

Jessica Cross

Postdoctoral Research Affiliate

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Curriculum Vitae

EDUCATION

- *University of Alaska-Fairbanks, School of Fisheries and Ocean Sciences*
Ph.D., Chemical Oceanography **2008-2013**
Dissertation: "Carbon Biogeochemistry of the Eastern Bering Sea Shelf."
Major Advisor: Dr. Jeremy Mathis
GPA: 3.72 of 4.0
- *Rhodes College*
B.S., Chemistry **2004-2008**
Research: Computational modeling of quantum mechanical systems
GPA: 3.2 of 4.0

AWARDS

- Teaching Assistantship, UAF **2008-2010**
- Research Assistantship, UAF **Summer 2009-2013**
- Graduate Travel Grant, UAF **2011**
- Early-Career Travel Grant, International Council for Science, Scientific Committee on Ocean Research **2012**

RESEARCH AND TEACHING EXPERIENCE

- **Postdoctoral Research** – *NOAA Pacific Marine Environmental Laboratory Carbon Group and UAF Ocean Acidification Research Center* **2013-Present**
Supervisory analysis of sub-Arctic marine carbon system monitoring data from multiple platforms, including autonomous moored sensors (Batelle, SAMI), continuous underway sampling, and extensive discrete observational datasets (MARIANDA 3S, 3C, and AIRICA Analyzers). A detailed statement of present research interests is appended.
- **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" **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

PROFESSIONAL SERVICE AND RELATED EXPERIENCE

- **North Pacific Research Board (NPRB)** **2009-Present**
Peer-Reviewer
- **NOAA - OCB Ocean Acidification Principal Investigator Workshop** **2013**
Participant; Working Group: Designing large multidisciplinary research efforts for Ocean Acidification Research

- Gallaudet University, Washington, DC
- **Ocean Carbon Biogeochemistry Workshop** 2009 – 2012
Participant
Woods Hole Oceanographic Institution, Woods Hole, MA.
- **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
University of Manitoba, Winnipeg, Canada.
- **Rosenstiel School of Marine and Atmospheric Sciences, University of Miami** 2007
Summer Research Fellow, supervised by Dennis Hansell
University of Miami, Miami, FL
- **Field Experience: 241 total days to date**
- *West Coast Ocean Acidification Monitoring Program*, a periodic, 14d., 2013
multidisciplinary coastal monitoring field program studying the impacts and progression of Ocean Acidification on the US West Coast (CA-WA).
Field Responsibilities: at-sea sample analysis (Total Alkalinity titration).
- *Western Arctic Research Program*, an annual multidisciplinary field 87d., 2010-2012
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).
- *Bering Ecosystem Study*, a large, multidisciplinary, ecosystem-scale 154d., 2009-2010
seasonal research program studying the effects of climate change and sea ice losses on the ecosystem. Field responsibilities: hydrographic sampling, underway instrumentation technician.

MEMBERSHIPS

- American Geophysical Union (AGU), Student Affiliate
- Arctic in Rapid Transition (ART), IASC-AOSB
- Pacific Arctic Group (PAG), IASC
- Association for Women in Science (AWIS), Junior Member
- Earth Science Women’s Network (ESWN)

REFERENCES

- **Dr. Jeremy T. Mathis, present supervisor**
Supervisory Oceanographer
NOAA Pacific Marine Environmental Laboratory, 7600 Sand Point Way NE, Seattle, WA 98115-6349
Office: (206) 526-4809 Fax: (206) 526-6744
Jeremy.Mathis@noaa.gov
- **Dr. Thomas J. Weingartner**
Professor of Oceanography
School of Fisheries and Ocean Sciences, PO Box 757220, Fairbanks, AK 99775-7220
Office: (907) 474-7993 Fax: (907) 474-7204
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- **Dr. S. Bradley Moran**
Program Director, NSF-OCE
Professor of Oceanography
Graduate School of Oceanography, University of Rhode Island, Narragansett, RI 02882-1197
Office: (401) 874-6530 Fax: (401) 874-6811
moran@gso.uri.edu

PUBLICATIONS AND PRESENTATIONS

Publications:

- Mathis, J.T., Cooley, S.R., Lucey, N., Hauri, C., Ekstrom, J., Hurst, T., Colt, S., Evans, W., **Cross, J.N.**, and Feely, R.A., 2013. Ocean Acidification Risk Assessment for Alaska's Fisheries Sector. *Progress in Oceanography*, submitted.
- **Cross, J.N.**, Mathis, J.T., Evans, W.W.E., Frey, K.E., Cosca, C., and Danielson, S.L., 2013. Sea-air CO₂ fluxes in the Bering Sea: New insights into late-season dynamics on an ice-covered continental shelf. *Geophysical Research Letters*, submitted.
- **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., 2012. Integrated assessment of the carbon budget in the Southeastern Bering Sea. *Deep Sea Research II*, in press.
- Mathis, J.T., **Cross, J.N.**, Monacchi, N.M., Feely, R.A., and Stabeno, P.J., 2013. Evidence of prolonged aragonite undersaturations in the bottom waters of the southern Bering Sea shelf from autonomous sensors. *Deep-Sea Research II*, 2013, in press.
- Evans, W., Mathis, J.T., and **Cross, J.N.**, 2013. Calcium carbonate corrosivity in an Alaskan inland sea. *Biogeosciences*, accepted.
- Mathis, J.T., Grebmeier, J.M., Hansell, D.A., Hopcroft, R.R., Kirchman, D.L., Lee, S.H., Moran, S.B., Bates, N.R., VanLangingham, S., **Cross, J.N.**, and Cai, W.-J., 2013. Carbon biogeochemistry of the Western Arctic: Primary Production, Carbon Export and Controls on Ocean Acidification. In: Grebmeier, J.M., and Maslowski, W. [Eds.] *The Pacific Arctic Region: Ecosystem Status and Trends in a Rapidly Changing Environment*. Springer, in press.
- Mathis, J.T., Hauri, C., and **Cross, J.N.**, 2013. [Arctic] Ocean acidification. In: State of the Climate in 2012. *Bulletin of the American Meteorological Society*, **94**(8), S121-S123.
- **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.
- **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.
- Mathis, J.T., Pickart, R.S., Byrne, R.H., McNeil, C.L., Moore, G.W.K., Juranek, W., Liu, X., Ma, J., Easley, R.A., Elliot, M.M., **Cross, J.N.**, Reisdorph, S.C., Bahr, F., Morison, J., Lichendorf, T., and Feely, R.A., 2012. Storm-induced upwelling of high pCO₂ waters onto the continental shelf of the western Arctic Ocean and implications for carbonate mineral saturation states. *Geophysical Research Letters*, **39**, L07606.
- Mathis, J.T., **Cross, J.N.**, and Bates, N.R., 2011. The role of ocean acidification in systemic carbonate mineral suppression in the Bering Sea. *Geophysical Research Letters*, **38**, L19602.
- Mathis, J.T., **Cross, J.N.**, and Bates, N.R., 2011. Coupling primary production and terrestrial runoff to ocean acidification and carbonate mineral suppression in the Eastern Bering Sea. *Journal of Geophysical Research-Oceans*, **116**, C02030, 2011.
- Mathis, J.T., **Cross, J.N.**, Bates, N.R., Moran, S.B., Lomas, M.W., and Stabeno, P.J., 2010. Seasonal distribution of dissolved inorganic carbon and net community production on the Bering Sea shelf. *Biogeosciences*, **7**, 1769-1787.

Invited Presentations:

- **Cross, J.N.***, Mathis, J.T., and Bates, N.R. Ocean Acidification of Alaskan Coastal Waters. Department of Chemistry Seminar, Rhodes College, Memphis, TN 2013.

Presentations at National and International Meetings:

- **Cross, J.N.***, Mathis, J.T., Evans, W., Monacchi, N.M., Danielson, S.L., and Stabeno, P.J., "Acidification-induced carbonate mineral dissolution in the eastern Bering Sea." Alaska Marine Science Symposium, Anchorage, AK, 2014.
- **Cross, J.N.***, "Integrated assessment of the carbon budget in the southeastern Bering Sea: from the atmosphere to the sediment." Alaska Marine Science Symposium, Anchorage, AK, 2013.
- **Cross, J.N.***, and Mathis, J.T. "Controls on carbonate mineral saturation states and ocean acidification on the Southeastern Bering Sea Shelf." Third International Symposium on the Ocean in a High CO₂ World, Monterey, CA, 2012.
- **Cross, J.N.***, Mathis, J.T., and Bates, N.R. "Controls on Carbonate Mineral Saturation States and Ocean Acidification in the Southeastern Bering Sea." American Geophysical Union Ocean Sciences

Meeting, Salt Lake City, UT, 2012.

- **Cross, J.N.***, Mathis, J.T., and Bates, N.R. "Controls on Carbonate Mineral Saturation States and Ocean Acidification on the Southeastern Bering Sea Shelf." North Pacific Marine Science Organization (PICES) ESSAS Ocean Sciences Meeting, Seattle, 2011.
- **Cross, J.N.***, Mathis, J.T., Bates, N.R., Moran, S.B., Lomas, M.W., and Stabeno, P.J. "The seasonal distribution of DIC and NCP on the Bering Sea Shelf." American Geophysical Union Ocean Sciences Meeting, Portland, OR, 2010.

Posters at National and International Meetings:

- Cross, J.N.* , Mathis, J.T., Evans, W., Byrne, R.H., and Bates, N.R., 2014. "Acidification-induced carbonate mineral dissolution in the Eastern Bering Sea." American Geophysical Union Ocean Sciences Meeting, Honolulu, HI, 2014.
- **Cross, J.N.***, and Mathis, J.T. "Ocean Acidification and Carbonate Mineral Saturation State Suppression in the Eastern Bering Sea." Woods Hole Oceanographic Institution Ocean Carbon Biogeochemistry Workshop, Woods Hole, 2012.
- **Cross, J.N.***, and Mathis, J.T. "Nonconservative Variation of Total Alkalinity in the Subarctic Pacific (Southeastern Bering Sea Shelf)." Bering Sea Project Principle Investigator Meeting, Anchorage, AK, 2012.
- **Cross, J.N.***, Mathis, J.T., and Bates, N.R. "Controls on Carbonate Mineral Saturation States and Ocean Acidification on the Bering Sea Shelf." Woods Hole Oceanographic Institution Ocean Carbon Biogeochemistry Workshop, Woods Hole, 2011.
- **Cross, J.N.***, Mathis, J.T., Bates, N.R., Moran, S.B., Lomas, M.W., and Stabeno, P.J. "The Southeastern Bering Sea Shelf: seasonal distribution of dissolved inorganic carbon and net community production." Woods Hole Oceanographic Institution Ocean Carbon Biogeochemistry Workshop, Woods Hole, 2009.

Local Presentations:

- **Cross, J.N.***, Carbon biogeochemistry of the eastern Bering Sea shelf. Doctoral defense, School of Fisheries and Ocean Sciences, Fairbanks, AK, 2013.
- **Cross, J.N.***, and Mathis, J.T. Carbon biogeochemistry of the eastern Bering Sea shelf: Mechanisms driving natural variability, anthropogenic perturbations, and some consequences for the ecosystem. Institute of Marine Science Departmental Seminar, Fairbanks, AK, 2013.
- Mathis, J.T., and **Cross, J.N.*** "Biogeochemical Assessment of the North Aleutian Basin Ecosystem: Current Status and Vulnerability to Change." Coastal Marine Institute, Fairbanks, AK, 2012.
- **Cross, J.N.*** "Controls on Carbonate Mineral Saturation States and Ocean Acidification on the Bering Sea Shelf." Institute of Marine Science Departmental Seminar, Fairbanks, AK, 2011.
- **Cross, J.N.*** "Seasonal distribution of Dissolved Inorganic Carbon and Net Community Production on the Bering Sea Shelf." Institute of Marine Science Departmental Seminar, Fairbanks, AK, 2010.
- Mathis, J.T., and **Cross, J.N.*** "The Ocean Acidification Initiative." University of Alaska, Fairbanks Board of Regents Meeting, Fairbanks, AK, 2010.
- Mathis, J.T., and **Cross, J.N.*** "Biogeochemical Assessment of the North Aleutian Basin Ecosystem: Current Status and Vulnerability to Change." Coastal Marine Institute, Fairbanks, AK, 2010.
- Mathis, J.T., and **Cross, J.N.*** "Ocean Acidification: What it Means to Alaska." School of Fisheries and Ocean Sciences Advisory Council, Fairbanks, AK, 2010.
- **Cross, J.N.*** "Techniques of Inorganic Carbon Dioxide Analysis in the Eastern Bering Sea." Institute of Marine Science Departmental Seminar, Fairbanks, AK, 2008.