

Fenix Garcia-Tigreros

ASSISTANT PROFESSOR · GRADUATE SCHOOL OF OCEANOGRAPHY

University of Rhode Island, Narragansett, RI

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Education

University of Rochester

PH.D. GEOSCIENCES

Rochester, NY

May 2019

- Advisor: Dr. John Kessler

Texas A& M University

M.S. OCEANOGRAPHY

College Station, TX

May 2019

- Advisor: Dr. Shari Yvon-Lewis

Binghamton University

B.S. CHEMISTRY

Binghamton, NY

May 2009

- Honors thesis advisor: Dr. Sadik Omowunmi

Professional Experience

- 2022-Present **Assistant Professor**, Graduate School of Oceanography, University of Rhode Island
- 2019-2022 **Postdoctoral Scholar**, Dept. Environmental and Forest Sciences, University of Washington - Dr. David Butman
- 2013-2019 **Graduate Teaching Assistant**, Dept. Earth and Environmental Sciences, University of Rochester
- 2010-2013 **Graduate Teaching Assistant**, Dept. Oceanography, Texas A&M University
- 2008-2009 **Undergraduate Research Assistant**, Dept. Chemistry, Binghamton University
- 2007 **Undergraduate Intern**, National Museum of Natural History, Smithsonian Institution - Dr. Brian T. Huber

Publications

PUBLISHED

- Kyzivat, E. D., Smith, L. C., **Garcia-Tigreros, F.**, Huang, C., Wang, C., Langhorst, T., et al. (2022). The importance of lake emergent aquatic vegetation for estimating Arctic-boreal methane emissions. *Journal of Geophysical Research: Biogeosciences*, 127, e2021JG006635. <https://doi.org/10.1029/2021JG006635>
- Garcia-Tigreros, F.**, C. Ruppel, M. Leonte, D. Joung, A. Ruiz Angulo, B. Young and J. D. Kessler (2021), Estimating the impact of ancient methane on pH and dissolved inorganic radiocarbon along the U.S. Mid-Atlantic Margin. *Journal of Geophysical Research: Biogeosciences*, 126, e2019JG005621, <https://doi.org/10.1029/2019JG005621>.
- Garcia-Tigreros, F.**, and J. D. Kessler (2018), Limited acute influence of aerobic methane oxidation on ocean carbon dioxide and pH in Hudson Canyon, Northern U.S. Atlantic Margin. *Journal of Geophysical Research: Biogeosciences*, 123(7), 2135-2144. <https://doi.org/10.1029/2018JG004384>.
- Sparrow, K. J., J. D. Kessler, J. R. Southon, **Garcia-Tigreros, F.**, K. M. Schreiner, C. D. Ruppel, J. B. Miller, S. J. Lehman, X. Xu (2018), Limited ontribution of ancient methane to surface waters of the U.S. Beaufort Sea shelf, *Science Advances*, 4, eaao4842, <https://doi.org/10.1126/sciadv.aao4842>.
- Garcia-Tigreros Kodovska, F.**, Sparrow, K., Yvon-Lewis, S., Paytan, A., Kessler, J. D. (2016), Dissolved methane and carbon dioxide fluxes in Subarctic and Arctic Regions: assessing measurement techniques and spatial gradients, *Earth and Planetary Science Letters*, 436, 43-55, <https://doi.org/10.1016/j.epsl.2015.12.002>.
- Dimova, N., A. Paytan, J. D. Kessler, K. J. Sparrow, **Garcia-Tigreros Kodovska, F.**, A. L. Lecher, J. Murray, and S. Tulaczyk. (2015), The current magnitude and mechanisms of groundwater discharge in the Arctic: a case study from Alaska, *Environmental Science & Technology*, 49 (20), 12036-12043, <https://doi.org/10.1021/acs.est.5b02215>.

- Lecher, A.L., J.D. Kessler, K. Sparrow, **Garcia-Tigreros Kodovska, F.**, N. Dimova, J. Murray, S. Tulaczyk, A. Paytan. (2015), Methane transport through submarine groundwater discharge to the North Pacific and Arctic Ocean at two Alaskan sites, *Limnology and Oceanography*, 61 (S1), <https://doi.org/10.1002/lno.10118>.
- Paytan, A., A. Lecher, N. Dimova, K. Sparrow, **Garcia-Tigreros Kodovska**, J. Murray, S. Tulaczyk, J.D. Kessler. (2015), Methane transport from the active layer to lakes in the Arctic using Toolik Lake, Alaska, as a case study, *Proceedings of the National Academy of Sciences*, 112 (12), 3636-3640, <https://doi.org/10.1073/pnas.1417392112>.
- Du, M., S. Yvon-Lewis, **Garcia-Tigreros Kodovska**, D.L. Valentine, S. Mendes, J.D. Kessler. (2014), High resolution measurements of methane and carbon dioxide concentrations and air-sea fluxes reveal the influence of methane seepage on greenhouse gas dynamics in a massive natural seep field near Coal Oil Point, California, *Environmental Science & Technology*, 48 (17), 10165-10173, <https://doi.org/10.1021/es5017813>.
- Bianchi, T.S., **Garcia-Tigreros**, Yvon-Lewis, S.A., Shields, M., Mills, H.J., Butman, D., Osburn, C., Raymond, P., Shank, C., DiMarco, S.F., Walker, N., Reese, B., Mullins, R., Quigg, A., Aiken, G.R., and Grossman E.L. (2013), Enhanced Transfer of Terrestrially-Derived Carbon to the Atmosphere in a Flooding Event, *Geophysical Research Letters*, 40(1), 116-122, doi:10.1029/2012GL054145
- Valentine, D.L., J.D. Kessler, M.C. Redmond, S.D. Mendes, M.B. Heintz, C. Farwell, L. Hu, F.S. Kinnaman, S. Yvon-Lewis, M. Du, E.W. Chan, **Garcia-Tigreros**, C.J. Villanueva (2010), Propane respiration jump-starts microbial response to a deep oil spill, *Science*, 330, 208, <https://doi.org/10.1126/science.1196830>.

IN REVIEW

- Garcia-Tigreros, F.**, Clayton D. Elder, Martin R. Kurek, Benjamin L. Miller, Xiaomei Xu, Kimberly P. Wickland, Claudia I. Czimczik, Mark M. Dornblaser, Robert G. Striegl, Ethan D. Kyzivat, Laurence C. Smith, Robert G.M. Spencer, Charles E. Miller, David E. Butman. Landscape variables dictate permafrost carbon cycling in Arctic-boreal lakes in interior Alaska.
- Kurek M. R., **Garcia-Tigreros, F.**, Kimberly P. Wickland, Karen E. Frey, Mark M. Dornblaser, Robert G. Striegl, Sydney F. Niles, Amy M. McKenna, Pieter J. K. Aukes, Ethan D. Kyzivat, Chao Wang, Tamlin M. Pavelsky, Laurence C. Smith, Sherry L. Schiff, David Butman, Robert G. M. Spencer. Hydrologic and landscape controls of dissolved organic matter composition across Western North American Arctic lakes.
- Wang, C., Tamlin M. Pavelsky, Ethan D. Kyzivat, **Garcia-Tigreros, F.**, Erika Podest, Fangfang Yao, Xiao Yang, Shuai Zhang, Conghe Song, Theodore Langhorst, Wayana Dolan, Martin Kurek, Merritt E. Harlan, Laurence C. Smith, David E. Butman, Robert G. M. Spencer, Colin J. Gleason, Kimberly P. Wickland, Robert G. Striegl, Daniel L. Peters. Quantification of wetland vegetation communities features with airborne AVIRIS-NG, UAVSAR, and UAV LiDAR data in Peace-Athabasca Delta

Fellowships, Honors & Awards

- 2019 **Student Travel Award**, The Oceanography Society
- 2016 **Invited**, Dissertation Symposium in Chemical Oceanography XXV
- 2016 **Graduate Student Travel Award**, University of Rochester
- Fall 2015 **Provost Fellowship**, University of Rochester
- Fall 2014 **Provost Fellowship**, University of Rochester
- Fall 2013 **Provost Fellowship**, University of Rochester
- Fall 2011 **NSF S-STEM Scholar**, Texas A& M University
- Fall 2010 **NSF S-STEM Scholar**, Texas A& M University

Presentations

INVITED TALKS

- Spring 2022. *Climate-sensitive methane: its fate and impact on dissolved inorganic carbon*. Departmental Seminar at the Oceanography Department, Texas A& M University, College Station, Texas.
- Fall 2016. *Assessing the influence of aerobic methane oxidation on ocean carbon dioxide, pH, and carbonate saturation states in areas of active gas seepage*. Dissertation Symposium in Chemical Oceanography XXV (DISCO), Honolulu, Hawaii.

Fall 2015. *The potential influence of aerobic methane oxidation on ocean carbon dioxide and pH*. Center for Arctic Gas Hydrates, Environment and Climate (CAGE), The Arctic University of Norway, Norway.

SELECTED PRESENTATIONS

- Garcia-Tigreros, Fenix, Mark M. Dornblaser, Kimberly P. Wickland, Martin Kurek, Benjamin L. Miller, Ethan D. Kyzivat, Robert G.M. Spencer, Robert G. Striegl, Laurence C. Smith, Tamlin M. Pavelsky, Chao Wang, David E. Butman. 2021. Assessing spatial heterogeneity of methane and carbon dioxide fluxes across open and littoral lake margins in northern interior Alaska. Oral Presentation, AGU Fall Meeting, New Orleans.
- Garcia-Tigreros, Fenix, C. D. Kuhn, M. M. Dornblaser, K. P. Wickland, M. Kurek, E. D. Kyzivat, R. G.M Spencer, R. G. Striegl, D. E. Butman. 2020. Estimating the Influence of Hydrological Connectivity on Carbon Dynamics Across Arctic-Boreal Lakes. Virtual Poster, AGU Fall meeting).
- Garcia-Tigreros, Fenix and J. D. Kessler. 2018. Estimating the impact of ancient methane on pH and dissolved inorganic radiocarbon along the U.S. Mid-Atlantic Margin, AGU Fall Meeting, Portland, OR (Poster).
- Garcia-Tigreros, Fenix, K. J. Sparrow, K. M. Schreiner, and J. D. Kessler. 2017. Using radiocarbon to fingerprint ancient sources of dissolved inorganic carbon to the Alaskan Arctic Shelf, Goldschmidt Conference, Poster, Paris, France.
- Garcia-Tigreros, Fenix, J.D. Kessler, M. Leonte, A. Chepigin, M. Kellermann, E. Arrington, D.L. Valentine. 2015. Carbonate Chemistry Dynamics in an Area of Active Gas Seepage: the Hudson Canyon, US Atlantic Margin. Poster, AGU Fall Meeting, San Francisco, CA.
- Garcia-Tigreros, Fenix, Sparrow, K., Yvon-Lewis, S., Paytan, A., Kessler, J. D. 2016. Dissolved Methane and Carbon Dioxide Fluxes in Subarctic and Arctic Regions: Assessing Measurement Techniques and Spatial Gradients. Poster, Ocean Sciences Meeting, New Orleans.
- Garcia-Tigreros, Fenix, Yvon-Lewis, S.A., Bianchi, T. S., Shields, M., Wanninkhof, R., Pierrot, D. 2012. Effects of the 2011 Mississippi River Flood on CO₂ Fluxes in the Louisiana Coastal Zone; Linkages with Riverine DOM. Oral, Ocean Sciences Meeting in Salt Lake City, UT.

Teaching & Outreach

Fall 2014	Chemical Oceanography , Teaching Assistant	<i>University of Rochester</i>
Spring 2014	Marine Geology , Teaching Assistant	<i>University of Rochester</i>
Fall 2013	Introduction to Geological Sciences , Teaching Assistant	<i>University of Rochester</i>
Spring 2022	My path in oceanography and limnology , Guest Speaker	<i>Queens College</i>
Winter 2021	Simultaneous interpreter , UW GEAR UP	<i>Kent High School</i>
Fall 2019	What is Chemical Oceanography , Guest Speaker	<i>University of New England</i>

Field Experience

- 2017 R/V Hugh R. Sharp, North Atlantic Margin, USA,
- 2016 R/V Helmer Hanssen, Tromso, Norway,
- 2016 R/V Ukpik, Prudhoe Bay, Alaska, USA,
- 2015 R/V Helmer Hanssen, Tromso, Norway,
- 2014 R/V Endeavor, North Atlantic Margin, USA,
- 2012 Barrow Field Station, Alaska, USA,
- 2012 Toolik Field Station, Alaska, USA,
- 2012 Kastitsna Bay Laboratoty, Kasitsna Bay, Alaska, USA,
- 2010-2012 R/V Pelican, Gulf of Mexico, USA,
- 2011 R/V Blazing 7, Gulf of Mexico, USA,
- 2010 R/V Cape Hatteras, Gulf of Mexico, USA,

Reviewer Contributions

SCIENTIFIC JOURNALS

Journal of Geophysical Research: Biogeosciences · Estuaries and Coasts · Nature Communications

FUNDING AGENCIES

Chemical Oceanography