NANCY L. WILLIAMS
CURRICULUM VITAE

Updated June 2020
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EDUCATION

Ph.D. in Ocean Ecology and Biogeochemistry, 2018, Oregon State University, Corvallis, OR, 3.9 GPA. Thesis: Observing the ocean carbon system in the Southern Ocean using autonomous 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

Aug. 2019 – present	Assistant Professor, University of South Florida College of Marine Science
June 2019 – Aug. 2019	Temporary Research Faculty, University of South Florida College of Marine Science
May 2018 – June 2019	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
Sept. 2014	Wendy Schmidt Ocean Health XPRIZE validation team member
Sept. 2011 – Mar. 2015	Graduate Research Assistant, University of Washington Oceanography
Apr. 2009 – Aug. 2011	Research Scientist/Engineer Assistant Joint Institute for the Study of the Atmosphere and Ocean, University of Washington and NOAA/PMEL
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
Oct. 2008 – Jan. 2009	Chemical Data Entry at Phillip Services Corporation
Mar. 2006 – May 2008	Lab Assistant and Field Technician for Dr. Frank Millero, Rosenstiel School of Marine and Atmospheric Science, University of Miami
May 2007 – Aug. 2007	NOAA Hollings Scholarship Internship at Atlantic Oceanographic and Meteorological Laboratories working with Dr. Rik Wanninkhof of Ocean Chemistry Division

Summer 2005 and 2006	Lab and Field Technician, North Carolina State University Center for Applied Aquatic Ecology

PUBLICATIONS

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

15. Bronselaer, B., Russell, J. L., Winton, M., **Williams, N. L.**, Key, R., Dunne, J., Feely, R. A., Johnson, K. S., & Sarmiento, J. L. (2020). Importance of wind and meltwater for observed chemical and physical changes in the Southern Ocean. *Nature Geoscience*. https://doi.org/10.1038/s41561-019-0502-8 (also see commentary on this manuscript by Alessandro Silvano)

14. Bushinsky, S. M., Takeshita, Y., & **Williams, N. L.** (2019). Observing changes in ocean carbonate chemistry: Our autonomous future. *Current Climate Change Reports*. https://doi.org/10.1007/s40641-019-00129-8

13. Carter, B. R., **Williams, N. L.**, Evans, W., Fassbender, A. J., Barbero, L., Hauri, C., Feely, R. A., & Sutton, A., (2019). Time-of-emergence as a metric for prioritizing between climate observation quality, frequency, and duration. *Geophysical Research Letters, 47*(6),3853-3861. https://doi.org/10.1029/2018GL080773

12. 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. (2019). Southern Ocean biogeochemical float deployment strategies, with example from the Greenwich Meridian line (GO-SHIP A12). *Journal of Geophysical Research: Oceans, 124*(1),403-431. https://doi.org/10.1029/2018JC014059

11. Bittig, H. C., Steinhoff, T., Claustre, H., Fiedler, B., **Williams**, **N. L.**, Körtzinger, A., Sauzède, R., & Gattuso, J.-P. (2018). An alternative to static climatologies: Robust estimation of open ocean CO_2 variables and nutrient concentrations from T, S, and O_2 data using Bayesian neural networks. *Frontiers in Marine Science*, 5(September), 328. https://doi.org/10.3389/fmars.2018.00328

10. 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. (2018). Autonomous biogeochemical floats detect significant carbon dioxide outgassing in the high-latitude Southern Ocean. *Geophysical Research Letters*, 45, 9049-9057. https://doi.org/10.1029/2018GL078013

9. **Williams, N. L.**, Juranek, L. W., Feely, R. A., Russell, J. L., Johnson, K. S., & Hales, B. (2018). Assessment of the carbonate chemistry seasonal cycles in the Southern Ocean from persistent observational platforms, *Journal of Geophysical Research: Oceans SOCCOM Special Issue*, 123(7), 4833-4852. https://doi.org/10.1029/2017JC012917

8. 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*, 15(12), 1–31. https://doi.org/10.5194/bg-2017-489

7. 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

6. 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

5. **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 (also see commentary on this manuscript by Are Olson)

4. **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

3. 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

2. **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

1. 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

WHITE PAPERS, TECHNICAL REPORTS, AND DATASETS

3. (Quarterly data snapshots beginning October 2016, only most recent snapshot cited here) Johnson, Kenneth S.; Riser, Stephen C.; Boss, Emmanuel S.; Talley, Lynne D.; Sarmiento, Jorge L.; Swift, Dana D.; Plant, Josh N.; Maurer, Tanya L.; Key, Robert M.; Williams, Nancy L.; Wanninkhof, Richard H.; Dickson, Andrew G.; Feely, Richard A.; Russell, Joellen L. (2020). SOCCOM float data - Snapshot 2019-12-22. In Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Float Data Archive. UC San Diego Library Digital Collections. https://doi.org/10.6075/J0NV9GM7

2. Wanninkhof, R., Johnson, K., **Williams, N.**, Sarmiento, J., Riser, S., Briggs, E., … Verdy, A. (2016). An evaluation of pH and NO_3 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

1. 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. New insights on the Southern Ocean carbon cycle from biogeochemical Argo floats. Institute of Ocean Sciences, Victoria, B.C., Canada, May 10, 2019 (invited talk).

Williams, N. L. New insights on the Southern Ocean carbon cycle from biogeochemical Argo floats. University of Victoria, Victoria, B.C., Canada, May 9, 2019 (invited talk).

Williams, N. L. Bridging observational scales using autonomous biogeochemical platforms (BGC-Argo). Cooperative Institute for Marine and Atmospheric Sciences, Miami, F.L., April 1, 2019 (invited talk).

Williams, N. L. New insights on the Southern Ocean carbon cycle from biogeochemical Argo floats. University of Arizona Geosciences Colloquium, Tucson, A.Z., February 14, 2019 (invited talk).

Williams, N. L., Feely, R. A., Juranek, L. W., Russell, J. L., & J. P. Dunne. Future changes in carbonate chemistry in the Southern Ocean under acidification using insights from SOCCOM biogeochemical floats. AGU Fall Meeting, Washington, D.C., December 12, 2018 (invited talk).

Williams, N. L. and J. Plant. Description of quality control processes in place: SOCCOM & BGC Argo. NOAA Workshop on Quality Control Processes of Key Biogeochemical Parameters, NOAA PMEL Seattle, WA, September 24, 2018 (invited talk).

Williams, N. L. Tools for calibration and estimation of other ocean carbon parameters from BGC float data. OCB Biogeochemical Profiling Float Workshop, University of Washington, Seattle, Washington, July 11, 2018 (invited talk).

Williams, N. L., Feely, R. A., Juranek, L. W., Russell, J. L., & J. P. Dunne. Future changes in carbonate chemistry in the Southern Ocean under acidification using insights from SOCCOM biogeochemical floats. SOCCOM Annual Meeting, Princeton University, Princeton, N.J., June 12, 2018 (invited talk).

Williams, N. L., R.A Feely, L. W. Juranek, J. L. Russell, & 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 23, 2017 (invited talk).

Williams, N. L., Feely, R. A., Juranek, L. W., & Russell, J. L. Observing seasonal cycles in pH and aragonite saturation in the Southern Ocean and projections for long-term change. SOCCOM Annual Meeting, Princeton University, Princeton, N.J., May 11, 2017 (invited 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, & 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., & A. G. Dickson. Southern Ocean carbon from profiling floats equipped with pH. Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, Massachusetts, July 26, 2016 (invited talk).

Williams, N. L., Juranek, L. W., & 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 10, 2016 (invited talk).

PRESENTATIONS AND CONFERENCE ABSTRACTS (not including coauthored presentations)

Williams, N. L., Uncertainty in calculating surface ocean pCO_2 from SOCCOM floats with pH. Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Annual Meeting, Remote talk via GoToMeeting, June 17, 2020 (talk).

Williams, N. L., Bio-Argo and SOCCOM Summary, Ocean Carbon and Biogeochemistry (OCB) working group: Filling the gaps in observation-based estimates of air-sea carbon fluxes. Remote talk via Webex, May 5, 2020 (talk).

Williams, N. L., Observing the Southern Ocean carbon cycle using autonomous biogeochemical platforms. University of South Florida College of Marine Science Departmental Seminar, Saint Petersburg, FL, October 18, 2019 (talk).

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, February 16, 2018 (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, & 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, & 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., 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, & 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, & 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., & 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 February 21, 2016 (talk).

Williams, N.L., Juranek, L.W., Feely, R.A., Johnson, K.S., Talley, L.D., & 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, 2015 (poster).

Williams, N.L., Juranek, L.W., Feely, R.A., Johnson, K., & 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, 2015 (poster).

Williams, N.L., Feely, R.A., Sabine, C.L., Dickson, A.D., Swift, J.H., Talley, L.D., & 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, 2014 (poster).

Williams, N.L., Feely, R.A., Sabine, C.L., Dickson, A.D., Swift, J.H., Talley, L.D., & 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, 2014 (talk).

Williams, N.L., Feely, R.A., & C. L. Sabine. Quantifying Anthropogenic Carbon Inventory Changes in the Southern Ocean. 2014 Ocean Sciences Meeting, Honolulu, Hawaii, February 23, 2014 (talk).

SESSIONS CONVENED

- "Accessing the Biogeochemical Argo network for Southern Ocean research" at the SCAR Open Science conference (2020)

GRANTS (not lead)

- National Ocean Partnership Program (NOPP) 2019 Broad Agency Announcement: "Improvements to Profiling Float Technology in Support of Equatorial Pacific Biogeochemical Studies" (2019)
- Ocean Carbon and Biogeochemistry Working Group: "Ocean Carbonate System Intercomparison Forum" Total Award = $29,500 (2019)
- Ocean Carbon and Biogeochemistry Working Group: "Filling the gaps in observation-based estimates of air-sea carbon fluxes" Total Request = $28,150 (2019)

CONSULTING WORK

- Intelligent Optical Systems, Small Business Innovation Research Program 2018

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
- Scripps Institution of Oceanography Director's Fellowship (declined) 2011
- Awarded University of Miami RSMAS Fellowship for Graduate Study (declined) 2008
- NOAA Ernest F. Hollings Scholarship 2006-2008

TRAVEL GRANT AWARDS

- IOCCP, to attend BONUS Integral Sensor training 2019
- NSF/NOAA, to attend Dissertations Symposium in Chemical Oceanography (DISCO) 2018
- OSU Graduate Student Committee Travel Award to attend Gordon Research Conference 2017
- Gordon Research Seminar travel support as invited speaker 2017
- OCB, travel support as invited speaker at OCB Summer Workshop 2016
- OCB, student support to attend OCB Summer Workshop 2015, 2017

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 – Jun. 2019	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
Feb. – Mar. 2013	Mentor two University of Washington seniors in Oceanography for their senior thesis cruise (22 days)
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

- Ad hoc reviewer for *Nature Climate Change, Nature Communications, Geophysical Research Letters*, *Journal of Marine Systems*, *Estuaries and Coasts*, *PLOS ONE*, and *Earth System Science Data Discussions*
- Proposal Review Panel member for NOAA OOMD

- Expert Committee Review Panel member for Canada Foundation for Innovation
- Ad hoc grant proposal reviewer for National Science Foundation (Chemical Oceanography)
- External reviewer for NOAA Ocean Acidification Research Program
- Member of American Geophysical Union, The Oceanography Society, Association for the Sciences of Limnology and Oceanography, and National Association of Geoscience Teachers
- Member of "Ocean carbonate system interconsistency forum" OCB Working Group
- Member of "Filling the gaps in observation-based estimates of air-sea carbon fluxes" OCB Working Group
- Participant in SOCCOM Carbon System Working Group, SOCCOM Float Committee, and SOCCOM Data Management Teams
- Volunteer for Skype a Scientist
- Volunteer presenter on behalf of the NOAA PMEL Marine Carbon group for groups of visiting college students
- University of Washington Program on Climate Change
- Volunteer for Seattle P-Patch Community Garden Program

SELECT EDUCATIONAL WORKSHOPS

December 2019	Ocean Best Practices Workshop
June 2019	IOCCP Bonus Integral Biogeochemical Sensor Training Course
December 2018	OCB Ocean Carbon Uptake in CMIP6 Models: Synthesis and Intercomparison
Sept. 2018	NOAA Workshop on QC Processes of Key Biogeochemical Parameters
June 2018	OCB Biogeochemical Profiling Float Workshop
Oct. 2017	#GreatAntarcticClimateHack at Scripps Institution of Oceanography
Sept. 2017	OCB Ocean Carbon Hot Spots Workshop
Feb. 2017	ComSciConPNW Science Communication Workshop for Graduate Students
Nov. 2016	Biogeochemical Argo training at Monterey Bay Aquarium Research Institute

SEA DAYS

August 2015, *Ronald H. Brown* Arctic 2015 (30 days)
February-March 2013, *Melville*, Kuroshio cruise (22 days)
February-April 2011, *Nathaniel B. Palmer*, CLIVAR S4P (64 days)
November-December 2010, *Natalie Schulte* container ship ride (21 days)
Summers 2009 and 2010, Coastal cruises *MacArthur II* (5 weeks total)
Various Puget Sound PRISM cruises (10 days total)
November-December 2009, *Melville*, CLIVAR P6 (40 days)
2009-2010, *Tatoosh* cruises (2 days)
2009-2010, *Elakha* cruises (2 days)
February-March 2009, *Southern Surveyor*, CLIVAR P15S (49 days)
December 2007-January 2008, *Ronald H. Brown*, CLIVAR P18 (30 days)
March 2007-May 2007, *Roger Revelle*, CLIVAR I9N (42 days)