <u>G.A. McKinley</u> (2022) Improved quantification of ocean carbon uptake by using machine learning to merge global models and pCO<sub>2</sub> data, *Journal of Advances in Modeling Earth Systems*, 14, e2021MS002620. doi: 10.1029/2021MS002620. (67)

Laughner, J.L, J.L. Neu, D. Schimel, P.O. Wennberg, K. Barsanti, K. Bowman, A. Chatterjeee, B. Croes, H. Fitzmaurice, D. Henze, J. Kim, E.A. Kort, Z. Liu, Kazuyuki Miyazaki, A.J. Turner, S. Anenberg, J. Avise, H. Cao, D. Crisp, J. de Gouw, A. Eldering, J.C. Fyfe, D.L. Goldberg, K.R. Gurney, S. Hasheminassa, F. Hopkins, C. E. Ivey, D.B.A. Jones, N.S. Lovenduski, R.V. Martin, <u>G.A. McKinley</u>, L. Ott, B. Poulter, M. Rua, S.P. Sander, N. Swart, Y.L. Yung, Z-C Zeng, and the rest of the Keck Institute for Space Studies "COVID-19: Identifying Unique Opportunities for Earth System Science" study team (2021) Societal shifts due to COVID-19 reveal large-scale complexities and feedbacks between atmospheric chemistry and climate change, *PNAS*, doi:10.1073/pnas.2109481118. (66)

Fay, A.R.\*, L. Gregor, P. Landschützer, <u>G.A. McKinley</u>, N. Gruber, M. Gehlen, Y. Iida, G.G. Laurelle, C. Rödenbeck, J. Zeng (2021) Harmonization of global surface ocean pCO<sub>2</sub> mapped products and flux calculations for an improved estimate of the ocean carbon sink, *Earth Sys. Sci. Data*, doi:10.5194/essd-13-4693-2021. (65)

Fay, A.R.\*, and <u>G.A. McKinley</u> (2021) Observed regional fluxes to constrain modeled estimates of the ocean carbon sink, *Geophys. Res. Lett.*, doi:10.1029/2021GL095325. (64)

Ridge, S.M.\*, and <u>G.A. McKinley</u> (2021) Ocean carbon uptake under aggressive emission mitigation, *Biogeosciences*. doi:10.5194/bg-18-2711-2021. (63)

Gloege, L.\*, <u>G.A. McKinley</u>, P. Landschützer, N.S. Lovenduski, K.B. Rodgers, A. Fay\*, T. Frölicher, J.C. Fyfe, T. Illyina, S.D. Jones, C. Rödenbeck, S. Schlunegger and Y. Takano (2021) Quantifying errors in observationally-based estimates of ocean carbon sink variability, *Global Biogeochem. Cycles*, 10.1029/2020GB006788. (62)

Lovenduski, N.S., N.C. Swart, A.J. Sutton, J.C. Fyfe, <u>G.A. McKinley</u>, C. Sabine and N.L. Williams (2021) The ocean carbon response to COVID-related emissions reductions, *Geophys. Res. Lett.*, 10.1029/2020GL092263. (61)

Stamell, J.\*, R.R. Rustagi\*\*, L. Gloege\*, and <u>G.A. McKinley</u> (2020) Strengths and weaknesses of three Machine Learning methods for pCO<sub>2</sub> interpolation, *Geoscientific Model Development Discuss*. doi: 10.5194/gmd-2020-311. (60)

Diffenbaugh, N.S., C.B. Field, E. Appel, I. Azevedo, D. Baldocchi, M. Burke, J. Burney, P. Ciais, S.J. Davis, A.M. Fiore, S. Fletcher, T. Hertel, D.E. Horton, S. Hsiang, R.B. Jackson, X. Jin, M. Levi, D. Lobell, <u>G.A. McKinley</u>, F.C. Moore, A. Montgomery, K.C. Nadeau, D. Pataki, J.T. Randerson, M. Reichstein, J.L. Schnell, S.I. Seneviratne, D. Singh, A. Steiner and G. Wong-Parodi (2020) The COVID-19 Lockdowns: A Window into the Earth System, *Nature Reviews Earth & Environment*, doi:10.1038/s43017-020-0079-1. (59)

Ridge, S.M.\* and <u>G.A. McKinley</u> (2020) Advective controls on the North Atlantic anthropogenic carbon sink, *Global Biogeochem. Cycles*, doi:10.1029/2019GB006457. (58)

- McKinley, G.A., A.R. Fay\*, Y. Eddebbar, L. Gloege\* and N.S. Lovenduski (2020) Forced mechanisms explain recent variability of the ocean carbon sink, *AGU Advances*, doi: 10.1029/2019AV000149. (57)
- Gloege, L.\*, <u>G.A. McKinley</u>, R. Mooney, J.D. Allan, M. Diebel and P. McIntyre (2020) Lake hydrodynamics intensify the potential impact of watershed pollutants on coastal ecosystem service, *ERL*, doi:10.1088/1748-9326/ab7f62. (56)
- Uchida, T., D. Balwada, R. Abernathey, <u>G.A. McKinley</u>, S. Smith & M. Levy (2020) Eddy iron fluxes control primary production in the open Southern Ocean, *Nature Communications*, doi:10.1038/s41467-020-14955-0. (55)
- Uchida, T., D. Balwada, R. Abernathey, <u>G.A. McKinley</u>, S. Smith and M. Levy (2019) The contribution of submesoscale over mesoscale eddy iron transport in the open Southern Ocean, *J. Adv. Model. Earth Sys.*, doi:10.1029/2019MS001805. (54)
- Chen, H.\*, and <u>G.A. McKinley</u> (2019) Isopycnal processes allow for summertime net heterotrophy despite net oxygen accumulation in the lower euphotic zone of the North Atlantic subtropical gyre, *Global Biogeochem. Cycles*, doi: 10.1029/2018GB006094. (53)
- McKinley, G.A., A.L. Ritzer\*, and N.S. Lovenduski (2018) Mechanisms of northern North Atlantic biomass variability, *Biogeosciences* 15, 6049-6066, doi:10.5194/bg-15-6049-2018. (52)
- Fay, A.R.\*, N.S. Lovenduski, <u>G.A. McKinley</u>, D.R. Munro, C. Sweeney, A.R. Gray, P. Landschützer, B. Stephens, T. Takahashi, N. Williams (2018) Utilizing the Drake Passage Time-series to understand variability and change in subpolar Southern Ocean pCO<sub>2</sub>, *Biogeosciences*, 15, 3841-3855, doi:10.5194/bg-15-3841-2018. (51)
- Muller-Karger, Frank, E. Hestir, C. Ade, K. Turpie, D. Roberts, D. Siegel, R. Miller, D. Humm, N. Izenberg, M. Keller, F. Morgan, R. Frouin, A. Dekker, R. Gardner, J. Goodman, B. Schaeffer, B. Franz, N. Pahlevan, A. Mannino, J. Concha, S. Ackleson, K. Cavanaugh, A. Romanou, M. Tzortziou, E. Boss, R. Pavlick, A. Freeman, C. Rousseaux, J. Dunne, M. Long, E. Klein, <u>G.A. McKinley</u>, R. Letelier, M. Kavanaugh, M. Roffer, J. Goes, A. Bracher, K. Arrigo, H. Dierssen, X. Zhang, F. Davis, B. Best, R. Guralnick, J. Moisan, H. Sosik, R. Kudela, C. Mouw, A. Barnard, S. Palacios, C. Roesler, E. Drakou, W. Appeltans (2018) Satellite Sensor Requirements for Monitoring Essential Biodiversity Variables of Coastal Ecosystems. *Ecological Applications*, 18, doi: 10.1002/eap.1682. (50)
- Peters, G.P., C. LeQuere, R.M. Andrew, J.G. Canadell, P. Friedlingstein, T. Ilyina, R.B. Jackson, F. Joos, J.I. Korsbakken, <u>G.A. McKinley</u>, S. Sitch, and P. Tans (2017) Towards real-time verification of CO<sub>2</sub> emissions, *Nature Climate Change, doi:* 10.1038/s41558-017-0013-9. (49)
- Golub, M., A.R. Desai, <u>G.A. McKinley</u>, C.K. Remucal, and E.H. Stanley (2017) Large uncertainty in estimating pCO<sub>2</sub> from carbonate equilibria in lakes, *J. Geophys. Res.- Biogeosci.*, 122 doi:10.1002/2017JG003794. (48)
- Pilcher, D.J.\*, <u>G.A. McKinley</u>, J. Kralj\*\*, H.A. Bootsma and E.D. Reavie (2017) Modeled sensitivity of Lake Michigan productivity and zooplankton to changing nutrient concentrations and quagga mussels, *J. Geophys. Res. Biogeosci.*, 122, 2017–2032, doi:10.1002/2017JG003818. (47)
- Gloege, L.\*, <u>G.A. McKinley</u>, Mouw, C.B.<sup>+</sup> and A. Ciochetto (2017) Global evaluation of particulate organic carbon flux parameterizations, *Global Biogeochem. Cycles*, 31, 1192–1215, doi:10.1002/2016GB005535. (46)
- Orr, J. C., Najjar, R. G., Aumont, O., Bopp, L., Bullister, J. L., Danabasoglu, G., Doney, S. C., Dunne, J. P., Dutay, J.-C., Graven, H., Griffies, S. M., John, J. G., Joos, F., Levin, I., Lindsay, K., Matear, R. J., McKinley, G. A., Mouchet, A., Oschlies, A., Romanou, A., Schlitzer, R., Tagliabue, A., Tanhua, T., and Yool, A. (2017) Biogeochemical protocols and diagnostics for the CMIP6 Ocean Model Intercomparison Project (OMIP), *Geosci. Model Dev.*, 10, 2169-2199, doi:10.5194/gmd-10-2169-2017. (45)
- Fay, A.R.\* and <u>G.A. McKinley</u> (2017) Correlations of surface ocean pCO<sub>2</sub> to satellite chlorophyll on timescales from monthly to interannual, *Global Biogeochem. Cycles*, 31, 436–455, doi:10.1002/2016GB005563. (44)

McKinley, G.A., A.R. Fay\*, N. Lovenduski, and D.J. Pilcher\* (2017) Natural variability and anthropogenic trends in the ocean carbon sink. *Ann. Rev. Mar. Sci.* 9: 125-150. doi: 10.1146/annurev-marine-010816-060529. (43)

Mouw, C.B.<sup>+</sup>, A. Barnett, <u>G.A. McKinley</u>, L. Gloege\* and D.J. Pilcher\* (2016) Phytoplankton size impact on export flux in the global ocean, *Global Biogeochem. Cycles*, 30, doi:10.1002/2015GB005355. (42)

Mouw, C.B.<sup>+</sup>, A. Barnett, <u>G.A. McKinley</u>, L. Gloege\* and D.J. Pilcher\* (2016) Global ocean particulate organic carbon flux merged with satellite parameters. *Earth Sys. Sci. Data*, 8, 531-541, doi:10.5194/essd-8-531-2016. (41)

Lovenduski, N., <u>G.A. McKinley</u>, A.R. Fay,\* K. Lindsay and M.C. Long (2016) Partitioning uncertainty in ocean carbon uptake projections, *Global Biogeochem. Cycles*, 29, 416–426, *doi:* 10.1002/2016GB005426. (40)

McKinley, G.A., D.J. Pilcher\*, A.R. Fay\*, K. Lindsay, M.C. Long, and N. Lovenduski (2016) Timescales for detection of trends in the ocean carbon sink, *Nature*, 530, 469–472, doi:10.1038/nature16958. (39)

Breeden, M.\*\* and G.A. McKinley (2016) Climate impacts on multidecadal pCO<sub>2</sub> variability in the North Atlantic: 1948-2009, *Biogeosciences*, 13, 3387-3396, doi:10.5194/bg-13-3387-2016. (38)

McKinley, G.A., C.A. Carlson, A. Andrews, D. Brown, P. Romero-Lankao, and G. Shrestha (2015) Managing the carbon cycle requires strong science, *Eos*, 96, doi:10.1029/2015EO040161. (37)

Dave, A., A.D. Barton, M.S. Lozier, <u>G.A. McKinley</u> (2015) What drives seasonal change in oligotrophic area in the subtropical North Atlantic? *J. Geophys. Res.*, doi: 10.1002/2015JC010787. (36)

Phillips, J.\*, <u>G.A. McKinley</u>, V. Bennington\*+, H. Bootsma, D. Pilcher\*, R.W. Sterner, N.R. Urban (2015) Evaluating the potential for CO<sub>2</sub>-induced acidification of the Laurentian Great Lakes, *Oceanography* 28(2), 136–145. doi:10.5670/oceanog.2015.37. (35)

Lovenduski, N., A.R. Fay\*, <u>G.A. McKinley</u> (2015) Observing multi-decadal trends in Southern Ocean CO<sub>2</sub> uptake: What can we learn from an ocean model? *Global Biogeochem. Cycles*, doi: 10.1002/2014GB004933. (34)

Pilcher, D.J.\*, <u>G.A. McKinley</u>, V. Bennington\*+ and H. Bootsma (2015) Physical and biogeochemical mechanisms of internal carbon cycling in Lake Michigan, *J. Geophys. Res.*, doi: 10.1002/2014JC010594. (33)

Kitchell, J.F., T. Cline, V. Bennington\* and <u>G.A. McKinley</u> (2015) Challenges of managing invasive sea lamprey in Lake Superior. In Bioeconomics of Invasive Species: Integrating Ecology, Economics, Policy and Management. ed: R. P. Keller, D. M. Lodge, M. A. Lewis, J. F. Shogren, University of Chicago Press. (32)

Fay, A.R.\*, <u>G.A. McKinley</u> and N. Lovenduski (2014) Southern Ocean carbon trends: Sensitivity to methods, *Geophys. Res. Lett.* doi: 10.1002/2014GL061324. (31)

Fay, A. R.\*, and <u>G. A. McKinley</u> (2014) Global ocean biomes: mean and temporal variability, *Earth Syst. Sci. Data*, 6, 273-284, doi:10.5194/essd-6-273-2014. (30).

Cline, T., J.F. Kitchell, V. Bennington\*+, <u>G.A. McKinley</u>, E.K. Moody and B.C. Weidel (2014) Climate impacts on landlocked sea lamprey: Implications for host-parasite interactions and invasive species management, *Ecosphere 5(6)*, *art68*. dx.doi.org/10.1890/ES14-00059.1. (29).

Fay, A.R.\* and <u>G.A. McKinley</u> (2013) Global trends in surface ocean pCO<sub>2</sub> from in situ data, *Global Biogeochem. Cycles*, 27, doi:10.1002/gbc.20051. (28).

Khatiwala, S., T. Tanhua, S. Mikaloff Fletcher, M. Gerber, S.C. Doney, H.D. Graven, N. Gruber, <u>G.A. McKinley</u>, A. Murata, A.F. Rios, C.L. Sabine and J.L. Sarmiento (2013) Global Ocean Carbon Storage, *Biogeosciences* 10, 2169-2191, doi:10.5194/bg-10-2169-2013. (27).

- Wanninkhof, R., G.H. Park, T. Takahashi, C. Sweeney, R. Feely, Y. Nojiri, N. Gruber, S. C. Doney, <u>G.A. McKinley</u>, A. Lenton, C. Le Quéré, C. Heinze, J. Schwinger, H. Graven and S. Khatiwala (2013) Global ocean carbon uptake: magnitude, variability and trends, *Biogeosciences* 10, 1983-2000, doi:10.5194/bg-10-1983-2013. (26).
- Mouw, C.B.<sup>+</sup>, H. Chen\*, <u>G.A. McKinley</u>, S. Effler, D. O'Donnell, M.G. Perkins and C. Strait (2013) Evaluation and optimization of bio-optical inversion algorithms for remote sensing of Lake Superior's optical properties, *J. Geophys. Res.-Oceans* 118, doi:10.1002/jgrc.20139. (25)
- Schuster, U., <u>G.A. McKinley</u>, N. Bates, F. Chevallier, S.C. Doney, A.R. Fay\*, M. González-Dávila, N. Gruber, S. Jones, J. Krijnen, P. Landschützer, N. Lefèvre, M. Manizza, J. Mathis, N. Metzl, N., A. Olsen, A.F. Rios, C. Rödenbeck, J. M. Santana-Casiano, T. Takahashi, R. Wanninkhof, and A.J. Watson (2013) Atlantic and Arctic sea-air CO2 fluxes, 1990–2009. *Biogeosciences* 10, 607-627, doi:10.5194/bg-10-607-2013. (24)
- Bennington, V.\*+, <u>G.A. McKinley</u>, N. Urban, and C. McDonald (2012) Can spatial heterogeneity explain the perceived imbalance in Lake Superior's carbon budget? a model study, *J. Geophys. Res. Biogeosci.* **117**, G03020 doi:10.1029/2011JG00189. (23)
- McDonald, C.P., V. Bennington\*\*, N. Urban and <u>G.A. McKinley</u> (2012) Test-bed calibration of a Lake Superior biogeochemical model, *Ecol. Model.* **225**, 115–126, doi: 10.1016/j.ecolmodel.2011.11.021. (22)
- Vasys, V.N.\*\*, A.R. Desai, <u>G.A. McKinley</u>, 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. (21)
- 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. (20)
- Atilla, N.+, 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), 775–78, doi:10.4319/lo.2011.56.3.0775. (19)
- Bennington, V.\*+, <u>G. A. McKinley</u>, 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. (18)
- 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. (17)
- Illari L., J. Marshall, P. Bannon, J. Botella, R. Clark, T. Haine, A. Kumar, S. Lee, K. J. Mackin, <u>G.A. McKinley</u>, 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. (16)
- Desai, A., J. Austin, V. Bennington\* and <u>G.A. McKinley</u> (2009) Stronger winds over a large lake in response to a weakening air to lake temperature gradient. *Nature Geoscience*, doi:10.1038/ngeo693. (15)
- 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. (14)
- Bennington,V.\*, <u>G. A. McKinley</u>, 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. (13)
- Koch, J.\*\*, <u>G. A. McKinley</u>, 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. (12)

- Cassar, N., <u>G.A. McKinley</u>, 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. (11)
- 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 <u>G. A. McKinley</u> (2008), Contribution of ocean, fossil fuel, land biosphere, biomass burning carbon fluxes to seasonal and interannual variability in atmospheric CO<sub>2</sub>, *J. Geophys. Res.*, 113, G01010, doi:10.1029/2007JG000408. (10)
- Sweeney, C., E. Gloor, A.R. Jacobson, R.M. Key, <u>G.A. McKinley</u>, 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. (9)
- 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. (8)
- 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. (7)
- Peylin, P., P. Bousquet, C. LeQuere, S. Sitch, P. Friedlingstein, <u>G.A. McKinley</u>, 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. (6)
- 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. (5)
- 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, *Global Biogeochem. Cycles* 18, GB2011, doi:10.1029/2003GB002179. (4)
- 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. (3)
- Battle, M., M. Bender, M.B. Hendricks, D.T. Ho, R. Mika, <u>G.A. McKinley</u>, S. Fan, T. Blaine, and R. Keeling (2003) Measurements and models of the atm. Ar/N<sub>2</sub> ratio, *Geophys. Res. Lett.* 30(15), 1786, doi:10.1029/2003GL017411. (2)
- 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. (1)

#### **PUBLICATIONS IN REVIEW**

- Ciais, P., S. Davis, S. Saatchi, Z. Deng, B. Poulter, F. Chevallier, G. Grassi, Z. Liu, R. L. Thompson, <u>G.A. McKinley</u>, N. Gruber, J.P. Wigneron, P. Gentine, A. d'Aspremont, T. Lauvaux, C. Albergel and D. Crisp. Towards near-real-time estimates of greenhouse gas budgets, *Nature*, *in review*.
- Bennington, V.S.\*+, T. Galjanic, <u>G.A. McKinley</u>. Estimating historical air-sea CO<sub>2</sub> fluxes: Incorporating physical knowledge within a data-only approach, *JAMES*, *in review*.
- Gruber, N., D.C.E. Bakker, T. DeVries, L. Gregor, J. Hauck, P. Landschützer, <u>G.A. McKinley</u> and J.D. Muller. Recent trends and variability in the ocean carbon sink, *Nature Reviews Earth and Environment, in review*.
- Fay, A.\*, <u>G.A. McKinley</u>, N. Lovenduski, Y. Eddebbar, M. Levy, M. Long, H. Olivarez and R. Rustagi. Immediate and long-lasting impacts of the Mt. Pinatubo eruption on ocean oxygen and carbon inventories, *Global Biogeochem. Cycles, in review*.

#### PUBLICATIONS IN PREPARATION

G.A. McKinley and V.S. Bennington\*+. Modern flux distributions constrain the future ocean carbon sink, in prep.

Wong, S.\*, R. Seager, G.A. McKinley. Evaluation of equatorial Pacific ENSO carbon dynamics in CMIP6, in prep.

Moseley, L.\*, <u>G.A. McKinley</u>, A. Nguyen, D. Carroll, D. Menemenlis. Using a data constrained regional model to understand Labrador Sea oxygen dynamics, *in prep*.

#### SCIENTIFIC PLANNING AND REVIEW DOCUMENTS

Bingham, F., L. Juranek, M. Mazloff, <u>G.A. McKinley</u>, N. Nelson, S. Wijffels (2019) Review of US GO-SHIP (Global Oceans Ship-Based Hydrographic Investigators Program) An OCB and US CLIVAR Report. Report 2019 (OCB) and 2019-6 (US CLIVAR).112pp. doi:10.1575/1912/24897.

Benway, H., S. Alin, E. Boyer, W.-J. Cai, P. Coble, J. Cross, M. Friedrichs, M.,Goñi, P. Griffith, M. Herrmann, S. Lohrenz, J. Mathis, <u>G.A. McKinley</u>, R. Najjar, C. Pilskaln, S. Siedlecki, R. Smith (2016). A Science Plan for Carbon Cycle Research in North American Coastal Waters. Report of the Coastal CARbon Synthesis (CCARS) community workshop, August 19-21, 2014, Ocean Carbon and Biogeochemistry Program and North American Carbon Program, 84 pp., doi: 10.1575/1912/7777.

Michalak, A.M., R.B. Jackson, G. Marland, C. Sabine and The Carbon Cycle Working Group: R.F. Anderson, D. Bronk, K.J. Davis, R.S. Defries, A. S. Denning, L. Dilling, A. Jacobson, S. Lohrenz, A.D. McGuire, <u>G.A. McKinley</u>, C. Miller, B. Moore III, D.S. Ojima, B. O'Neill, J.T. Randerson, S.W. Running, B. Sohngen, P.P. Tans, P.E. Thorton, S.C. Wofsy, N. Zeng (2011) A U.S. Carbon Cycle Science Plan, a UCAR report.

Alin S.R., J. Day, <u>G.A. McKinley</u>, C. Stow, M. Baker, E. Brody, R. Bohne, T. Nalepa, T. Heatlie, A.J. Sutton, and R.A. Feely (2010) Great Lakes Region Acidification Research Plan—NOAA Ocean Acidification Steering Committee: NOAA Ocean and Great Lakes Acidification Research Plan, NOAA Special Report, 143 pp.

### OTHER PUBLICATIONS AND PRODUCTS

Mouw, C.B.<sup>+</sup> A. Barnett, <u>G.A. McKinley</u>, L. Gloege\* and D.J. Pilcher\* (2016) Global Ocean Particulate Organic Carbon flux merged with satellite parameters. doi:10.1594/PANGAEA.855600.

Ocean Carbon and Biogeochemistry Program (2015) Temporal and Spatial Perspectives on the Fate of Anthropogenic Carbon: A Carbon Cycle Slide Deck for Broad Audiences with explanatory notes. Contributors: S. Khatiwala, T. DeVries, J. Cook, G.A. McKinley, C. Carlson and H. Benway. doi:10.1575/1912/7670.

Bracco, A., M.C. Long, N.M. Levine, R.Q. Thomas, C. Deutsch and <u>G.A. McKinley</u> (2015) NCAR's Summer Colloquium: Capacity Building in Cross-Disciplinary Research of Earth System Carbon–Climate Connections. *Bull. Amer. Meteor. Soc.*, **96**, 1381–1384. doi:10.1175/BAMS-D-13-00246.1.

Fay, A.R.\* and <u>G.A. McKinley</u> (2014) Global Ocean Biomes: Mean and time-varying maps. doi:10.1594/PANGAEA.828650.

Thomas, R.Q., <u>G.A. McKinley</u>, and M.C. Long (2013) Examining uncertainties in representations of the carbon cycle in Earth System Models. *EOS* 94:460.

Mooney, M.E., S. Ackerman, S., <u>G.A. McKinley</u>, T. Whittaker and T. Jasmin (2012) Lesson plans and classroom activities from the Climate Literacy Ambassadors community. *The Earth Scientist* 28, 30-32.

McKinley, G.A., N. Urban, V. Bennington\*+, D. Pilcher\* and C. McDonald (2011) Preliminary carbon budgets for the Laurentian Great Lakes, OCB News, Spring/Summer 2011.

McKinley, G. A. (2008), Fixing Climate: What Past Climate Changes Reveal About the Current Threat—And How to Counter It (*Book review*), Eos Trans. AGU, 89(43), 422–422, doi:10.1029/2008EO430009.

PROFESSIONAL SERVICE		
2022 to present	Ocean Studies Board, National Academy of Sciences	
	Member	
2022 to present	US National Committee for UN Decade of Ocean Sciences for Sustainable Development	
_	Member	
2022 to present	Climate and Global Dynamics Advisory Panel, National Center for Atmospheric Research	
•	Member	
2021 to present	PICES/ICES, Working Group 46, Ocean Negative Carbon Emissions	
-	Member	
2020 to present	Ocean Carbon and Biogeochemistry program, Working Group on Ocean Carbon Gaps	
1	Chair	
2020 to present	The Oceanography Society	
1	Chemical Oceanography Councilor, 2020-2022	
2019 to present	Annual Reviews of Earth and Planetary Science, Editorial Board	
1	Editorial Board, 2020-2024; Guest, 2019	
2019 to present	Defense Science Study Group Alumni Outreach Committee	
	Committee of 10 recent DSSG alumni; tasked by IDA to advise on alumni engagement	
March 2022	AGU/ASLO/TOS Ocean Sciences 2022, virtual	
111011 011 0000	Co-convener and chair: "Quantifying the Ocean Carbon Sink"	
December 2021	North Atlantic Biogeochemical Carbon Pump, virtual	
December 2021	Invited participant and plenary speaker	
April 2020	ECCO Review Panel, NASA, Washington DC	
7 Ipin 2020	Invited panel member	
February 2020	AGU/ASLO/TOS Ocean Sciences 2020, San Diego CA	
1 columny 2020	Co-convener and chair: "The Evolving Ocean Carbon Sink: Processes and Impacts"	
October 2019	Expert Workshop on Integrated Ocean Carbon Research (IOCR), Paris, France	
October 2019	Invited participant and speaker	
October 2019	CMIP6 Hackathon, Boulder CO / Palisades NY / Seattle WA / ETH Zurich	
October 2019	Co-organizer of OCB and CLIVAR sponsored hackathon	
Santambar 2010	Vetlesen Prize Selection Committee	
September 2019	Awarded bi-annually for distinction in earth science research	
2018 to 2019	GO SHIP Program Review Committee	
2010 to 2019	Committee of 6; tasked by OCB and US CLIVAR to review the repeat hydrography program	
2017 to 2019	AGU Chapman Conference, La Jolla CA	
2017 to 2019	Program committee for conference: "Understanding carbon climate feedbacks", August 2019	
December 2018	American Geophysical Union Fall Meeting, Washington DC	
December 2018	1 1	
D	Co-convener and chair: "Understanding changing ocean biogeochemistry"	
December 2018	Ocean carbon uptake in CMIP6 models, Washington DC	
2014 - 2019	Co-organizer of OCB-sponsored workshop	
2014 to 2018	Global Carbon Project Scientific Steering Committee (GCP-SSC)  The GCP coordinates interrestional carbon style activities and de Enture Forth	
I 2010	The GCP coordinates international carbon cycle activities under Future Earth.	
June 2018	The effects of climate change on the world's oceans, Washington DC	
E 1 2010	Co-convener and chair: "Carbon uptake, ocean acidification, and ecosystem and human impacts"	
February 2018	AGU/ASLO/TOS Ocean Sciences 2018, Portland OR	
2016 2010	Co-convener and chair: "The ocean carbon cycle across timescales"	
2016 to 2018	MPOWIR mentor	
	Co-lead of monthly mentoring teleconferences with 10 junior women in physical oceanography	
2014 to 2017	Ocean Model Intercomparison Project Scientific Steering Committee (OMIP6-SSC)	
	This is the 6 <sup>th</sup> round of ocean model intercomparison under the CMIP6 umbrella.	
2015 to 2017	NASA Ocean Biology and Biogeochemistry Pre-Decadal Survey / Advanced Plan Review Team	
	Reviewed community-proposed input to the NASA Decadal Survey for the OBB program	
2016 to 2017	Great Lakes Advisory Board Science and Information Subcommittee	
	Appointed by the EPA administrator to advise the Great Lakes Interagency Task Force	
2015 to 2017	CONCORDE Scientific Advisory Panel	
	CONCORDE was a GoMRI-funded group pursuing science needs identified with Deepwater Horizon.	

	GALEN A. WCKINLE I
January 2017	Panelist, NOAA Climate Program Office, Ocean Observing & Monitoring, Washington DC
2011 to 2016	Review panelist for OOM program  Carbon Cycle Science Scientific Steering Group (CCSSG)
2011 10 2010	CCSSG discusses science with the US Carbon Cycle Interagency Working Group (CCIWG)
2008 to 2016	North American Carbon Program / Ocean Carbon and Biogeochemistry Coastal CARbon Synthesis, Leader: Great Lakes Working Group; Co-author of final CCARS Science Plan
February 2016	<b>AGU/ASLO/TOS Ocean Sciences 2016,</b> New Orleans, LA Co-convener: "How do the carbon pumps pump? Mechanisms of the solubility and biological pumps'
2012 to 2015	US CLIVAR - OCB Working Group
2011 to 2014	Oceanic carbon uptake in the CMIP5 models, Core Member  Global Biogeochemical Cycles
NT 1 2014	Associate Editor
November 2014	External evaluator, Helmholtz Center Geesthacht, Germany
April 2014	Evaluation of candidates for director  Planning Warkshop, Int'l Pessagah on the Coupled N. Atlantia Arctic System, Weshington DC
April 2014	Planning Workshop: Int'l Research on the Coupled N. Atlantic-Arctic System, Washington DC
February 2014	Invited participant  AGU/ASLO/TOS Ocean Sciences 2014, Honolulu, HI
reditiary 2014	Co-convener and session chair: "Mechanisms of biogeochemical variability in the global oceans"
2012 to 2013	<b>Defense Science Study Group</b> (DSSG), Institute for Defense Analysis (IDA)
2012 to 2013	Selected from 150+ nominees to join a group of 15 for study of STEM needs in national security.
2012 to 2013	NCAR ASP Colloquium, Summer 2013
2012 00 2015	Co-organizer and lecturer for workshop on "Carbon Climate Connections in the Earth System"
2012 to 2013	External Review Committee for US CLIVAR AMOC program
	Attendance and interviews at annual meeting, survey of AMOC PI community, report preparation
2010 to 2013	REgional Carbon Cycle Assessment and Processes (RECCAP)
	Co-lead: Arctic and Atlantic; co-author: Global Carbon Storage and Global Air-Sea Flux
2008 to 2011	Carbon Cycle Science Working Group (CCS-WG)
	The CCS-WG wrote the New US Carbon Cycle Science Plan (2012)
October 2011	Patullo Conference, MPOWIR, Warrenton, VA
D 1 2010	Senior participant; Meeting goal is to promote retention of women in physical oceanography
December 2010	NACP/OCB Coastal Carbon Synthesis Workshop, San Francisco, CA
Manala 2010	Co-organizer and speaker
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
reditially 2010	Co-convener and session chair: "Carbon Cycling in the Coastal Oceans"
May 2009	International Association of Great Lakes Research Annual Meeting, Toldeo, OH
Way 2007	Co-convener 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
December 2008	American Geophysical Union Fall Meeting, San Francisco, CA
	Co-convener and session chair: "Ocean Carbon Cycle: Decadal Trends"
July 2007	Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, MA
	Co-organizer and session chair for "Changing ocean biogeochemistry: The prediction challenge"
April 2005	External Review Committee for JISAO at NOAA-University of Washington, Seattle, WA
September 2005	North American Coastal Margins: The Coastal CO <sub>2</sub> Workshop, Boulder, CO
June 2004	NOAA GCC Workshop: Understanding North Pacific Carbon-cycle Changes, Seattle WA
June 2004	UCAR/NCAR Junior Faculty Forum on Future Scientific Directions, Boulder, CO
December 2003	American Geophysical Union Fall Meeting, San Francisco, CA
	Co-convener and session chair for Union session: "Health, Air Pollution and Climate"

#### 2002 to present Reviewer

# **Reviewer for Papers and Proposals**

Papers and books: AGU Books, BAMS, BG/BGD, Cambridge U. Press, DSR, Ecology Lett, ESD/ESDD, EST, EI, EOS, Frontiers, GBC, GMD/GMDD, GRL, Inland Waters, JAMES, JES, JGR, L&O, Nature, Nature Climate Change, Nature Geoscience, Ocean Dynamics, OS/OSD, PNAS, Prog. Oceanog., Princeton U. Press, Science, Springer, Tellus B, U. Chicago Press Assessment Reports: National Academy of Science review of SOCCR2 (2018), IPCC SROCC (2018) Proposals: NASA (Carbon Cycle, MAP, OBB), NOAA, NSF (CO, DEB, OTIC, PO), ArcticNet, Leaders Opportunity Fund (Quebec), Ocean Frontier Institute (CA), NERC (UK), NSERC (Canada), SeaGrant (WI, HI, OH), SCOR (International), Marsten Fund (NZ), U. Michigan Water Center Proposal Panels: NASA (2004, 2011, 2013, 2021); NSF (2008, 2017); NOAA (2021)

# AWARDS AND HONORS

2020	Ocean Sciences Voyager Award, American Geophysical Union
2019	ATOC Distinguished Lecturer, University of Colorado Boulder
2016	Kavli Fellow / National Academy of Sciences
2012 to 2013	Defense Science Study Group
2011	Class of 1955 Distinguished Teaching Award, University of Wisconsin - Madison
2008 to 2011	NASA New Investigator
2010	Faculty teaching award from UW-Madison AOS Graduate Student Association
2003 to 2004	Anna Julia Cooper Postdoctoral Fellow, from University of Wisconsin – Madison
2000 to 2001	Martin Fellow for Sustainability, MIT
1999 to 2002	NASA Earth System Science Fellowship
1999	Teaching Assistant Prize, MIT Department of Earth, Atmospheric and Planetary Sciences

### PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Science (2020-present)

American Geophysical Union (1998-present)

American Society of Limnology and Oceanography (2011-present)

Earth Science Women's Network (2003-present)

The Oceanography Society (2008-present)

# SERVICE at COLUMBIA UNIVERSITY

2018 to present	<b>Diversity Committee</b> , Earth and Environmental Sciences, Chair 2019-present
2020 to present	STEM DEI Committee, Arts and Sciences
2022	Carbon Cycle & Decarbonization Implementation Team, LDEO
2020	Diversity, Equity and Inclusion Task Force, Lamont-Doherty Earth Observatory
2020	Vision Committee, Lamont-Doherty Earth Observatory
2018 to 2020	Graduate Admissions Committee, Earth and Environmental Sciences
2017	RISE Competition, reviewer

# **SERVICE at UNIVERSITY OF WISCONSIN - MADISON**

SERVICE ME CITY ERROLL OF WISCOTION WINDLESON		
2015 to 2017	Physical Sciences Divisional Committee, Campus-level faculty tenure review committee	
2013 to 2017	Curriculum Committee chair, AOS	
2011 to 2017	2017 Women Faculty Mentoring Program Advisory Committee	
2004 to 2017	Curriculum, Strategic Planning, Budget, Faculty Recruitment, Computing,	
	Qualifying Exam, Award, Graduate Recruitment Committees, AOS	
2015 to 2016	Ad-hoc Committee on Post-Tenure Review, Campus-level faculty committee	
2013 to 2016	Curriculum Committee, College of Letters & Science	
2010 to 2015	Co-chair for Undergraduate Education. AOS	
2013 to 2015	Major in Environmental Science, L&S Faculty Advisor, and Executive Committee	
2013 to 2014	Center for Climatic Research Science Council	
2013 to 2014	Ad-hoc Committee on Fossil Fuel Use and Climate Change, Campus-level committee	
2011 to 2012	Nelson Institute Director Search and Screen Committee	

# PROFESSIONAL DEVELOPMENT

November 2004	UW System Women & Science, Workshop for STEM Faculty, Wisconsin Dells, WI
March 2003	<b>Dissertations Initiative for the Advancement of Climate Change Research, Guanica, PR</b>
May 2002	Carbon Cycle Data Assimilation Institute, Boulder, CO
June 2001	American Meteorological Society Summer Policy Colloquium, Washington, DC
January 1999	JGOFS Training Course on Biogeochemical Modeling of the Ocean, Bangalore, India

# SELECTED PRESENTATIONS

SELECTED PR	RESENTATIONS
September 2022	Marine Carbon Dioxide Removal: Essential Science for MRV Workshop, Kingston, RI Invited Plenary, "Understanding the ocean carbon sink models, data and machine learning"
September 2022	ICOS Science Conference 2022, Utrect, Netherlands / Hybrid
	Oral (virtual), "Physical knowledge to improve and extend machine learning pCO <sub>2</sub> reconstructions"
June 2022	Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
1.6 2022	Plenary "The variable air-sea CO <sub>2</sub> flux: Insights from models, observations, and machine learning"
May 2022	Gordon Research Conference: Ocean Biogeochemistry 2022, Barcelona, Spain
March 2022	Invited plenary speaker "Constraining models of the future ocean carbon sink with machine learning" AGU/ASLO/TOS Ocean Sciences 2022, virtual
Maich 2022	Oral, "Constraining the future ocean carbon sink"
February 2022	BGC-Argo Group Meeting, virtual
1 0010001	Invited speaker, "LEAP STC and connections to float based biogeochemistry"
December 2021	North Atlantic Biogeochemical Carbon Pump, virtual
	Invited plenary speaker, "Models to understand the North Atlantic carbon sink"
October 2021	University of California-Irvine, Irvine CA
	Invited seminar, "Models, data and theory to understand the ocean carbon sink"
April 2021	NOAA Global Monitoring Laboratory, Boulder CO
A	Invited seminar, "Decadal variability in the ocean carbon sink"
April 2021	European Geophysical Union, Fall Meeting Oral, "Quantifying the ocean carbon sink for 1994-2007: Combined evidence from multiple methods"
February 2021	Earth and Environmental Engineering, Columbia University
reducing 2021	Invited seminar, "Decadal variability in the ocean carbon sink"
December 2020	Machine Learning in Science & Engineering, Columbia Data Science Institute
	Invited, "Quantifying the ocean carbon sink with sparse data, physical models and machine learning"
December 2020	American Geophysical Union, Fall Meeting
	Oral, "Quantifying the ocean carbon sink for 1994-2007: Combined evidence from multiple methods"
April 2020	Woods Hole Oceanographic Institution, Woods Hole MA
	Invited seminar, "Understanding change in ocean carbon sink"
April 2020	Geochemistry Seminar, Lamont Doherty Earth Observatory, Palisades NY
E-1 2020	Seminar, "Mechanisms of decadal variability in the ocean carbon sink"
February 2020	AGU/ASLO/TOS Ocean Sciences 2020, San Diego CA Oral, "Forced mechanisms of decadal variability in the ocean carbon sink"
October 2019	Atmospheric and Oceanic Sciences, University of Colorado, Boulder CO
October 2017	Distinguished Lecture, "Understanding recent decadal variability of the global ocean carbon sink"
August 2019	Observing Carbon Climate Feedbacks, Chapman Conference, La Jolla CA
D	Invited Plenary Speaker, "Forced change in the ocean carbon sink"
July 2019	Chemical Oceanography, Gordon Conference, Holderness NH
	Invited Plenary Speaker, "Forced change in the ocean carbon sink"
May 2019	Princeton University, Princeton NJ
	Invited seminar, "Forced change in the ocean carbon sink"
April 2019	University of Connecticut, Avery Point CT
D	Invited seminar, "Forced change in the ocean carbon sink"
December 2018	Ocean carbon uptake in CMIP6 models workshop, Washington DC Oral, "Forced changes and internal variability in the ocean carbon sink"
June 2018	The Effects of Climate Change on the World's Oceans, 4th Int'l Symposium, Washington DC
June 2010	Oral, "Variability and trends in ocean carbon uptake: 1981-2016"
April 2018	Massachusetts Institute of Technology, Earth Atmospheric and Planetary Sciences, Cambridge MA
1	Invited seminar, "Diagnosing change in the ocean carbon sink"
April 2018	University of Pennsylvania, Philadelphia, PA
	Invited seminar, "Diagnosing change in the ocean carbon sink"
February 2018	AGU/ASLO/TOS Ocean Sciences 2018, Portland OR
T 2010	Poster, "Correlations of surface ocean pCO <sub>2</sub> to satellite chlorophyll, monthly to interannual"
January 2018	NASA GISS, New York, NY
	Invited seminar, "Variability in the ocean carbon sink"

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November 2017	
October 2017	Invited seminar, "Variability in the ocean carbon sink: Drivers and challenges to detection"  Distinguished Scientist Seminar, Marine Biological Laboratory, Woods Hole MA  Invited seminar, "Understanding the ocean's role in the global carbon cycle"
September 2017	· · · · · · · · · · · · · · · · · · ·
August 2017	International Carbon Dioxide Conference 10, Interlaken, Switzerland Plenary, "Detecting and understanding the changing ocean carbon sink with data and models"
April 2017	Nelson Institute Earth Day Conference, University of Wisconsin, Madison WI Moderator and Speaker, "What now? Preparing for Environmental Change"
January 2017	Cooperative Inst. Limnology & Ecosystems Research, U. Michigan, Ann Arbor MI
December 2016	Invited seminar, "Spatial variability and potential long-term trends in Great Lakes carbon"  American Geophysical Union, Fall Meeting, San Francisco CA
November 2016	Oral, "Seasonal cycles and long-term growth in Southern Ocean carbon uptake"  Climate People and the Environment Program, University of Wisconsin, Madison WI  Seminar, "Mechanistic connections between carbon and chlorophyll in the global ocean"
October 2016	Kavli Frontiers of Science Symposium, Irvine CA
July 2016	Invited poster "Natural Variability and Anthropogenic Trends in the Ocean Carbon Sink"  Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
June 2016	Invited plenary, "Detecting trends in the ocean carbon sink"  Scripps Institution of Oceanography, La Jolla CA
	Seminar, "Detection of trends in the ocean carbon sink"
June 2016	Lamont-Doherty Earth Observatory of Columbia University, Palisades NY
April 2016	Invited colloquium, "Detection of trends in the ocean carbon sink"  University of Wisconsin – Climate Change Symposium, Madison WI
1	Invited plenary, "Ocean mitigation of climate change: past, present and future"
March 2016	Sarmiento Symposium, Princeton NJ Invited speaker and panelist, "The breath of life — a changing carbon cycle"
February 2016	AGU/ASLO/TOS Ocean Sciences 2016, New Orleans LA Oral, "Detectability of change in the ocean carbon sink"
February 2016	Climate People and the Environment Program, University of Wisconsin, Madison WI
January 2016	Invited seminar, "Variability and trends in ocean carbon uptake from models and data"  NOAA –Pacific Marine Environmental Laboratory, Seattle WA
•	Invited seminar, "Variability and trends in ocean biogeochemistry from models and data"
September 2015	University of Southern Mississippi, Hattiesburg, MS Invited seminar, "The ocean carbon sink: Separating trends from variability"
June 2015	Global Carbon Project Scientific Steering Committee Meeting, Oslo, Norway
June 2015	Invited plenary, "Ocean carbon research and integration in the global carbon cycle"  JASON summer study, La Jolla, CA
	Invited brief, "Changing ocean carbon: Observations and models"
May 2015	University of Wisconsin Water Symposium, Madison WI Invited plenary, "Circulation and carbon: Oceans and Great Lakes"
March 2015	Pre-decadal survey workshop on Carbon and Climate, Norman OK
December 2014	Invited plenary, "Uncertainties and unknowns in the ocean carbon sink (+coastal and inland)" <b>American Geophysical Union, Fall Meeting</b> , San Francisco CA
Danamban 2014	Oral, "Carbon cycle variability associated with AMO, NAO and AMOC"
December 2014	US CLIVAR / OCB Joint Workshop on ocean heat and carbon uptake, San Francisco CA Invited plenary, "Quantifying carbon uptake and its trends"
November 2014	
November 2014	
August 2014	Invited plenary, "The ocean carbon sink: Present knowledge and critical gaps"  Coastal Carbon Synthesis Community Workshop, Woods Hole MA
I 2014	Invited plenary, "Great Lakes carbon budgets"
June 2014	Oak Ridge National Lab, Oak Ridge TN Talk, "Carbon and biogeochemistry in the oceans and Great Lakes"

	GALENA, MCKINDET
April 2014	Center for Climatic Research and Climate People and Environment Program, Madison WI
March 2014	Seminar, "Climate change and national security: Implications and preparedness"  Institute for Defense Analysis, Alexandria VA
	Invited seminar, "What I learned and some recommendations"
March 2014	Lamont-Doherty Earth Observatory of Columbia University, Palisades NY
	Invited seminar, "Natural variability and anthropogenic trends in the ocean carbon sink"
E 1 2014	http://tinyurl.com/mrj3bo8
February 2014	AGU/ASLO/TOS Ocean Sciences 2014, Honolulu HI
A	Oral, "CO <sub>2</sub> -acidification of the Laurentian Great Lakes"
August 2013	NCAR ASP Key Uncertainties in the Global Carbon Cycle, Boulder CO
August 2012	Invited plenary, "Using data to elucidate feedback mechanisms in the ocean carbon cycle"
August 2013	NCAR ASP Graduate Student Colloquium, Boulder CO Invited lecture, "Mechanisms of ocean carbon climate feedback: What do the data support?"
July 2013	NCAR ASP Graduate Student Colloquium, Boulder, CO
July 2013	Invited lecture, "Ocean carbon biogeochemistry: Productivity, export, remineralization"
June 2013	9 <sup>th</sup> International Carbon Dioxide Conference, Beijing, China
June 2015	Oral, "Regional distribution and seasonal mechanisms of carbon uptake in the global oceans"
March 2013	Biogeochemistry of the Great Lakes System, Wayne State University, Detroit MI
Water 2015	Invited plenary, "Spatio-temporal variability and long-term trends in Great Lakes carbon cycling"
January 2013	University of Wisconsin - Madison, Atmospheric and Oceanic Sciences, Madison WI
bulldary 2013	Seminar, "The ocean carbon sink: How strong? How vulnerable?"
January 2013	Ohio State University, Climate Change Webinar
2012	Invited, "Climate, carbon impacts on productivity, chemistry & invasive species in the Great Lakes."
July 2012	Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
•	Invited Plenary, "RECCAP: Results from a global synthesis on ocean carbon uptake"
April 2012	NASA Ocean Color Research Team Meeting, Seattle WA
-	Plenary, "Trends in ocean carbon uptake"
February 2012	AGU/ASLO/TOS Ocean Sciences 2012, Salt Lake City UT
	Oral, "Physical drivers of biogeochemical and carbon cycling in Lake Superior"
January 2012	Lake Superior Research Symposium, University of Minnesota, St. Paul MN
	Invited talk, "Modeling circulation, carbon and climate for Superior"
November 2011	Department of Chemistry and Biochemistry, University of Montana, Boseman MT
N. 1 2011	Invited seminar, "Trends in ocean carbon uptake"
November 2011	School for Freshwater Science, University of Wisconsin - Milwaukee, Milwaukee WI
Ct1 2011	Invited seminar, "Circulation, carbon cycling and invasive species in Lake Superior"  The Ocean Carbon Cycle at A. Time Of Change Synthesis And Vylney bilities. Page France.
September 2011	The Ocean Carbon Cycle at A Time Of Change: Synthesis And Vulnerabilities, Paris, France
August 2011	Invited plenary, "Attribution: What drives CO <sub>2</sub> sink trends?" (given by A. Fay due to injury) <b>Gordon Research Conference</b> , Andover NH
August 2011	Poster, "Convergence of atmospheric and North Atlantic CO <sub>2</sub> trends on multidecadal timescales"
July 2011	Woods Hole Oceanographic Institution, Woods Hole MA
July 2011	Seminar, "Biogeochemistry, carbon cycling and invasive species in Lake Superior"
July 2011	Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
ouly 2011	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
J	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, University of 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"

	GALEN A, MCKINLET
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
	Seminar, "Understanding recent variability in the North Atlantic carbon sink"
May 2010	Aquatic Ecosystem Health and Management: Ecology of Lake Superior, Duluth MN
<i>y</i>	Oral, "Carbon cycle variability in Lake Superior and impacts on the regional carbon budget"
May 2010	Subpolar North Atlantic Workshop, Durham NC
111aj 2010	Invited talk, "North Atlantic carbon uptake from biogeochemical models and data"
March 2010	Caltech Keck Institute for Space Studies (KISS), Pasadena CA
17141011 2010	Invited plenary, "Air-sea CO <sub>2</sub> fluxes: Climatology, variability and land-ocean links"
February 2010	AGU/ASLO/TOS Ocean Sciences 2010, Portland OR
1 001 001 0	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
November 2007	Invited oral, "Carbon cycling in North American coastal waters"
August 2009	Biogeochemistry and Carbon Cycle of Lake Superior, Woodruff WI
August 2009	Oral, "Biogeochemical variability in Lake Superior – A modeling perspective"
July 2009	Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
July 2009	Poster, "Understanding the carbon budget of Lake Superior"
May 2009	International Association of Great Lakes Research Annual Meeting, Toledo OH
May 2009	Oral, "The magnitudes and mechanisms determining the carbon budget of Lake Superior"
Mar. 2000	
May 2009	NASA Ocean Color Research Team Meeting, New York NY
D	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
December 2008	Oral, "The changing North Atlantic carbon sink: 1992-2006"  University of Wisconsin - Madison, Atmospheric and Oceanic Sciences, Madison WI
December 2008	
0.4.12000	Seminar, "Variability in the ocean carbon cycle: A North Atlantic perspective"
October 2008	Colorado State University, Fort Collins CO
I1 2000	Invited seminar, "Variability in the ocean carbon cycle: A North Atlantic perspective"
July 2008	Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
1 2000	Invited plenary, "Carbon sink trends in the Northern Oceans"
June 2008	Workshop on Teaching Weather and Climate Using Laboratory Experiments, Chicago IL
1.6 2000	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
	Oral, "Trends in the North Atlantic carbon sink"
April 2008	NASA Ocean Color Research Team Meeting, Adelphi MD
1.0000	Plenary, "The changing North Atlantic carbon cycle"
March 2008	Princeton University, Princeton NJ
	Seminar "Trends and variability in the carbon cycle of the North Atlantic"
March 2008	AGU/ASLO/TOS Ocean Sciences 2008, Orlando FL
	Oral, "Carbon cycle variability and trends at Bermuda and across the North Atlantic"
January 2008	American Meteorological Society Annual Meeting, New Orleans LA
	Co-author on one talk and 2 posters on undergraduate teaching with the 'Weather in a tank' project
October 2007	Stony Brook University, Stony Brook NY
	Invited public lecture, "The oceans and the climate system"
July 2007	Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
	Poster, "Carbon cycle variability in the North Atlantic: Timescales of change"
April 2007	Johns Hopkins University, Baltimore MD
	Invited seminar, "Air-sea CO <sub>2</sub> flux variability: Physical and ecological drivers"
April 2007	Surface Ocean CO <sub>2</sub> Variability and Vulnerability Workshop, UNESCO, Paris, France
	Plenary, "North Atlantic CO <sub>2</sub> flux variability: Physical and ecological drivers"
April 2007	NASA Ocean Color Research Team Meeting, Seattle WA
	Poster, "Physical and biological drivers of carbon cycle variability in the North Atlantic"

	GALEN A. MCKINLEY
April 2007	Michigan Technological University, Houghton MI
11p111 200 /	Invited seminar, "Air-sea CO <sub>2</sub> flux variability: Physical and ecological drivers"
July 2006	Ocean Carbon and Biogeochemistry Workshop, Woods Hole MA
5 daily 2000	Poster, "Modeling the seasonal cycle of pCO <sub>2</sub> in the North Atlantic"
June 2006	The Art of Climate Modeling, NCAR/ASP Summer School, Boulder CO
3 time 2000	Invited lecture, "Modeling ocean biogeochemistry"
February 2006	AGU/ASLO/TOS Ocean Sciences 2006, Honolulu HI
10014417 2000	Talk, "North Pacific carbon cycle response to climate variability on seasonal to decadal timescales"
February 2006	Old Dominion University, Norfolk VA
1 001 441 / 2000	Invited seminar, "Air-sea CO <sub>2</sub> flux variability on seasonal, interannual and decadal timescales"
November 2005	University of Maryland, College Park MD
11010111001 2003	Invited seminar, "Air-sea CO <sub>2</sub> flux variability on seasonal, interannual and decadal timescales"
November 2005	Great Lakes Environmental Research Laboratory, Ann Arbor MI
11010111001 2003	Invited seminar, "Air-sea CO <sub>2</sub> flux variability on seasonal, interannual and decadal timescales"
September 2005	· · · · · · · · · · · · · · · · · · ·
Septemoer 2003	Invited plenary, "Pacific dominance to global air-sea CO <sub>2</sub> flux variability"
August 2005	Ocean Carbon Cycle and Climate Change Workshop, Woods Hole MA
rugust 2003	Poster "North Pacific carbon cycle response to climate variability on seasonal to decadal timescales"
March 2005	The Pennsylvania State University, State College PA
With 2005	Invited seminar, "CO <sub>2</sub> air-sea flux variability: Ocean models and atmospheric inversions"
March 2005	Princeton University, Princeton NJ
With 2005	Seminar, "Argon as a tracer of physical processes in the atmosphere and ocean"
December 2004	American Geophysical Union, Fall Meeting, San Francisco CA
December 2004	Poster, "Testing ocean models with argon and nitrogen"
November 2004	
11010111001 2001	Seminar, "Local and global benefits of air pollution control in Mexico City"
October 2004	University of Wisconsin, Chaos and Complexity Seminar Series, Madison WI
30.0001 200 1	Seminar, "CO <sub>2</sub> air-sea flux variability: Ocean models and atmospheric inversions"
October 2004	SOLAS Science 2004, Halifax, Canada
300001 200 1	Poster, "Atmospheric Ar/N <sub>2</sub> : A Tool for Constraining Atmosphere and Ocean Models"
June 2004	NOAA GCC Workshop: Understanding North Pacific Carbon-cycle Changes, Seattle WA
June 2001	Invited plenary, "Modeled North Pacific carbon cycle variability"
May 2004	Geophysical Fluid Dynamics Laboratory, Princeton NJ
111aj 200 i	Seminar, "CO <sub>2</sub> air-sea flux variability: Ocean models and atmospheric inversions"
March 2004	Princeton Environmental Institute Postdoctoral Colloquium, Princeton NJ
1.10.1011 200 .	Seminar, "Local and global benefits of air pollution control in Mexico City"
December 2003	American Geophysical Union, Fall Meeting, San Francisco CA
December 2003	Oral, "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
	Seminar, "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
<b>3</b>	Invited seminar, "CO <sub>2</sub> air-sea flux variability: ocean models and atmospheric inversions"
May 2003	JGOFS Open Science Conference, Washington DC
<b>3</b>	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
1	Seminar, "Carbon sink variability from ocean models and atmospheric inversions" (in Spanish)
July 2002	Princeton University, Atmosphere and Ocean Sciences Program, Princeton NJ
•	Invited seminar, "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
	Oral, "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
·	Oral, "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)

TEACHING	
	Columbia University / Lamont Doherty Earth Observatory New York, NY / Palisades, NY Semester Courses
2022	Climate Prediction Challenges / Applied Data Science (STAT 5243/4243)
	Graduate / undergraduate project-based course applying machine learning to climate science problems.
2018, 2021	Humans and the Carbon Cycle (EESC GU4020)
	Graduate / undergraduate course on the global carbon cycle and its connections to climate.
2019, 2020	The Climate System (EESC UN2100)
2010 2021	Intensive undergraduate survey course on climate science, with weekly laboratory session.
2019, 2021	Idealized Models of Climate Processes (EESC GU6926)
	Graduate course on applying idealized models to coupled physical-chemical-climate processes.
	University of Wisconsin - Madison Madison, WI
	Semester Courses
2016	Physical-Biogeochemical Coupling in the Ocean and Lakes (ATM OCN 750)
	Mechanisms of physical-biogeochemical coupling in oceans and lakes; hands-on data and modeling
2015, 2016	The Science of Climate Change (ATM OCN 323)
2012 15 17	Quantitative treatment of climate processes for science and engineering, non-AOS, students
2013,15,17	Global Warming: Science and Impacts (ATM OCN 332) Undergraduate intermediate level course on the science and expected impacts of climate change
2007-2014	Introduction to Physical Oceanography (ATM OCN 660)
2007-2014	Graduate introduction to the physical structure and dynamics of the ocean
2004-2010	Global Climate Processes (ATM OCN 425)
2001 2010	Global energy balance, circulation of the atmosphere and ocean, climate and climate modeling
2008-2016	Laboratory in Rotating Fluid Dynamics (ATM OCN 801, 615)
	Use rotating tank and data analysis to elucidate key principles of geophysical fluid dynamics
2005,06,14	Dynamics of the Atmosphere and Ocean II (ATM OCN 311)
	Intermediate geophysical fluid dynamics for undergraduate majors
	Semester Seminars
2012, 2017	Ocean Biogeochemical Cycles (ATM OCN 965)
Spring 2008	Threats to Wildlife from Global Warming (ATM OCN 980)
Fall 2006	The Ocean Carbon Cycle (ATM OCN 925)
Spring 2005,06	Senior Capstone Seminar (ATM OCN 405)
Spring 2006	Climate Change: Science and Impacts (ATM OCN 980)
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#### ADVISING

#### Columbia University / Lamont Doherty Earth Observatory New York, NY / Palisades, NY **Graduate Students** 2022-present Julia Simpson, PhD candidate in Earth and Environmental Sciences 2020-present Suki Wong, PhD candidate in Earth and Environmental Sciences 2018-present Lauren Moseley, PhD candidate in Earth and Environmental Sciences 2017-2020 Sean Ridge, PhD 2020 Earth and Environmental Sciences (now senior data scientist at Sunairio) 2017-2020 Lucas Gloege, PhD 2020 Earth and Environmental Sciences (now postdoc at NASA GISS) **Undergraduate and Masters Student Researchers** Tomislav Galjanic (Data Science Institute Scholar, MS 2022) 2021 2021 Aditya Koduri (Data Science Institute Scholar, MS 2022, now at JP Morgan) 2020 Jake Stamell (Data Science Institute Scholar, MS 2021, Statistics, now at Instacart) 2020-2022 Rea Rustagi, undergraduate researcher (Class of 2022, Applied Math) 2019 Monica Yan (Data Science Institute Scholar, MS 2020, now at JP Morgan) 2018 Leonard Boncenne, ENSTA ParisTech, summer student intern Postdoctoral Scholars 2022-present Dr. Thea Heimdal 2020-2022 Dr. Val Bennington (UW-Madison CCR, 2012-14; Epic, 2014-20; now Makai Ocean Engineering) University of Wisconsin - Madison Madison, WI **Graduate Students** 2015-2017 Sean Ridge, MS AOS 2017 (PhD 2020 Columbia Earth and Environmental Sciences) Lucas Gloege, MS AOS 2017 (PhD 2020 Columbia Earth and Environmental Sciences) 2014-2017 Collin Tuttle, MS AOS 2018 (now US Coast Guard) 2016-2017 2010-2015 Darren Pilcher, PhD AOS 2015 (now research scientist at NOAA PMEL/JISAO) Haidi Chen, PhD AOS 2015 (postdoctoral fellow at Princeton University, 2015-2019) 2010-2015 Alexis Ritzer, MS AOS 2014 (now at Luminant Energy Services) 2011-2014 Jennifer Phillips, MS Envi. & Resources 2012 (Sr. Scientist, Governor's Planning and Research, CA) 2010-2012 2009-2012 Jesse Roberts, MS AOS 2012 2008-2010 Amanda Fay, MS AOS 2010 (now Researcher with McKinley) 2005-2010 Valerie Bennington, PhD AOS 2010 2005-2007 David Ullman, MS AOS 2008 (PhD Geoscience 2013, now Professor at Northland College, WI) **Undergraduate Student Researchers** 2015-2017 Gabriela Negrete (BS Chemistry 2017, now PhD student at Scripps with Prof. A. Barton) 2012-2015 James Kralj (BS Microbiology 2015, MS 2018 U. Washington); 2012-2015 Melissa Breeden (BS AOS 2013, PhD AOS 2018, NOAA Global Change Postdoc Fellow, 2019-2021) 2009-2010 Victoria Vasys (BS AOS 2010) 2007-2008 Jennifer Koch (BS AOS '08, EPA'08-11, MS Portland State '13, Rhodeside & Harwell '14-present) **Postdoctoral Scholars** 2010-2011 Dr. Val Bennington (UW-Madison CCR, 2012-14; Epic, 2014-20; now Makai Ocean Engineering) 2009-2010 Dr. Colleen Mouw (now Professor, University of Rhode Island: 2016 PECASE awardee)

# 2007 Dr. Nobuaki Kimura (now at Kyushu University, Japan) Visiting Students

2007-2009

2008-2009 Nsikak Benson, Fulbright Scholar (Nigeria)

Dr. Nazan Atilla (now at UW-Madison Department of Zoology)

#### **STUDENT COMMITTEES** (\* = McKinley students)

# Columbia University / Lamont Doherty Earth Observatory PhD Thesis Committees

New York, NY / Palisades, NY

#### The Thesis Committees

Ms. Annie Leal (PhD expected 2026)

Ms. Lauren Moseley\* (PhD expected 2023)

Ms. Suki Wong\* (PhD expected 2023)

# PhD Theses at Columbia University / Lamont Doherty Earth Observatory

Dr. Colleen Baublitz (PhD Earth and Environmental Sciences 2021)

Dr. Sean Ridge\* (PhD Earth and Environmental Sciences 2020)

Dr. Lucas Gloege\* (PhD Earth and Environmental Sciences 2020)

Dr. Takaya Uchida (PhD Earth and Environmental Sciences 2019)

#### PhD Theses at University of Wisconsin - Madison

Madison, WI

- Dr. Erin Thomas (PhD AOS 2017)
- Dr. Cristian Martinez (PhD AOS 2016)
- Dr. Malgorzata Golub (PhD Freshwater and Marine Science 2016)
- Dr. Jiaxu Zhang (PhD AOS 2016)
- Dr. Benjamin Kraemer (PhD Freshwater and Marine Science 2015)
- Dr. Darren Pilcher\* (PhD AOS 2015)
- Dr. Haidi Chen\* (PhD AOS 2015)
- Dr. Katherine Holman (PhD AOS 2013)
- Dr. Benjamin Sulman (PhD AOS 2012)
- Dr. Justin Bagley (PhD AOS 2011)
- Dr. Fung He (PhD AOS 2011)
- Dr. Wei Liu (PhD AOS 2011)
- Dr. Val Bennington\* (PhD AOS 2010)
- Dr. Claudia Cyganowski (PhD Astronomy 2010)
- Dr. Jerry Tjiputra (PhD AOS 2007)

## Masters Theses at University of Wisconsin - Madison

Madison, WI

- Mr. Lucas Gloege\* (MS AOS 2017)
- Mr. Sean Ridge\* (MS AOS 2017)
- Ms. Nicole Colasacco-Thumm (MS AOS 2015)
- Ms. Amanda Stone (MS Freshwater and Marine Science, 2012)
- Mr. Jesse Roberts\* (MS AOS 2012)
- Ms. Jennifer Phillips\* (MS Environment and Resources 2012)
- Ms. Alexis Santos-Ritzer\* (MS AOS 2012)
- Ms. Amanda Fay\* (MS AOS 2010)
- Dr. David Ullman\* (MS AOS 2008; PhD UW-Madison Geoscience 2013)
- Mr. William Ahue (MS AOS 2008)
- Ms. Erin Hokanson (MS AOS 2006)

# Delta Teaching & Learning Internship Advisees at University of Wisconsin - Madison

Madison, WI

Dr. Andrew Winters (PhD AOS 2015)

#### **PhD External Committees**

PhD Committee Member

Dr. Cory McDonald (PhD Michigan Technological University, 2010)

PhD External Evaluator

Dr. Precious Mongwe (PhD University of Cape Town, 2018)

Dr. Peisheng Huang (PhD University of Western Australia, 2010)

OUTREACH, INTERVIEWS and EDITORIALS		
	Lead developer for Carbon/Climate educational website, with interactive carbon budget applet English: carboncycle.ldeo.columbia.edu (Launch 12/2009, ~5,000 new sessions per month, 2021)	
	Spanish: carboncycle_spanish.ldeo.columbia.edu (Launch 2/2011, ~2,000 sessions/month, 2021) Previously hosted at carboncycle.aos.wisc.edu and carboncycle.es.wisc.edu	
April 2022	CFA (Chartered Financial Analyst) Society New York Sustainable Investing Group, NY, NY	
April 2022	Invited speaker on climate and carbon science	
April 2022	Hunter College High School, New York, NY	
	Invited speaker for Climate Day programming	
February 2021	Roundtable on internalizing climate risk, Columbia University, New York NY	
,	Invited speaker for financial services workshop from Columbia Center on Sustainable Investment	
October 2020	Carbon Dioxide   Present and Future, Columbia University, New York NY	
	Invited panelist for public event of LDEO/Earth Institute Open House	
June 2020	Radio Universidad Nacional de Mar del Plata, Mar del Plata, Argentina	
	Recorded interview, aired 27 June 2020, S. Buján (in Spanish; http://www.programa-ecos.com.ar)	
December 2019	Field trip for Fieldston Ethical Culture High School, Columbia University, New York NY	
	Hosted Climate and Weather class for rotating tank experiments	
April 2019	College Club of Northern New Jersey, Ridgewood NJ	
0 + 1 2017	Invited speaker "Carbon, climate and the oceans"	
October 2017	LDEO Open House, Columbia University, New York / Palisades NY	
Ealamany 2017	Speaker for "A year in a life of a scientist"  Field trip for Randall School 4th Grade, Madison WI	
February 2017	Hosted 56 4 <sup>th</sup> graders for rotating tank experiments and "science on a sphere" presentations	
January 2017	Perpetual Notion, WORT, Madison WI	
January 2017	On-air interview on "Stability of the Atlantic Meridional Overturning Circulation", 19 Jan 2017	
December 2016	Central Time, Wisconsin Public Radio, Madison WI	
December 2010	On-air interview on "Global warming snapshot for 2016", 22 Dec 2016	
December 2016	The Buzz, WORT, Madison WI	
	On-air interview on "NASA contributions to Earth Science", 5 Dec 2016	
November 2016	WISC TV 3 / Channel3000.com, Madison WI	
	On-air interview on "The Record Warmth of 2016" (http://tinyurl.com/hy4pqb7), 16 Nov 2016	
October 2016	Nelson Institute and University of Wisconsin News	
T	Q&A on climate change "Explaining 'terrifying' trends of climate change: Q&A" J. Peek	
February 2016	UW News, Science Daily, Insurance Journal, phys.org, Eureka Alert, Nature News & Views	
D 1 2015	Various articles associated with McKinley et al. (2016), <i>Nature doi:10.1038/nature16958</i>	
December 2015	The Daily Climate, Charlottesville VA	
November 2015	"Acid trip: Great Lakes could face similar acidification risks as the seas" B. Bienkowski	
November 2013	Yale Environment 360, New Haven CT "On thin ice: Big northern lakes are being rapidly transformed" C. Katz	
October 2015	Wisconsin Science Festival, Madison WI	
October 2013	Invited plenary talk "Keeping the Great Lakes Great"	
July 2015	Wisconsin Public Radio, Madison WI	
outy <b>2</b> 010	Guest on "Joy Cardine Show", 9 July 2015	
June 2015	Capital Times, Madison WI	
	Op-ed, "Scott Walker, Legislature should stop swinging hammers at education"	
December 2014	BioHouse, UW-Madison, Madison WI	
	Evening seminar speaker on the ocean and climate change	
October 2014	Wisconsin Science Festival, Madison WI	
	Invited plenary talk "Ocean Acidification: The other CO <sub>2</sub> problem"	
September 2014	National Geographic News, Washington DC	
June 2014	"New reports offer clearest picture yet of rising greenhouse gas emissions" B.C. Howard	
	Radio Ciudad, Buenos Aires, Argentina	
D 1 2012	Radio interview on the new US EPA carbon rules (in Spanish)	
December 2013	Climate Change: What it means for Wisconsin's economy and natural resources, Madison WI Invited Panelist for Forum hosted by Wisconsin Legislature (Representatives Clark and Mursau) and Wisconsin Academy of Sciences, Arts and Letters (http://tinyurl.com/mhzlxem)	
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	GALEN A. MCKINLE I
November 2013	Adhoc Committee on Climate Change and Fossil Fuel Use, UW-Madison, Madison WI
0 1 2012	Panelist, Town Hall
October 2013	Wisconsin Energy Institute, UW-Madison, Madison WI
4 1 0 . 2012	Panelist, IPCC Report and EPA Rules
April, Oct 2013	Bradley Learning Center, UW-Madison, Madison WI
A	Dinner speaker on climate change science and impacts
April 2013	Wisconsin Gazette, Shorewood WI "Extraore Wisconsin Warmen watter weinder weether sheed" I. Noff
Contombou 2012	"Extreme Wisconsin: Warmer, wetter, weirder weather ahead" L. Neff
September 2012	Women in Science and Engineering, UW-Madison, Madison WI Dinner speaker for living group supporting freshman women planning on STEM majors
April 2012	Aldo Leopold Nature Center, Monona WI
April 2012	Presenter on Antarctic response to climate change; Climate Education Center Grand Opening
November 2011	Wisconsin State Journal, Madison WI
November 2011	"Curiosities: Why does warm Coke go flat so much faster than cold Coke?" J. Sakai
September 2011	WORT, Perpetual Notion Machine, Madison WI
F	Interview on air September 1, 2011 (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, 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
January 2011	Climate Ambassadors Workshop, University of Wisconsin - Madison, Madison WI
<b>5</b> 1 2010	Lecturer, "Climate and Climate Change: Science Basics"
December 2010	NASA Television, http://www.youtube.com/watch?v=hXg4ugCajkE
4 2010	"NASA Science on the Road: Oceans, Carbon, and Climate" S. Cole
August 2010	Chicago Tribune, Chicago IL "Sink on assure 2 Firming Court Labor" relating limeter about 2" and "Could said! firsting threaten
	"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
Julie 2010	Lecturer, "Climate and Climate Change: Science Basics"
April 2010	Whiteside Forum, Morrison IL
11pm 2010	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
0 1 2007	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 in The Open Selta" I Seleci Also appeared in Seignes Deily
October 2007	"Why is The Ocean Salty", J. Sakai. Also appeared in Science Daily
JC10001 200/	Second Annual Wisconsin Climate Change Forum, Madison, WI Invited panelist
July 2007	CIMSS, University of Wisconsin - Madison, Madison WI
Jaij 2001	Invited lecturer, Remote Sensing Applications in the Geosciences Teacher's Workshop
	The second of th

June 2007 Capital Times, Madison WI "Local scientist calls global warming theory 'hooey", 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 First Annual Wisconsin Climate Change Forum, Madison WI October 2006 Invited panelist September 2006 Women In Science and Engineering, UW-Madison, Madison WI Dinner speaker for living group supporting freshman women planning on STEM majors 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