CURRICULUM VITAE
NANCY L. WILLIAMS

Updated July 2018
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EDUCATION

Ph.D. in Ocean Ecology and Biogeochemistry, 2018, Oregon State University, Corvallis, OR, 3.9 GPA. Thesis: New Insights on the Southern Ocean Carbon Cycle from Biogeochemical Argo Floats. Advisor: Laurie Juranek

M.S. in Oceanography, 2014, University of Washington School of Oceanography, Seattle, WA, 3.7 GPA. Thesis: Quantifying Anthropogenic Carbon Inventory Changes in the Pacific Sector of the Southern Ocean. Advisors: Richard Feely, Christopher Sabine

B.S. in Chemistry and Marine Science, Double Major, 2008, University of Miami, Coral Gables, FL, 3.7 GPA. Graduated with University of Miami General Honors and Departmental Honors in Marine Science

RELEVANT WORK AND RESEARCH EXPERIENCE

May 2018 – present	National Research Council Postdoctoral Fellow, National Oceanic and Atmospheric Administration Pacific Marine Environmental Laboratory Marine Carbon Group.
Mar. 2015 – May 2018	Graduate Research Assistant, Oregon State University College of Earth, Ocean, and Atmospheric Sciences. Duties: Work on aforementioned thesis project. Collect and analyze seawater samples for carbonate system measurements on Arctic Research Cruise (~30 days at sea).
Sept. 2014	Wendy Schmidt Ocean Health XPRIZE validation team member. Duties: with experimental design, pH sample analysis, and preliminary data processing for phase II lab trials at Monterey Bay Aquarium Research Institute
Sept. 2011 – Mar. 2015	Graduate Research Assistant, University of Washington Oceanography. Duties: Work on aforementioned thesis project. Collect and analyze seawater samples for carbonate system measurements (dissolved inorganic carbon, pH, total alkalinity) on various research cruises (~22 days at sea). TA for undergraduate courses.
Apr. 2009 – Aug. 2011	Research Scientist/Engineer Assistant Joint Institute for the Study of the Atmosphere and Ocean, University of Washington and NOAA/PMEL. Duties: Collect and analyze seawater samples for total alkalinity, dissolved inorganic carbon and pH, participate in PacOOS coastal cruises (~45 days), participate in Puget Sound PRISM cruises (10 days), participate in CLIVAR cruises P06 2009 (41 days) and S04P 2011(64 days), use MATLAB to do preliminary data analysis, use CO2SYS to calculate other CO_2 parameters, assist with maintenance and installation of Moored Autonomous PCO_2 systems and underway pCO_2 systems, monitor status of ~$3.6M in funding, assist with spending plans, distribute budget numbers accordingly
Jan. 2009 – Mar. 2009	Shipboard CFC Analyst for Dr. Mark Warner aboard R/V Southern Surveyor on CLIVAR P15S Pacific Cruise (52 days), University of Washington Oceanography. Duties: Sample and analyze seawater CFC concentrations using automated shipboard gas chromatography system, preliminary analysis and organization of data, perform calibrations with reference gas standards

Oct.2008 – Jan. 2009	Chemical Data Entry at Phillip Services Corporation. Duties: Organize and enter data for chemical wastewater treatment facility and determine necessary treatment.
Mar. 2006 – May 2008	Lab Assistant and Field Technician for Dr. Frank Millero, Rosenstiel School of Marine and Atmospheric Science, University of Miami. Duties at sea: Participate in two CLIVAR repeat hydrography cruises (I9N and P18N) measuring total alkalinity and pH, serve as the team lead for four scientists on the P18N cruise, analyze and organize data and create a preliminary cruise data report. Duties in lab: Collect samples and perform alkalinity titrations on various marine and estuarine samples, analyze samples for salinity and density, analyze samples for trace concentrations of iron using long path spectrophotometry, assist in the preparation of samples for ICP-MS, clean glassware using an acid bath, analyze preliminary lab and cruise data
May 2007 – Aug. 2007	NOAA Hollings Scholarship Internship at Atlantic Oceanographic and Meteorological Laboratories working with Dr. Rik Wanninkhof of Ocean Chemistry Division. Duties: Conducted a self-directed laboratory experiment studying the effects of pH on the rate of exchange of carbon dioxide across the air-sea interface using an original experimental design, presented findings at NOAA Hollings Scholar summer meeting in D.C.
Summer 2005 and 2006	Lab and Field Technician, North Carolina State University Center for Applied Aquatic Ecology. Duties: Wet and analytical chemistry, nutrient analysis using Lachat flow injection analyzer, chlorophyll and suspended solids analysis (state certified), field sampling (freshwater and estuarine systems), preparation of media and seawater for algal cultures, calibration of pipettes and thermometers, assisting with culture maintenance, data entry, glassware preparation, preparation of reagents and stocks without contamination, analyze water samples for Microcystin-LR toxin using ELISA plates, preliminary analysis of several years of toxin data in lakes/drinking water reservoirs

PUBLICATIONS

Williams, N. L., Juranek, L. W., Feely, R. A., Russell, J. L., & Dunne, J. (in prep). Future changes in carbonate chemistry in the Southern Ocean under ocean acidification using insights from SOCCOM biogeochemical floats.

Talley, L. D., Rosso, I., Kamenkovich, I., Mazloff, M. E., Wang, J., Boss, E., Gray, A. R., Johnson, K. S., Key, R., Riser, S. C., **Williams, N. L.**, & Sarmiento, J. L. (in review) Southern Ocean biogeochemical float deployment strategies, with example from the Greenwich Meridian line (GO-SHIP A12). *Journal of Geophysical Research: Oceans SOCCOM Special Issue*.

Gray, A. R., Johnson, K. S., Bushinsky, S. M., Riser, S. C., Russell, J. L., Talley, L. D., Wanninkhof, R., **Williams**, **N. L.**, & Sarmiento, J. L. (in review). Autonomous biogeochemical floats detect significant carbon dioxide outgassing in the high-latitude Southern Ocean. *Geophysical Research Letters*.

Bittig, H. C., Steinhoff, T., Claustre, H., Fiedler, B., **Williams**, **N. L.**, Körtzinger, A., & Gattuso, J.-P. (in review). CONTENT: Improved estimates of open ocean CO_2 parameters from T, S, and O_2 data for underway and profile applications. *Frontiers in Marine Science.*

Williams, N. L., Juranek, L. W., Feely, R. A., Russell, J. L., & Johnson, K. S. (2018). Assessment of the carbonate chemistry seasonal cycles in the Southern Ocean from persistent observational platforms, *Journal of Geophysical Research: Oceans SOCCOM Special Issue*. https://doi.org/10.1029/2017JC012917

Fay, A. R., Lovenduski, N. S., McKinley, G. A., Munro, D. R., Sweeney, C., Gray, A. R., … **Williams, N.** (2018). Utilizing the Drake Passage Time-series to understand variability and change in subpolar Southern Ocean pCO_2, *Biogeosciences Discussions*, (December), 1–31. https://doi.org/10.5194/bg-2017-489

Carter, B. R., Feely, R. A., **Williams, N. L.**, Dickson, A. G., Fong, M. B., & Takeshita, Y. (2018). Updated methods for global locally interpolated estimation of alkalinity, pH, and nitrate. *Limnology and Oceanography: Methods*, *16*(2), 119–131. https://doi.org/10.1002/lom3.10232

Johnson, K. S., Plant, J. N., Coletti, L. J., Jannasch, H. W., Sakamoto, C. M., Riser, S. C., **Williams, N. L.**, & Sarmiento, J. L. (2017). Biogeochemical sensor performance in the SOCCOM profiling float array. Journal of Geophysical Research: Oceans, 122(8), 6416–6436. https://doi.org/10.1002/2017JC012838

Williams, N. L., Juranek, L. W., Feely, R. A., Johnson, K. S., Sarmiento, J. L., Talley, L. D., … Takeshita, Y. (2017). Calculating surface ocean pCO_2 from biogeochemical Argo floats equipped with pH: An uncertainty analysis. *Global Biogeochemical Cycles*, *31*(3), 591–604. https://doi.org/10.1002/2016GB005541

Wanninkhof, R., Johnson, K., **Williams, N.**, Sarmiento, J., Riser, S., Briggs, E., … Verdy, A. (2016). An evaluation of pH and NO3 sensor data from SOCCOM floats and their utilization to develop ocean inorganic carbon products: A summary of discussions and recommendations of the Carbon Working Group (CWG) of SOCCOM. Retrieved from http://soccom.princeton.edu/sites/default/files/files/CWG_white_paper_March_13_2016.pdf

Williams, N. L., Juranek, L. W., Johnson, K. S., Feely, R. A., Riser, S. C., Talley, L. D., … Wanninkhof, R. (2016). Empirical algorithms to estimate water column pH in the Southern Ocean. *Geophysical Research Letters*, *43*(7), 3415–3422. https://doi.org/10.1002/2016GL068539

Carter, B. R., **Williams, N. L.**, Gray, A. R., & Feely, R. A. (2016). Locally interpolated alkalinity regression for global alkalinity estimation. *Limnology and Oceanography: Methods*, *14*(4), 268–277. https://doi.org/10.1002/lom3.10087

Williams, N. L., Feely, R. A., Sabine, C. L., Dickson, A. G., Swift, J. H., Talley, L. D., & Russell, J. L. (2015). Quantifying anthropogenic carbon inventory changes in the Pacific sector of the Southern Ocean. *Marine Chemistry*, *174*, 147–160. https://doi.org/10.1016/j.marchem.2015.06.015

Millero, F. J., Huang, F., **Williams, N.**, Waters, J., & Woosley, R. (2009). The effect of composition on the density of South Pacific Ocean waters. *Marine Chemistry*, *114*(1–2), 56–62. https://doi.org/10.1016/j.marchem.2009.04.001

Millero, F. J., Chanson, M., Mathis, J., **Williams, N.L**., and Abrams , A. J. (2007), Global Ocean Repeat Hydrography Study: pH and Total Alkalinity Measurements in the Indian Ocean I9N 22nd March- 1st May 2007, University of Miami Technical Report, No. RSMAS-2007-01

INVITED PRESENTATIONS

Williams, N. L., L. W. Juranek, R. A. Feely, K. S. Johnson, J. L. Sarmiento, L. D. Talley, A. G. Dickson, A. R. Gray, R. Wanninkhof, J. L. Russell, S. C. Riser, and Y. Takeshita. Observing the carbon cycle in the Southern Ocean using biogeochemical Argo floats equipped with pH sensors. University of Washington Chemical Oceanography Seminar, Seattle, Washington, April 7, 2017 (invited talk).

Williams, N. L., Juranek, L. W., Feely, R. A., Johnson, K. S., Sarmiento, J. L., Talley, L. D., Russell, J. L., Riser, Stephen, Wanninkhof, R., Gray, A. R., and A. G. Dickson. Southern Ocean carbon from profiling floats equipped with pH. Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, Massachusetts, July 25-28, 2016 (invited talk).

Williams, N. L., Juranek, L. W., and R. A. Feely. Seasonal cycles in pH and $\Omega_{Aragonite}$ from SOCCOM profiling floats. Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Annual Meeting, Scripps Institution of Oceanography, La Jolla, California, May 9-11, 2016 (invited talk).

SELECT PRESENTATIONS AND CONFERENCE ABSTRACTS

Williams, N. L., J. L. Russell, L. W. Juranek, & R. A. Feely. Seasonal cycles in Southern Ocean carbonate chemistry as observed from persistent observational platforms. 2018 Ocean Sciences Meeting, Portland, Oregon (talk).

Williams, N. L., L. W. Juranek, R. A. Feely, K. S. Johnson, J. L. Sarmiento, L. D. Talley, A. G. Dickson, A. R. Gray, R. Wanninkhof, J. L. Russell, S. C. Riser, and Y. Takeshita. Observing the carbon cycle in the Southern Ocean using biogeochemical Argo floats equipped with pH sensors. CLIVAR Ocean Carbon Hotspots Workshop, Monterey Bay Aquarium Research Institute, Monterey, California, September 25-26, 2017 (poster).

Williams, N. L., R.A Feely, L. W. Juranek, J. L. Russell, and K. S. Johnson. Seasonal cycles in pH and the saturation state of aragonite in the Southern Ocean from biogeochemical profiling floats and projections for long-term change. Gordon Research Conference, New London, New Hampshire, July 24-27, 2017 (poster).

Williams, N. L., R.A Feely, L. W. Juranek, J. L. Russell, and K. S. Johnson. Seasonal cycles in pH and the saturation state of aragonite in the Southern Ocean from biogeochemical profiling floats and projections for long term change. Gordon Research Seminar, New London, New Hampshire, July 22-23, 2017 (talk).

Williams, N. L., L. W. Juranek, R. A. Feely, K. S. Johnson, J. L. Sarmiento, L. D. Talley, A. G. Dickson, A. R. Gray, R. Wanninkhof, J. L. Russell, S. C. Riser, and Y. Takeshita. Observing the carbon cycle in the Southern Ocean using biogeochemical Argo floats equipped with pH sensors. Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, Massachusetts, June 26-28, 2017 (poster).

Williams, N. L., L. W. Juranek, R. A. Feely, K. S. Johnson, J. L. Sarmiento, L. D. Talley, A. G. Dickson, A. R. Gray, R. Wanninkhof, J. L. Russell, S. C. Riser, and Y. Takeshita. Observing the carbon cycle in the Southern Ocean using biogeochemical Argo floats equipped with pH sensors. 2017 University of Washington Program on Climate Change Spring Symposium, Seattle, Washington April 8, 2017 (poster).

Williams, N.L., Juranek, L.W., Feely, R.A., Johnson, K.S., Talley, L.D., and J. L. Russell. Empirical algorithms to estimate pH and $\Omega_{Aragonite}$ on biogeochemical Argo floats in the Southern Ocean. 2016 Ocean Sciences Meeting, New Orleans, Louisiana (talk).

Williams, N.L., Juranek, L.W., Feely, R.A., Johnson, K.S., Talley, L.D., and J. L. Russell. Empirical algorithms to predict pH and $\Omega_{Aragonite}$ on biogeochemical Argo floats in the Southern Ocean. Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, Massachusetts, July 20-23, 2015 (poster).

Williams, N.L., Juranek, L.W., Feely, R.A., Johnson, K., and L. D. Talley. Estimation of carbonate system parameters from Argo profiling floats in the Southern Ocean. Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Annual Meeting, Princeton University, Princeton, New Jersey, May 12-14, 2015 (poster).

Williams, N.L., Feely, R.A., Sabine, C.L., Dickson, A.D., Swift, J.H., Talley, L.D., and J. L. Russell. Quantifying Anthropogenic Carbon Inventory Changes in the Pacific Sector of the Southern Ocean. US CLIVAR/OCB Workshop: Ocean's Carbon and Heat Uptake: Uncertainties and Metrics, San Francisco, California, December 12-14, 2014 (poster).

Williams, N.L., Feely, R.A., Sabine, C.L., Dickson, A.D., Swift, J.H., Talley, L.D., and J. L. Russell. Quantifying Anthropogenic Carbon Inventory Changes in the Pacific Sector of the Southern Ocean. The Graduate Climate Conference, Pack Forest, Eatonville, Washington, October 31-November 2, 2014 (talk).

Williams, N.L., Feely, R.A., and C. L. Sabine. Quantifying Anthropogenic Carbon Inventory Changes in the Southern Ocean. 2014 Ocean Sciences Meeting, Honolulu, Hawaii (talk).

HONORS/AWARDS

- NRC Research Associateship Programs Postdoctoral Fellowship 2017
- NOAA Climate and Global Change Fellowship 2017 (selected but not funded)
- Monterey Bay Aquarium Research Institute Postdoctoral Fellowship (declined) 2017
- ARCS Foundation Meigs/Fish Scholar Award, Oregon Chapter 2015-2018
- Awarded University of Miami RSMAS Fellowship for Graduate Study (declined) 2008
- NOAA Ernest F. Hollings Scholarship 2006-2008
- University of Miami President's Honor Roll Spring 2007 (GPA 4.0)
- University of Miami Provost's Honor Roll 2004-2008 (GPA 3.75 or higher)
- University of Miami Henry King Stanford Academic Scholarship 2004-2008
- Just Within Reach Foundation Scholarship for Undergraduate Study 2004

LEADERSHIP EXPERIENCE

- Captain of University of Washington Women's Cycling Team
- President of University of Miami Earth Alert Environmental Club
- Treasurer of University of Miami SCUBA Club
- Vice President of University of Miami Chemistry Club
- Equipment Manager for University of Miami Canes Outdoor Recreation Programs (CORPs)

TEACHING EXPERIENCE

Aug. 2016 – present	Association for Women in Science (AWIS) Girls in Engineering, Math, and Science (GEMS) Mentor (middle school girls, underserved schools)
Apr. 2014 – Jun. 2014	200-level Oceanography Lab Teaching Assistant, University of Washington
May 2010	Volunteer at Expanding your Horizons Workshop for middle school girls interested in science
Jun. 2009 – present	NOAA Science Camp volunteer (middle school students)
May 2008 – Sept. 2008	GRE prep course instructor and math tutor for BrainTrust Tutoring (middle school through college-age students)
Jan. 2008 – May 2008	Chemical Oceanography Lab Teaching Assistant, University of Miami
Jan. 2006 – Dec. 2007	Introductory General Chemistry Lab Teaching Assistant, University of Miami

MEMBERSHIPS AND SERVICE ACTIVITIES

- Reviewer for *Geophysical Research Letters*, *Estuaries and Coasts*, and *Earth System Science Data Discussions*
- Member of American Geophysical Union, The Oceanography Society, and Association for the Sciences of Limnology and Oceanography
- Volunteer presenter on behalf of the NOAA PMEL marine carbon group for groups of visiting college students
- University of Washington Program on Climate Change
- American Chemical Society Student Affiliate
- Volunteer for Seattle P-Patch Community Garden Program

- Volunteer for Miami Baynanza Biscayne Bay Beach Cleanups
- Volunteer at Biscayne National Park in Coral Nursery Program
- Volunteer at Duke Children's Hospital
- University of Miami Honors Student Association
- Freshman Peer Counselor for the University of Miami Department of Marine Science
- Gold Member of University of Miami Rho Rho Rho Marine Science Honor Society

SELECT EDUCATIONAL WORKSHOPS

June 2018	OCB Biogeochemical Profiling Float Workshop
Oct. 2017	#GreatAntarcticClimateHack at Scripps Institution of Oceanography
Feb. 2017	ComSciConPNW Science Communication Workshop for Graduate Students
Nov. 2016	Biogeochemical Argo training at Monterey Bay Aquarium Research Institute