CURRICULUM VITAE
JESSICA NICOLE CROSS, PhD

NOAA Office of Oceanic and Atmospheric Research
Pacific Marine Environmental Laboratory
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PROFESSIONAL INTERESTS

- Impacts of ocean-related climate change on coastal communities and tailored climate resilience strategies
- Observational research from research vessels, moorings, mobile autonomous platforms like gliders and drones, and satellite ocean remote sensing products
- Technology development: $1,800,000 in research funding awards for technical development of Arctic observational infrastructure

EDUCATION

University of Alaska-Fairbanks, School of Fisheries and Ocean Sciences **2008-2013**
- **Ph.D., Chemical Oceanography**
- Dissertation: "Carbon Biogeochemistry of the Eastern Bering Sea Shelf."
- Major Advisor: Dr. Jeremy Mathis
- GPA: 3.72 of 4.0

Rhodes College **2004-2008**
- **B.S., Chemistry**
- Research: Computational modeling of quantum mechanical systems
- GPA: 3.2 of 4.0

PROFESSIONAL EMPLOYMENT AND TEACHING EXPERIENCE

- **Oceanographer** – *NOAA Pacific Marine Environmental Laboratory* **2016-Present**
  Supervisory management, mission design and execution for the NOAA Innovative Technology for Arctic Exploration Program, the NOAA Alaska Ocean Acidification Monitoring Program, and the NOAA Arctic Glider Program, emphasizing technical development, research and monitoring from mobile autonomous platforms, and growth of community resilience applications.
- **Research Associate** – *NOAA Pacific Marine Environmental Laboratory and UAF Cooperative Institute for Alaska Research* **2015-2016**
  Supervisory planning, deployment, monitoring, and analysis of physical and chemical data from multiple platforms, emphasizing mobile autonomous systems and technical development for Arctic Research applications.
- **Postdoctoral Research** – *NOAA Pacific Marine Environmental Laboratory and UAF Cooperative Institute for Alaska Research* **2013-2015**
  Supervisory analysis of sub-Arctic marine carbon system monitoring data from multiple platforms, including moored and mobile autonomous sensors, continuous underway sampling, and extensive discrete observational datasets.

- **Doctoral Research –** *University of Alaska, Fairbanks, Ocean Acidification Research Center* **2008-2013**
  Carbon chemistry component for the Bering Sea Integrated Ecosystem Research Project and Bering Ecosystem Study. Characterized spatiotemporal variability of carbon system components, identified the drivers of natural corrosivity, and the present status and future progression of ocean acidification processes.
- **Teaching Assistant** – to Dr.s Jeremy Mathis and Peter Winsor in, "The Oceans," an undergraduate introductory science course **2008-2010**
  Supervised development of the 2009-2010 laboratory manual, managed lab classes, collaborated on exam development, met with students upon request, and graded all written work, including final exam papers.

HONORS AND AWARDS

- **NOAA Presidential Early Career Award for Scientists and Engineers (PECASE)** **Present**
  Highest honor bestowed by the U.S. government on outstanding scientists and engineers. It recognizes recipients' potential to advance the frontiers of scientific knowledge and their commitment to community service through professional leadership, education and community outreach. Pacific Marine Environmental Laboratory Nominee 2016, 2019.
- **National Ocean Partnership Program (NOPP) Excellence in Partnering Award** **2019**
  Awarded to the most effective and productive project partnerships that have led to notable success in both reaching their goals and sparking incentives for further research investments. To the Marine Arctic Ecosystem Study team.
- **Department of Commerce Bronze Medalist** **2018**
  The highest honor award that the Under Secretary of Commerce for Oceans and Atmosphere may bestow. Awarded for revolutionizing the design of "next-generation ecosystem surveys."
- **Best Oral Presentation Award** **2018**
  North Pacific Marine Science Organization, 2018 Annual Meeting
- **NOAA OAR Outstanding Scientific Paper Award** **2017**
  Awarded for published discoveries that are expected to help improve weather forecasting and further understanding of climate change. For "Ocean Acidification Risk Assessment for Alaska's Fishery Sector."
- **Best Communicator** **2016**
  NOAA Ocean Acidification Program Steering Committee

FUNDING HISTORY

- Innovative Technology for Arctic Exploration, NOAA Office of Oceanic and Atmospheric Research, **$635,933** **2014-2020**
- New Sustained Observations for Arctic Research, NOAA Climate Observation Division Arctic Research Program, **$1,348,220** **2017-2020**
- Ocean Acidification in the Distributed Biological Observatory, NOAA Climate Observation Division Arctic Research Program, **$400,000** **2017-2020**
- Alaska Ocean Acidification Research: Autonomous Observations of Ocean Acidification in Alaska Coastal Seas, NOAA Ocean Acidification Program, **$566,302** **2018-2020**

- Alaska Ocean Acidification Research: Coastal OA Monitoring in the Gulf of Alaska, **$459,946** **2018-2020**
- Alaska Ocean Acidification Research: Autonomous Observations of Ocean Acidification in Alaska Coastal Seas, NOAA Ocean Acidification Program, **$250,047** **2016-2017**
- Alaska Ocean Acidification Research: The Rise of Anthropogenic Impacts: CO2 Fluxes and Ocean Acidification in the Arctic Ocean, NOAA Ocean Acidification Program, **$160,000** **2016-2017**
- CO2 Fluxes and Ocean Acidification in a Rapidly Changing Arctic, Synthesis of Arctic Research (SOAR) Program, **$40,000** **2016**

LEADERSHIP POSITIONS

- **Innovative Technology for Arctic Exploration Program** **2016-Present**
  Principal Investigator
- **Ocean Carbon Biogeochemistry (OCB) Steering Committee** **2016-2019**
  Elected member
- **Alaska Ocean Acidification Network Executive Committee** **2016-Present**
  Invited Member
- **International Arctic Sciences Summit** **2016-2019**
  Invited Participant and Speaker
- **U.S. Arctic Marine Advisory Program Delegation** **2017-2018**
  Invited Member

SELECTED KEYNOTE PRESENTATIONS

Cross, J.N., 2019. Ecosystem and economic resilience under ocean acidification: an Alaskan Case Study. OceanVisions Initiative Invited Keynote Address, April, 2019, Atlanta, GA. Watch online: 6:30, https://player.vimeo.com/video/327817044

Cross, J.N., 2017. Formation and transport of corrosive water in the Pacific Arctic Region. Invited Keynote Address to IMBER Ecosystem Studies of Sub-Arctic and Arctic Seas (ESSAS), June 2017, Tromsø, Norway.

Cross, J.N., 2017. Stretching the scales of ocean observing: Biogeochemistry from the Saildrone ASV. June 2017, Ocean Carbon Biogeochemistry Summer Workshop, Woods Hole, MA.

Cross, J.N., 2017. Ocean Acidification in Alaska: Ecosystems and Economies. Official testimony given to Alaska State Legislature, House Resources Committee, February 2017, Juneau, AK.

PUBLICATION RECORD H-Index: 16

First-Author, Peer-Reviewed Publications:

- **Cross, J.N.,** Turner, J., Cooley, S.R., Newton, J., Azetsu-Scott, K., Braby, C.E., Caren E., et al., 2018. Building the Knowledge-to-Action Pipeline in North America: Connecting ocean acidification research and actionable decision support. Frontiers in Marine Science, 6:356, doi: 10.3389/fmars.2019.00356.
- **Cross, J.N.**, Hurst, T.P., Foy, R.S., Long, C.W., Dalton, M.G., and Stone, R.P., 2018. Successes and challenges of interdisciplinary ocean acidification research in Alaska. Arctic Observing Summit Statement. Available at:

https://www.arcticobservingsummit.org/sites/default/files/ID_022_2018_Arctic%20Observing%20Summit%20statement.pdf

- **Cross, J.N.**, Mathis, J.T., Pickart, R.S., and Bates, N.R., 2018. Formation and transport of corrosive water in the Pacific Arctic Region. Deep Sea Research II, 152, 67-81, doi: 10.1016/j.dsr2.2018.05.020.
- **Cross, J.N.**, Mordy, C.W., Tabisola, H.M., Meinig, C., Cokelet, E.D., and Stabeno, P.J., 2016. Innovative Technology Development for Arctic Exploration. Oceans 2015 MTS/IEEE Washington, IEEE Washington, DC, 8 pp.
- **Cross, J.N.**, Mathis, J.T., Frey, K.E., Cosca, C., Danielson, S.L., Bates, N.R., Feely, R.A., Takahashi, T., and Evans, W., 2014. Annual sea-air CO_2 fluxes in the Bering Sea: Insights from new autumn and winter observations of a seasonally ice-covered continental shelf. Journal of Geophysical Research – Oceans, 119, doi: 10.1002/2013JC009579
- **Cross, J.N.**, Mathis, J.T., Lomas, M.W., Moran, S.B., Grebmeier, J., Shull, D., Mordy, C.W., Stabeno, P.J., Sambrotto, R., Gradinger, R., Juranek, L., Prokopenko, M., and Baumann, M.S., 2014. Integrated assessment of the carbon budget in the Southeastern Bering Sea. Deep Sea Research II, 109, 112-124, doi: 10.1016/j.desr2.2014.03.003.
- **Cross, J.N.**, Mathis, J.T., Bates, N.R., and Byrne, R.H., 2012. Conservative and non-conservative variations of total alkalinity on the Southeastern Bering Sea Shelf. Marine Chemistry, 154, 100-112, doi: 10.1016/jmarchem.2013.05.012
- **Cross, J.N.**, and Mathis, J.T., 2012. Hydrographic Controls on Net Community Production and Total Organic Carbon Distributions in the Eastern Bering Sea. Deep Sea Research II, 65-70, 98-109, doi: 10.1016/j.dsr2.2012.02.003

Recent Co-Authored Publications and Reports (2015 to Present):

- Creamean, J., **Cross, J.N.,** Pickart, R., McRaven, L., Lin, P., Pacini, A., Hanlon, R., Schmale, D.G., Cecineros, J., Aydell, T., Colombi, N., Bolger, E., and DeMott, P.J., 2019. Ice nucleating particles carried from below a phytoplankton bloom to the Arctic atmosphere. Geophysical Research Letters, 46(14), doi: 10.1029/2019GL083039.
- Meinig, C., Jenkins, R., deHalleaux, S., Cohen, N., Lawrence-Slavas, N., **Cross, J.N.**, Cronin, M.F., Cokelet, E.D., Burger, E., Sutton, A., Mordy, C.W., Zhang, D., Zhang, C., and Jessup A., 2019. Public-private partnerships to advance global ocean observing capabilities: A Saildrone an NOAA-PMEL case study. Frontiers in Marine Science, 6, 448, doi: 10.3389/fmars.2019.00448.
- Sutton, A.J., Feely, R.A. Maenner-Jones, S., Musielewicz, S., Osborne, J., Dietrich, C., Monacci, N., **Cross, J.**, Bott, R., Kozyr, A., et al., 2019. Autonomous seawater pCO2 and pH time series from 40 surface buoys and the emergence of anthropogenic trends. Earth Systems Science Data, 11, 421-439, 2019.
- Pilcher, D., Naiman, D.M., **Cross, J.N.,** Hermann, A.J., Siedlecki, S.A., Gibson, G.A., Mathis J.T., 2018. Modeled effect of coastal biogeochemical processes, climate variability, and ocean acidification on aragonite saturation state in the Bering Sea. Frontiers in Marine Science, doi: 10.3389/fmars.2018.00508.
- Bellerby, R., Anderson, L.G., Osborne, E., Steiner, N., Pipko, I., **Cross, J.N.**, Chierici, M., Fransson, A., Azetsu-Scott, K., Olafsson, J., and Miller, L., 2018. Arctic ocean acidification: an update. In: AMAP Assessment 2018: Arctic ocean acidification, Arctic Monitoring and Assessment Programme (AMAP), Tromso, Norway.
- Le Quere, C., Andrew, R.M., Friedlingstein, P., Sitch, S., Pongratz, J., Manning, A.C., Krosbakken, J.I., Peters, G.P., Canadell, J.G., Jackson, R.B., Boden, T.A., Tans, P.P., Andrews, O.D., Arora, V.K., Bakker, D.C.E., Barbero, L., Becker, M., Betts, R.A., Bopp, L., Chevallier, F., Chini, L.P., Ciais, P., Cosca, C.E., **Cross J.N.**, Currie, K., Gasser, T., Harris, I., Hauck, J., Haverd, V., Houghton, R.A., Hunt, C.W., et al., 2018. Global Carbon Budget 2017. Earth System Science Data, 10, 405-448, doi: 10.5194/essd-10-405-2018.
- Mordy, C.W., Cokelet, E.D., De Robertis, A., Jenkins, R., Kuhn, C.W., Lawrence-Slavas, N., Berchok, C.L., Crance, J.L., Sterling, J.T., **Cross, J.N.**, Stabeno, P.J., Meinig, C., Tabisola, H.M., Burgess, W., and Wangen, I., 2017. Advances in Ecosystem Research: Saildrone

surveys of oceanography, fish, and marine mammals in the Bering Sea. Oceanography, 30(2), 113-115, doi: 10.5670/oceanog.2017.230.

- Carter, B.R., Feely, R.A., Mecking, S., **Cross, J.N.**, Macdonald, A.M., Siedlecki, S.A., Talley, L.D., Sabine, C.L., Millero, F.J., Swift, J.H., Dickson, A.G., and Rodgers, K.B., 2017. Two decades of Pacific anthropogenic carbon storage and ocean acidification along Global Ocean Ship-based Hydrographic Investigations Program sections P16 and P02. Global Biogeochemical Cycles, 31(2), 306-327, doi: 10.1002/2016GB005485.
- Turk, D., Bednarsek, N., Evans, W., Garcia-Ibanez, M.I., Hales, B., and **Cross, J.N.**, 2017. Role of technology in Ocean Acidification: monitoring, water-quality impairments, CO2 mitigation, and machine learning. In: Reference Module in Earth Systems and Environmental Sciences, Encyclopedia of Sustainable Technologies, Elias, S.A., ed., pp. 125-133, doi: 10.1016/B978-0-12-409548-9.10165-4.
- Benway, H., Alin, S., Boyer, E., Cai, W.-J., Coble, P., **Cross, J.N**, Friedrichs, M., Goñi, M., Griffith, P., Herrmann, M., Lohrenz, S., Mathis, J., McKinley, G., Najjar, R., Pilskaln, C., Siedlecki, S., Smith, R. 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.
- Cokelet, E.D., Meinig, C., Lawrence-Slavas, N., Stabeno, P.J., Mordy, C.W., Tabisola, H.M., Jenkins, R., **Cross, J.N.**, 2015. The use of Saildrones to examine spring conditions in the Bering Sea: instrument comparisons, sea ice meltwater, and Yukon River plume studies, Oceans 2015 MTS/IEEE Washington, IEEE Washington, DC, 6 pp.
- Evans, W., Mathis, J.T., **Cross, J.N.**, Bates, N.R., Frey, K.E., and Else, B.G.T., et al., 2015. Sea-air CO_2 exchange in the western Arctic coastal ocean. Global Biogeochemical Cycles, 29, doi: 10.1002/2015GB005153.
- Mathis, J.T., and **Cross, J.N.,** Evans, W., and Doney, S.C., 2015. Ocean acidification in the surface waters of the Pacific-Arctic Boundary Regions. Oceanography Magazine, 28(2), 122-135, doi: 10.5670/oceanog.2015.36.
- Yates, K.K., Turley, C., Hopkinson, B., Todgham, A., **Cross, J.N.,** Greening, H., Van Hooidonk, R., Williamson, P., Deheyn, D., and Johnson, Z., 2015. Transdisciplinary science: a path to understanding the interactions among ocean acidification, ecosystems, and society. Oceanography Magazine, 28(2), 212-225. doi: 10.5670/oceanog.2015.43.

FIELD EXPERIENCE

413 Total Days to Date:

- **Distributed Biological Observatory**, a change detection array for the identification and consistent monitoring of biophysical responses to climate change, occupied by national and international entities with a shared data plan. Supervised collection and analysis of carbon system data. **61 d., 2017-2019**
- **Innovative Technology for Arctic Exploration**, a technology development program emphasizing mobile autonomous platforms. Deployed and recovered Liquid Robotics wave gliders and moored systems, including dockside preparation. **33 d., 2016**
- **GO-SHIP Repeat Hydrography**, a periodic ocean properties monitoring program continuing the tradition of WOCE and CLIVAR. Served as Chief Scientist for P16N, including mission planning. **34 d., 2015**
- **NOAA Acidification Monitoring Program***,* a periodic, multidisciplinary coastal monitoring field program studying the impacts and progression of Ocean Acidification on the US West Coast (CA-WA) and Gulf of Alaska. Field Responsibilities: at-sea sample analysis (Total Alkalinity titration; AIRICA DIC analysis) (2013), chief scientist (2015). **44 d., 2013, 2015**

- **Western Arctic Research Program***,* an annual multidisciplinary field program studying the links between physical processes and ocean acidification vulnerabilities in the Chukchi and Beaufort Seas. Field responsibilities: Shift lead; hydrographic sampling, at-sea carbon sample analysis (MARIANDA: 3S, AIRICA). **87 d., 2010-2012**
- **Bering Ecosystem Study**, a large, multidisciplinary, ecosystem-scale seasonal research program studying the effects of climate change and sea ice losses on the ecosystem. Field responsibilities: hydrographic sampling, underway instrumentation technician. **154 d., 2009-2010**

PROFESSIONAL SERVICE AND RELATED EXPERIENCE

- **Review Service** **2009-Present**
  Review Editor, Frontiers in Marine Science, Ocean Solutions section; Reviewer, inaugural Department of Energy Ocean Observing Prize; Peer Reviewer, North Pacific Research Board; Oceanography Magazine; Journal of Geophysical Research – Oceans; Global Biogeochemical Cycles; Deep-Sea Research Part II; Biogeochemistry Discussions; Earth System Science Data; National Science Foundation
- **Conference Leadership** **2015-Present**
  - **Organizing Committees:** NOAA-DFO Joint Workshop on Ocean Acidification (2016, 2019); North American Carbon Program Principle Investigators Meeting, 2019; Ocean Carbon Biogeochemistry Summer Workshop, 2017-2019
  - **Session Chair:** International Association for the Physical Sciences of the Ocean, 'Coastal Ocean Acidification', 2019**;** American Geophysical Union Ocean Sciences Meeting, 'Changing Ocean Biogeochemistry in a High CO2 World,' 2018; Gordon Research Conference on Polar Oceanography, 'Technological Advances,' 2017; Ocean Carbon Biogeochemistry Program Summer Workshop 'Our Autonomous Future,' 2017
- **Ocean Carbon Biogeochemistry (OCB) Summer Workshops** **2013-Present**
  Invited US participant, Woods Hole, MA, Scientific Steering Committee
- **Global Ocean Acidification Observing Network (GOA-ON) Workshop** **2016**
  Invited Participant, Hobart, Australia
- **Creativity Symposium: Women Leaders Now** **2015**
  Participant, Seattle, WA.
- **Grants Training Center Workshop** **2015**
  'Writing/Designing NSF Proposals in Earth Sciences and Oceanography' Participant, Seattle, WA.
- **University of Alaska-Fairbanks, Search Committee for the Dean of the School of Fisheries and Ocean Sciences** **2010-2011**
  Student Representative
- **International Arctic Science Committee - Arctic Ocean Sciences Board** **2010**
  "Arctic in Rapid Transition (ART)" Science and Implementation Plan Initiation Workshop**,** Winnipeg, Canada.

OTHER MEMBERSHIPS

- Inter-agency Research Policy Committee (IARPC) Collaborations Teams for Environmental Intelligence and Marine Ecosystems
- Pacific Arctic Group (PAG), International Arctic Science Committee (IASC)
- Alaska Ocean Observing System (AOOS)
- American Geophysical Union (AGU)
- North American Carbon Program (NACP)
- Global Ocean Acidification Observing Network (GOA-ON)
- American Chemical Society (ACS), Puget Sound Section
- Association for Women in Science (AWIS)
- Earth Science Women's Network (ESWN)

COMMUNITY SERVICE AND ADVOCACY

- **Seattle Science on Tap** **2019**
  Invited expert speaker on climate change and resilience building
- **Ocean Visions Initiative** **2019**
  Keynote Speaker at 2019 Climate Summit: Successes in Resilience, Adaptation, and Sustainability
- **United Fishermen of Alaska** **2017-2019**
  Invited expert testimony given to commercial fishermen in Alaska
- **Smithsonian Institution "Expert is In" Program** **2017-2018**
  Regular outreach at the National Museum of Natural History
- **Seattle Association for Women in Science** **2016-2018**
  Elected President
- **Alaska State Legislature** **2017**
  Invited testimony on ocean acidification and climate change expert given to the House Resources Committee

PROFESSIONAL REFERENCES

Dr. Sarah Cooley
Director, Ocean Acidification Program
Ocean Conservancy
Public engagement and academic collaborator
202-280-6231
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Dr. Jaqueline Grebmeier
Research Professor, University of Maryland Chesapeake Biological Laboratory
International collaborator, fieldwork collaborator
410-326-7334
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Dr. Samantha Siedlecki
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Interdisciplinary collaborator
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Dr. Jeremy T. Mathis
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Former supervisor, PhD Advisor
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Contact information for current supervisory staff at NOAA is available upon request. Please do not contact NOAA regarding this application without prior notice of applicant.