

# Patricia L. Yager, Ph.D.

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## ADDRESS, TELEPHONE

Department of Marine Sciences  
University of Georgia, Athens, Georgia 30602-3636

(706) 542-6824  
pyager@uga.edu

**Researcher ID:** K-8020-2014

Profile in **Google Scholar**

**ORCID:** [orcid.org/0000-0002-8462-6427](https://orcid.org/0000-0002-8462-6427)

**Brazil Lattes:** 8808128639645246

## EDUCATION

- 1996 **Doctor of Philosophy.** *Biological Oceanography.* School of Oceanography, University of Washington, Seattle, Washington. Major Professor: J. W. Deming.
- 1988 **Master of Science.** *Marine Geology and Geophysics.* School of Oceanography, University of Washington, Seattle, Washington. Major Professor: A. R. M. Nowell.
- 1985 **Bachelor of Science.** *Geology-Biology.* Brown University, Department of Geology, Providence, Rhode Island. Advisor: W. L. Prell.

## PROFESSIONAL EXPERIENCE

- 2016– **Professor.** Department of Marine Sciences, University of Georgia, Athens, Georgia.
- 2013–16 **Visiting Professor.** Federal University of Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil. *Science without Borders (Ciência sem Fronteiras).* Host: F.L. Thompson.
- 2012– **Affiliate Faculty.** Latin American and Caribbean Studies Institute, University of Georgia.
- 2010– **Director.** Georgia Initiative for Climate and Society. University of Georgia
- 2007–16 **Associate Professor.** Department of Marine Sciences, University of Georgia.
- 1999– **Affiliate Faculty.** Institute for Women's Studies (IWS), University of Georgia.
- 1998–07 **Assistant Professor.** Department of Marine Sciences, University of Georgia.
- 1996–98 **Assistant Professor.** Department of Oceanography, Florida State University.
- 1996 **Postdoctoral Fellow.** *University Corporation for Atmospheric Research (UCAR) Postdoctoral Program in Ocean Modeling.* Advisor: Dr. R. G. Wiegert.
- 1991–96 **Graduate Fellow.** *Department of Energy, Graduate Fellowship for Global Change.* University of Washington, Seattle, Washington. Major professor: Dr. J. W. Deming.
- 1989–91 **Research Scientist (Oceanographer I, II).** University of Washington, Seattle, Washington. Laboratory and field research technician for Dr. J. W. Deming.
- 1986–89 **Teaching Assistant.** School of Oceanography, University of Washington, Seattle, Washington. Drs. A. Duxbury, C. M. Emerick, A. R. M. Nowell, and P. A. Jumars.
- 1985–88 **Research Assistant.** School of Oceanography, University of Washington, Seattle, Washington. Dr. A. R. M. Nowell, P. A. Jumars.

## PROFESSIONAL SERVICE AND ADMINISTRATIVE EXPERIENCE

- 2019– **Co-chair,** *Southern Ocean Observing System (SOOS)* – Amundsen / Bellingshausen Sea Regional Working Group
- 2018– **Member,** *Subcommittee on Ocean-Atmospheric Interactions,* Ocean Carbon & Biogeochemistry (OCB; [www.us-ocb.org](http://www.us-ocb.org)) program.
- 2017– **Executive Board Member** of the *Georgia Climate Project (GCP;* [georgiaclimatoproject.org](http://georgiaclimatoproject.org))
- 2017–19 **Co-Editor-in-Chief,** *Encyclopedia of the Oceans* (Elsevier).
- 2016– **Steering committee** member for West Antarctic Ice Sheet project and co-author of WAIS Science Plan (2016).

- 2010–      **Director** of the Georgia Initiative for Climate and Society (*climateandsociety.uga.edu*)
- 2012        **Antarctic Service Medal** of the United States of America. National Science Foundation. For exemplary service as Chief Scientist of 8-week icebreaker expedition to Antarctica.
- 2010–12    **Chief Scientist** and lead principal investigator on 4 global-class research expeditions to Antarctica (1) and the western tropical North Atlantic Ocean (3).
- 2009–11    **Chair (2011) and Vice Chair (2009)** of Gordon Research Conferences on Polar Marine Sciences. Ventura, California (March 2011); Il Ciocco, Italy (2009).
- 1998–      **Lead Principal Investigator** on collaborative extramural grants (includes non-UGA components): >\$12.3 million.

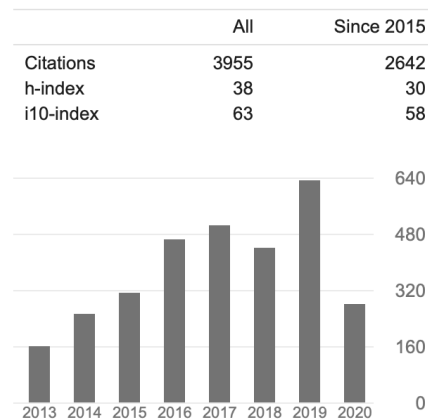
## RESEARCH DESCRIPTION

My research investigates how climate and climate-driven processes affect marine ecosystems and the global carbon cycle. I work across disciplinary boundaries to synthesize ideas about complex earth systems. My research focuses on the ocean's role of absorbing excess carbon dioxide from the atmosphere. Carbon uptake can be altered when the ocean changes in response to climate change, thus altering air-sea gradients and exchange. Regions of interest span the globe, with projects in Antarctica, the Arctic, and the western tropical North Atlantic. Recent efforts have explored the impact of changing rivers, glacial melt, and sea ice melt on net community production and CO<sub>2</sub> uptake by coastal oceans. As primary agents for carbon and nutrient cycling, marine microorganisms are the focus of my efforts, but interests and international collaborations include the discovery of a coral reef system near the mouth of the Amazon River. My interdisciplinary approach combines observational and experimental fieldwork with numerical modeling approaches to explore climate impacts on biological, chemical, and physical oceanographic processes that influence the global carbon cycle.

## EVIDENCE OF EXPERTISE AND RESEARCH PRODUCTIVITY

### PEER-REVIEWED PAPERS

I am an author of 74 published, peer-reviewed papers. My research is highly collaborative, and I have been the Lead Principal Investigator of several large, international, multi-disciplinary field efforts. These papers are in top-tier, high-impact journals, and have been cited over 3955 times (see figure on right, Google Scholar, as of June 30, 2020). My **H-index is 38** (38 of my papers have been cited at least 38 times) and my i10-index is 63 (63 papers cited more than 10 times). Following several multi-year field efforts, I have been in “synthesis and modeling” phase recently. Two projects used numerical modeling in coastal Greenland or Antarctica to understand the mechanisms behind the impact of melting ice sheets on coastal ecosystems. I am also involved in several climate-change science communication efforts.



See papers listed below, arranged by research area. Underlined author indicates Yager students or postdocs; dashed-underlined author indicates project students or postdocs.

### Greenland Ice-Sheet meltwater impacts on coastal marine ecosystems (Greenland ISS)

*In the Arctic, our NASA-IDS project brought together oceanographers and glaciologists to explore the oceanic fate of Greenland meltwater and its potential impact on phytoplankton offshore. We used numerical models to understand the production and routing of meltwater, we observed a correlation in time between the arrival of meltwater and increased ocean color in coastal Greenland, and we demonstrated a mechanism for increased fall phytoplankton blooms and community shifts in response to this meltwater.*

74. Oliver, H., R. M. Castelao, C. Wang, **P. L. Yager** (2020). Meltwater-enhanced nutrient export from Greenland's glacial fjords: a sensitivity analysis *J. Geophys. Res: Oceans*. doi: 10.1029/2020JC016185.
73. Castelao, R.M., H. Luo, H. Oliver, A. K. Rennermalm, M. Tedesco, A. Bracco, **P. L. Yager**, T. L. Mote, P. M. Medeiros (2019). Controls on the transport of meltwater from the southern Greenland ice sheet in the Labrador Sea. *J. Geophys. Res: Oceans*. doi:10.1029/2019JC015159
72. Oliver, H., H. Luo, R. M. Castelao, G. van Dijken, K. S. Mattingly, J. J. Rosen, T. L. Mote, K. R. Arrigo, Å. K. Rennermalm, M. Tedesco, **P. L. Yager** (2018). Exploring the potential impact of Greenland meltwater on photosynthetically active radiation and primary production in the Labrador Sea. *J. Geophys. Res: Oceans*. 123 (4): 2570-2591. doi: 10.1002/2018JC013802
71. Arrigo, K. R., G. L. van Dijken, R. M. Castelao, H. Luo, Å. K. Rennermalm, M. Tedesco, T. L. Mote, H. Oliver, **P. L. Yager** (2017). Melting glaciers stimulate large summer phytoplankton blooms in southwest Greenland waters. *Geophys. Res. Lett.* 44. doi: 10.1002/2017GL073583.
70. Luo, H., R. M. Castelao, A. K. Rennermalm, M. Tedesco, A. Bracco, **P. L. Yager**, T. L. Mote (2016). Oceanic transport of surface meltwater from the southern Greenland Ice Sheet. *Nature Geosciences*. doi: 10.1038/ngeo2708.

### West Antarctic Ice-Sheet meltwater impacts on coastal marine ecosystems (INSPIRE)

*In the Antarctic, our NSF-OPP project investigated the glacial meltwater pump mechanism behind iron delivery to the extremely productive Amundsen Sea Polynya (ASP) using a numerical model validated with field data from an earlier project (ASPIRE; see below). We also incorporated biogeochemical cycling into the ROMS model to examine climate-sensitive mechanisms behind the massive phytoplankton bloom.*

69. Oliver, H., P. St-Laurent, R. M. Sherrell, and **P. L. Yager** (2019). Modeling iron and light controls on the summer *Phaeocystis antarctica* bloom in the Amundsen Sea Polynya. *Global Biogeochem. Cyc.* doi:10.1029/2018GB006168
68. St-Laurent, P., **P. L. Yager**, R. M. Sherrell, H. Oliver, M. S. Dinniman, and S. E. Stammerjohn (2019). Modeling the seasonal cycle of iron and carbon fluxes in the Amundsen Sea Polynya, Antarctica. *J. Geophys. Res: Oceans*. doi: 10.1029/2018JC014773
67. ~~St-Laurent, P.~~, **P. L. Yager**, R. M. Sherrell, S. E. Stammerjohn, and M. S. Dinniman (2017). Pathways and supply of dissolved iron in the Amundsen Sea (Antarctica). *J. Geophys. Res: Oceans* 122, doi:10.1002/2017JC013162.

See also: **Research Features**. Dec. 2017. *Exploring the links between melting ice and ecosystems*. 121:14–17. [http://cdn.researchfeatures.com/3d\\_issues/issue121/html5/index.html](http://cdn.researchfeatures.com/3d_issues/issue121/html5/index.html)

### Georgia Climate Project

*The Georgia Climate Project is a state-wide consortium founded in 2016 and led by Emory University, the University of Georgia, and the Georgia Institute of Technology, to improve understanding of climate impacts and solutions in Georgia. In one of our first efforts, a multi-disciplinary team of experts developed the "Georgia Climate Research Roadmap," a first-of-its-kind list of 40 key research questions that can help policymakers and practitioners better understand and address climate change in Georgia.*

66. Rudd, M. A., A. F. P. Moore, D. Rochberg, L. Bianchi-Fossati, M. A. Brown, D. D'Onofrio, C. A. Furman, J. Garcia, B. Jordan, J. Kline, L. M. Risse, **P. L. Yager**, J. Abbinett, M. Alber, J. E. Bell, C. Bhedwar, K. M. Cobb, J. Cohen, M. Cox, M. Dormer, N. Dunkley, H. Farley, J. Gambill, M. Goldstein, G. Harris, M. Hopkinson, J. -A. James, S. Kidd, P. Knox, Y. Liu, D. C. Matisoff, M. D. Meyer, J. D. Mitchem, K. Moore, A. J. Ono, J. Philipsborn, K. M. Sendall, F. Shafiei, M. Shepherd, J. Teebken, A. N. Worley (2018). Climate research priorities for policy-makers, practitioners, and scientists in Georgia, USA. *Environmental*

Management. doi: 10.1007/s00267-018-1051-4.

### Antarctic Ice Sheet - Ocean - Sea Ice - Ecosystem interactions (Amundsen Sea, Antarctica)

*My Antarctic research began onboard Oden Southern Ocean in 2007, which led to the Amundsen Sea Polynya International Research Expedition (ASPIRE, part of IPY) onboard the Research Icebreaker N. B. Palmer in 2010–11. As Chief Scientist, I led the 40 international scientists onboard. The project examined the massive algal bloom of the Amundsen Sea polynya, and explored the climate driven mechanisms relieving iron- and light-limitation there. The project generated more than 20 publications, led to a special feature in the journal Elementa: Science of the Anthropocene (collections.elementascience.org/aspire), and captured the interest of the West Antarctic Ice Sheet (WAIS) working group.*

65. Richert, I., **P. L. Yager**, J. Dinasquet, R. Logares, L. Riemann, A. Wendeberg, S. Bertilsson, D. G. Scofield (2019). Summer comes to the Southern Ocean: how surface phytoplankton shapes bacterioplankton communities far into the deep dark sea. *Ecosphere* 10 (3), e02641. DOI:10.1002/ecs2.2641
64. Scambos, T. A., R. E. Bell, R. B. Alley, S. Anandakrishnan, D. H. Bromwich, K. Brunt, K. Christianson, T. Creyts, S. B. Das, R. DeConto, P. Dutrieux, H. A. Fricker, D. Holland, J. MacGregor, B. Medley, J. P. Nicolas, D. Pollard, M. R. Siegfried, A. M. Smith, E. J. Steig, L. D. Trusel, D. G. Vaughan, **P. L. Yager** (2017). How much, how fast? A science review and outlook for research on the instability of Antarctica's Thwaites Glacier in the 21st century. *Global and Planetary Change* 153: 16–34. doi: 10.1016/j.gloplacha.2017.04.008.
63. Dinasquet, J., I. Richert, R. Logares, **P. L. Yager**, S. Bertilsson, L. Riemann (2017). Mixing of water masses caused by a drifting iceberg affects bacterial activity, community composition and substrate utilization capability in the Southern Ocean. *Environ. Microbiol.* 19(6): 2453–2467. doi: 10.1111/1462-2920.13769.
62. **Yager, P. L.**, R. M. Sherrell, S. E. Stammerjohn, H. W. Ducklow, O. M. E. Schofield, E. D. Ingall, S. E. Wilson, K. E. Lowry, C. M. Williams, L. Riemann, S. Bertilsson, A. -C. Alderkamp, J. Dinasquet, R. Logares, I. Richert, R. E. Sipler, A. J. Melara, L. Mu, R. G. Newstead, A. F. Post, R. Swalethorp, and G. L. van Dijken (2016). A carbon budget for the Amundsen Sea Polynya, Antarctica; estimating net community production and export in a highly productive polar ecosystem. *Elem. Sci. Anth.* 4(1): 000140. doi: 10.12952/journal.elementa.000140.
61. Williams, C. M., A. M. Dupont, J. Loevenich, A. F. Post, J. Dinasquet, **P. L. Yager** (2016). Pelagic microbial heterotrophy in response to a highly productive bloom of *Phaeocystis antarctica* in the Amundsen Sea Polynya, Antarctica. *Elem. Sci. Anth.* 4: 000102. doi: 10.12952/journal.elementa.000102.
60. Sherrell, R. M., M. Lagerström, K. O. Forsch, S. E. Stammerjohn, and **P. L. Yager** (2015). Dynamics of dissolved iron and other bioactive trace metals (Mn, Ni, Cu, Zn) in the Amundsen Sea polynya, Antarctica. *Elem. Sci. Anth.* 3: 000071. doi: 10.12952/journal.elementa.000071.
59. Schofield, O., T. Miles, A. -C. Alderkamp, S. -H. Lee, C. Haskins, E. Rogalsky, R. Sipler, R. Sherrell, **P. L. Yager** (2015). In situ phytoplankton distributions in the Amundsen Sea polynya measured by autonomous gliders. *Elem. Sci. Anth.* 3: 000073. doi: 10.12952/journal.elementa.000073.
58. Randall-Goodwin, E., M. P. Meredith, A. Jenkins, **P. L. Yager**, R. M. Sherrell, E. P. Abrahamsen, R. Guerrero, X. Yuan, R. A. Mortlock, K. Gavahan, A. -C. Alderkamp, H. Ducklow, R. Robertson, and S. E. Stammerjohn (2015). Freshwater distributions and water mass structure in the Amundsen Sea Polynya region, Antarctica. *Elem. Sci. Anth.* 3: 000065. doi:10.12952/journal.elementa.000065
57. Stammerjohn, S. E., T. Maksym, R. A. Massom, K. E. Lowry, K. R. Arrigo, X. Yuan, M. Raphael, E. Randall-Goodwin, R. M. Sherrell, and **P. L. Yager** (2015). Seasonal sea ice changes in the Amundsen Sea, Antarctica, over the period of 1979–2014. *Elem. Sci. Anth.* 3: 000055. doi:10.12952/journal.elementa.000055.
56. Ducklow, H. W., S. E. Wilson, A. F. Post, S. E. Stammerjohn, M. Erickson, S. -H. Lee, K. E. Lowry, R. M.

- Sherrell, **P. L. Yager** (2015). Particle flux over the continental shelf in the Amundsen Sea Polynya and Western Antarctic Peninsula. *Elem. Sci. Anth.* 3(1) 000046. doi: 10.12952/journal.elementa.000046.
55. Richert, I., J. Dinassquet, R. Logares, L. Riemann, **P. L. Yager**, A. Wendeborg, S. Bertilsson (2015). The influence of light and water mass on bacterial population dynamics in the Amundsen Sea Polynya. *Elem. Sci. Anth.* 3(1) 000044. doi: 10.12952/journal.elementa.000044.
54. Alderkamp, A.-C., G. L. van Dijken, K. E. Lowry, T. L. Connelly, M. Lagerstrom, R. M. Sherrell, T. Haskins, E. Rogalsky, O. Schofield, S. E. Stammerjohn, **P. L. Yager**, K. R. Arrigo. (2015). Fe availability drives phytoplankton photosynthesis rates in the Amundsen Sea Polynya, Antarctica. *Elem. Sci. Anth.* 3(1) 000043. doi: 10.12952/journal.elementa.000043.
53. Wilson, S. E., R. Swalethrop, S. Kjellerup, M. A. Wolverton, H. W. Ducklow, and **P. L. Yager** (2015). Meso- and macro-zooplankton community structure of the Amundsen Sea Polynya, Antarctica (Summer 2010–2011). *Elem. Sci. Anth.* 3(1): 000033 doi: 10.12952/journal.elementa.000033.
52. Delmont, T. O., K. M. Hammar, H. W. Ducklow, **P. L. Yager**, and A.F. Post (2014). *Phaeocystis antarctica* blooms strongly influence bacterial community structures in the Amundsen Sea polynya. *Frontiers in Microbiology* 5: 646. doi: 10.3389/fmicb.2014.00646.
51. Mu, L., S.E. Stammerjohn, K. E. Lowry, **P. L. Yager** (2014). Spatial variability of surface pCO<sub>2</sub> and air-sea CO<sub>2</sub> flux in the Amundsen Sea Polynya, Antarctica. *Elem. Sci. Anth.* 2: 000036 doi: 10.12952/journal.elementa.000036.
50. \*Garay, L., A. M. Wotkyns, K. E. Lowry, J Warburton, A.-C. Alderkamp, and **P. L. Yager** (2014). ASPIRE: Teachers and researchers working together to enhance student learning. *Elem. Sci. Anth.* 2: 000034 doi: 10.12952/journal.elementa.000034. (\*Garay is a middle-school science teacher)
49. Ingall, E. D., J. M. Diaz, A. F. Longo, M. Oakes, L. Finney, S. Vogt, B. Lai, **P. L. Yager**, B. S. Twining, and J. A. Brandes (2013). Role of biogenic silica in the removal of iron from Antarctic Seas. *Nature Communications*: doi: 10.1038/ncomms2981.
48. Alonso-Sáez, L., A. S. Waller, D. R. Mende, K. Bakker, H. Farnelid, **P. L. Yager**, C. Lovejoy, J. E. Tremblay, M. Potvin, F. Heinrich, M. Estrada, L. Riemann, P. Bork, C. Pedrós-Alió, S. Bertilsson (2012). Role for urea in nitrification by polar marine Archaea. *Proc. Nat. Acad. Sci.* 109(44): 17989–17994. doi/10.1073/pnas.1201914109.
47. Ghiglione, J. -F., P. E. Galand, T. Pommier, C. Pedrós-Alió, E. W. Maas, K. Bakker, S. Bertilson, D. L. Kirchman, C. Lovejoy, **P. L. Yager**, A.E. Murray (2012). Pole to pole biogeography of surface and deep marine bacterial communities. *Proc. Nat. Acad. Sci.* 109(43): 17633–17638. doi/10.1073/pnas.1208160109.
46. **Yager, P. L.**, R. M. Sherrell, S. E. Stammerjohn, A.-C. Alderkamp, O. Schofield, E. P. Abrahamsen, K. R. Arrigo, S. Bertilsson, D. L. Garay, R. Guerrero, K. E. Lowry, P. -O. Moksnes, K. Ndungu, A. F. Post, E. Randall-Goodwin, L. Riemann, et al. (2012). ASPIRE: The Amundsen Sea Polynya International Research Expedition. *Oceanography* 25(3): 30–43. doi: 10.5670/oceanog.2012.73
45. Fransson, A., M. Chierici, **P. L. Yager**, and W. O. Smith Jr. (2011) Antarctic sea ice carbon dioxide system and controls. *Journal Geophysical Res.* 116(C12). doi:10.1029/2010JC006844.

### River-Ocean Continuum of the Amazon (ROCA and ANACONDAS projects)

*My contributions and those of my doctoral student (Sarah Cooley) to the 2001–2003 “MANTRA-PIRANA” expeditions led to the discovery of the Amazon plume as a globally significant CO<sub>2</sub> sink. This finding motivated me to lead 15 co-PIs in the next field effort (ANACONDAS / ROCA): 3 international oceanographic expeditions from 2010–2012 to explore the climate-sensitive controls and mechanisms of this carbon sink. NSF funded most of the plume work offshore and the Gordon and Betty Moore Foundation supported sampling the lower reaches of the Amazon River itself. The 3-year field effort generated more than 20 papers, with additional works in preparation. Collaborations with Brazilian collaborators were critical to the outcome, including*

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*the sampling of the microbial biogeochemistry of the lower reach and the discovery of a new coral reef located near the mouth.*

44. Gomes, H. R., Q. Xu, J. Ishizaka, E. J. Carpenter, **P. L. Yager**, J. I. Goes (2018). The influence of riverine nutrients in niche partitioning of phytoplankton communities—a contrast between the Amazon River Plume and the Changjiang (Yangtze) River diluted water of the East China Sea. *Frontiers Mar. Sci.* 5: 343. doi: 10.3389/fmars.2018.00343
43. Coles, V. J., M. R. Stukel, M. T. Brooks, A. Burd, B. C. Crump, M. A. Moran, J. H. Paul, **B. M. Satinsky**, **P. L. Yager**, **B. L. Zielinski**, R. R. Hood (2017). Ocean biogeochemistry modeled with emergent trait-based genomics. *Science* 358 (6367): 1149–1154. doi: 10.1126/science.aan5712.
42. ~~de O. Silva, B. S., F. H. Coutino, G. B. Gregoracci, L. Leomil, L. S. de Oliveira, A. Fróes, D. Tschoeke, A. C. Soares, A. S. Cabral, N. D. Ward, J. E. Richey, A. V. Krusche, **P. L. Yager**, C. E. Rezende, C. C. Thompson, F. L. Thompson (2017). Virioplankton assemblage structure in the lower river and ocean continuum of the Amazon. *mSphere* 2(5). doi: 10.1128/mSphere.00366-17.~~
41. ~~Satinsky B. M., C. B. Smith, S. Sharma, N. D. Ward, A. V. Krusche, J. E Richey, **P. L. Yager**, B. C. Crump, and M. A. Moran (2017). Patterns of bacterial and Archaeal gene expression through the lower Amazon River. *Front. Mar. Sci.* 4:253. doi: 10.3389/fmars.2017.00253.~~
40. ~~Doherty, M., **P. L. Yager**, M. A. Moran, V. J. Coles, C. S. Fortunato, A. V. Krusche, P. M. Medeiros, J. P. Payet, J. E. Richey, B. M. Satinsky, H. O. Sawakuchi, N. D. Ward, B. C. Crump (2017). Bacterial biogeography across the Amazon river-ocean continuum. *Front. Microbiol.* 8: 882. doi: 10.3389/fmicb.2017.00882.~~
39. Stenegren, M., C. Berg, C. C. Padilla, S. S. David, J. P. Montoya, **P. L. Yager**, **R. A. Foster** (2017). Piecewise Structural Equation Model (SEM) disentangles the environmental conditions favoring Diatom Diazotroph Associations (DDAs) in the western tropical North Atlantic (WTNA). *Front. Microbiol.* 8: 810. doi: 10.3389/fmicb.2017.00810.
38. ~~Satinsky, B. M., C. B. Smith, S. Sharma, M. Landa, P. M. Medeiros, V. J. Coles, **P. L. Yager**, B. C. Crump, M. A. Moran (2017). Expression patterns of elemental cycling genes in the Amazon River plume. *ISME J.* doi:10.1038/ismej.2017.46.~~
37. ~~Weber, S. C., E. J. Carpenter, V. J. Coles, **P. L. Yager**, J. I. Goes, and J. P. Montoya (2017). Amazon River influence on nitrogen fixation and export production in the western tropical North Atlantic. *Limnology and Oceanography* 62(2): 618–631. doi: 10.1002/lno.10448.~~
36. ~~Seidel, M., T. Dittmar, N. D. Ward, A. V. Krusche, J. E. Richey, **P. L. Yager**, P. M. Medeiros (2016). Seasonal and spatial variability of dissolved organic matter composition in the lower Amazon River. *Biogeochemistry* 131(3): 281-302. doi: 10.1007/s10533-016-0279-4.~~
35. ~~Zielinski B. L., A. E. Allen, E. J. Carpenter, V. J. Coles, B. C. Crump, M. Doherty, R. A. Foster, J. I. Goes, H. R. Gomes, R. R. Hood, J. P. McCrow, J. P. Montoya, A. Moustafa, B. M. Satinsky, S. Sharma, C. B. Smith, **P. L. Yager**, J. H. Paul (2016). Patterns of transcript abundance of eukaryotic biogeochemically-relevant genes in the Amazon River plume. *PLoS ONE* 11(9): e0160929. doi: 10.1371/journal.pone.0160929.~~
34. ~~Medeiros, P. M., ~~M. Seidel~~, J. Niggemann, R. G. M. Spencer, P. J. Hernes, **P. L. Yager**, W. L. Miller, T. Dittmar, and D. A. Hansell (2016). A novel molecular approach for tracing terrigenous dissolved organic matter into the deep ocean. *Global Biogeochem. Cyc.* 30:689–699. doi: 10.1002/2015GB005320.~~
33. Moura, R. L., et al. (2016). An extensive reef system at the Amazon River mouth. *Science Advances* 2(4):e1501252. doi: 10.1126/sciadv.1501252.
32. ~~Seidel, M., **P. L. Yager**, ~~N. D. Ward~~, E. J. Carpenter, H. R. Gomes, A. V. Krusche, J. E. Richey, T. Dittmar, P. M. Medeiros (2015). Molecular-level changes of dissolved organic matter along the Amazon River-to-~~

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- ocean continuum. *Mar. Chem.* doi:10.1016/j.marchem.2015.06.019.
31. Satinsky, B. M., C. S. Fortunato, M. Doherty, C. B. Smith, S. Sharma, N. D. Ward, A. V. Krusche, P. L. Yager, J. E. Richey, M. A. Moran, B. C. Crump (2015). Metagenomic and metatranscriptomic inventories of the lower Amazon River, May 2011. *Microbiome* 3:39. doi: 10.1186/s40168-015-0099-0.
  30. Ward, N. D., A. V. Krusche, H. O. Sawakuchi, D. C. Brito, A. C. Cunha, J. M. S. Moura, R. da Silva, **P. L. Yager**, R. G. Keil, J. E. Richey (2015). The compositional evolution of dissolved and particulate organic matter along the lower Amazon River – Óbidos to the Ocean. *Mar. Chem.* doi:10.1016/j.marchem.2015.06.013.
  29. Medeiros, P. M., M. Seidel, N. D. Ward, E. J. Carpenter, H. R. Gomes, J. Niggemann, A. V. Krusche, J. E. Richey, **P. L. Yager** and T. Dittmar (2015). Fate of the Amazon River dissolved organic matter in the tropical Atlantic Ocean. *Global Biogeochemical Cycles* 29(5): 677–690. doi: 10.1002/2015GB005115.
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  27. Chong, L. S., W. M. Berelson, J. McManus, D. E. Hammond, N. E. Rollins, **P. L. Yager** (2014) Carbon and biogenic silica export influenced by the Amazon River plume: patterns of remineralization in deep-sea sediments. *Deep-Sea Research Part I*. 85: 124–137. doi: 10.1016/j.dsr.2013.12.007.
  26. Goes, J. I., H. R. Gomes, A. M. Chekalyuk, E. J. Carpenter, J. P. Montoya, V. J. Coles, **P. L. Yager**, W. M. Berelson, D. G. Capone, R. A. Foster, D. K. Steinberg, A. Subramaniam, M. A. Hafez (2014). Influence of the Amazon River discharge on the biogeography of phytoplankton communities in the western tropical North Atlantic. *Progress in Oceanography* 120: 29–40. <http://dx.doi.org/10.1016/j.pocan.2013.07.010>.
  25. Coles, V. J., M. T. Brooks, J. Hopkins, M. R. Stukel, **P. L. Yager**, and R. R. Hood (2013). The pathways and properties of the Amazon River plume in the tropical North Atlantic Ocean. *J. Geophys. Res.* 118 (12): 6894–6913. doi: 10.1002/2013JC008981.
  24. Ward, N. D., R. G. Keil, P. M. Medeiros, D. C. Brito, A. C. Cunha, T. Dittmar, **P. L. Yager**, A. V. Krusche, J. E. Richey (2013). Degradation of terrestrially-derived lignin macromolecules in the Amazon River. *Nature Geoscience* 6(7): 530–533. doi:10.1038/ngeo1817.
  23. Moran, M. A., B. Satinsky, S. M. Gifford, H. Luo, A. Rivers, L. -K. Chan, J. Meng, B. P. Durham, C. Shen, V. A. Varaljay, C. B. Smith, **P. L. Yager**, and B. M. Hopkinson (2013). Sizing up metatranscriptomics. *ISME Journal* 7(2): 237–243. doi:10.1038/ismej.2012.94.
  22. Yeung, L. Y., W. M. Berelson, E. D. Young, M. G. Prokopenko, N. Rollins, V. J. Coles, J. P. Montoya, E. J. Carpenter, D. K. Steinberg, R. A. Foster, D. G. Capone, and **P. L. Yager** (2012). Impact of diatom-diazotroph associations on carbon export in the Amazon River plume. *Geophysical Research Letters*. 39: L18609. doi:10.1029/2012GL053356.
  21. Subramaniam, A., **P. L. Yager**, E. J. Carpenter, C. Mahaffey, K. Björkman, S. Cooley, A. B. Kustka, J. P. Montoya, S. A. Sanudo-Wilhelmy, R. Shipe, and D. G. Capone (2008). Amazon River enhances diazotrophy and carbon sequestration in the tropical North Atlantic Ocean. *Proc. Nat. Acad. Sci.* 105(30): 10460–10465. doi: 10.1073/pnas.0710279105.
  20. Cooley, S. R., V. Coles, A. Subramaniam, and **P. L. Yager** (2007). Seasonal variations in the Amazon plume-related atmospheric carbon sink. *Global Biogeochemical Cycles* 21(3) GB3014, doi: 10.1029/2006GB002831.
  19. Cooley, S. R. and **P. L. Yager** (2006). Physical and biological contributions to the western tropical North Atlantic Ocean carbon sink formed by the Amazon River plume. *Journal of Geophysical Research* 111(C8),

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C08018, doi: 10.1029/2005JC002954.

### ArcticNitro: Climate change impacts on the coastal Arctic carbon and nitrogen cycling

*A multi-seasonal Arctic field effort, this collaborative project explored how competition for nitrogen between autotrophic and heterotrophic microorganisms would shift with losses in sea ice cover, ocean warming, and the increase in riverine delivery of terrestrial organic matter. We sampled north of Barrow, Alaska during January, April, and August 2010–12.*

18. Sipler, R. E., C. T. E. Kellogg, T. L. Connelly, Q. N. Roberts, P. L. Yager, D. A. Bronk (2017). Microbial community response to terrestrially-derived dissolved organic matter in the coastal Arctic. *Front. Microbiol.* 8: 1018. doi.org/10.3389/fmicb.2017.01018.
17. Baer, S. E., R. E. Sipler, Q. N. Roberts, P. L. Yager, M. E. Frischer, D. A. Bronk (2017). Seasonal nitrogen uptake and regeneration in the western coastal Arctic. *Limnology and Oceanography* doi: 10.1002/lno.10580.
16. Sipler, R. E., S. E. Baer, T. L. Connelly, M. E. Frischer, Q. N. Roberts, P. L. Yager, D. A. Bronk (2017). Chemical and photophysiological impact of terrestrially-derived dissolved organic matter on nitrate uptake in the coastal western Arctic. *Limnol. Oceanogr.* doi: 10.1002/lno.10541.
15. Baer, S. E., T. L. Connelly, R. E. Sipler, P. L. Yager, D. A. Bronk (2014). Effect of temperature on rates of ammonium uptake and nitrification in the western coastal Arctic during winter, spring, and summer. *Global Biogeochemical Cycles.* 28(12): 1455–1466. doi: 10.1002/2013GB004765.

### Arctic publications prior to 2010 (Chukchi Sea, Northwater and Northeast Water polynyas)

*My doctoral research was part of an Arctic System Science effort to understand climate sensitive carbon cycling in the Northeast Water polynya in coastal Greenland. One paper from my dissertation (Yager et al., 1995) was described as “canonical” at a recent Gordon Research Conference. Early career efforts followed up on this research in other Arctic regions such as the Northwater polynya and the Chukchi Sea.*

14. Connelly, T. L., C. M. Tilburg, and P. L. Yager (2006). Evidence for psychrophiles outnumbering psychrotolerant marine bacteria in the springtime coastal Arctic. *Limnology and Oceanography* 51(2): 1205–1210. doi: 10.4319/lo.2006.51.2.1205.
13. Mei, Z. -P., L. Legendre, J. -E. Tremblay, L. Miller, Y. Gratton, C. Lovejoy, P. Yager, and M. Gosselin (2005). Carbon to nitrogen (C:N) stoichiometry of the spring-summer phytoplankton bloom in the North Water Polynya (NOW). *Deep Sea Research I.* 52(12): 2301–2314. doi:10.1016/j.dsr.2005.07.001.
12. Hodges, L. R., N. Bano, J. T. Hollibaugh, and P. L. Yager (2005). Illustrating the importance of particulate organic matter to pelagic microbial abundance and community structure – an Arctic case study. *Aquatic Microbial Ecology* 40(3): 217–227. doi: 10.3354/ame040217.
11. Miller, L. A., P. L. Yager, K. A. Erickson, J. Bâcle, J. K. Cochran, M. -È. Garneau, M. Gosselin, D. J. Hirschberg, B. Klein, B. LeBlanc, and W. L. Miller (2002). Carbon distributions and fluxes in the North Water, northern Baffin Bay, 1998 and 1999. *Deep-Sea Research II* 49(22–23): 5151–5170. doi: 10.1016/S0967-0645(02)00183-2.
10. Yager, P. L., T. L. Connelly, B. Mortazavi, K. E. Wommack, N. Bano, J. E. Bauer, S. Opsahl, and J. T. Hollibaugh (2001). Dynamic bacterial and viral response to an algal bloom at sub-zero temperatures. *Limnology and Oceanography* 46(4): 790 – 801. doi: 10.4319/lo.2001.46.4.0790.
9. Yager, P. L., and J. W. Deming (1999). Pelagic microbial activity in an Arctic polynya: testing for temperature and substrate interactions using a kinetic approach. *Limnology and Oceanography* 44(8):1882–1893.
8. Daly, K. L., D. W. R. Wallace, W. O. Smith, Jr., A. Skoog, R. Lara, M. Gosselin, E. Falck, P. L. Yager (1999). Non-Redfield carbon and nitrogen cycling in the Arctic: Effects of ecosystem structure and dynamics. *Journal of Geophysical Research* 104(C2): 3185–3199. doi: 10.1029/1998JC900071.
7. Yager, P. L., D. W. R. Wallace, K. M. Johnson, W. O. Smith, Jr., P. J. Minnett, and J. W. Deming (1995).



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The Northeast Water Polynya as an atmospheric CO<sub>2</sub> sink: a seasonal rectification hypothesis. *Journal of Geophysical Research* 100(C3): 4389–4398. doi: 10.1029/94JC01962.

### Other peer-reviewed publications prior to 2010

*My Masters thesis explored the relationships between boundary layer fluid dynamics, benthic organisms, and the seafloor sediments. Early publications also reflect my developing interest in the activities of marine microorganisms.*

6. Jiang, L. -Q., W. -J. Cai, Y. Wang, J. Diaz, **P. L. Yager**, and X. Hu (2010). Pelagic community respiration on the continental shelf off Georgia, USA. *Biogeochem.* 98(1–3): 101–113. doi: 10.1007/s10533-009-9379-8.
5. Smith, C. R., H. L. Maybaum, A. R. Baco, R. H. Pope, S. D. Carpenter, **P. L. Yager**, S. A. Macko, and J. W. Deming (1998). Sediment community structure around a whale skeleton in the deep NE Pacific: macrofaunal, microbial, and bioturbation effects. *Deep-Sea Res. II.* 45(1–3): 335–364. doi: 10.1016/S0967-0645(97)00043-X.
4. Jumars, P. A., J. W. Deming, P. S. Hill, L. Karp-Boss, **P. L. Yager**, and W. B. Dade (1993). Physical constraints on marine osmotrophy in an optimal foraging context. *Marine Microbial Food Webs* 7(2): 121–159.
3. **Yager, P. L.**, A. R. M. Nowell, and P. A. Jumars (1993). Enhanced deposition to pits: a local food source for benthos. *Journal of Marine Research* 51(1): 209–236. doi: 10.1357/0022240933223819.

### BOOK CHAPTERS (PEER REVIEWED)

2. Ducklow, H. and **P. L. Yager** (2007). Pelagic bacterial processes in polynyas. In: W. O. Smith Jr. and D. Barber (eds) *Polynyas: Windows to the World*. Elsevier Oceanography Series, 74 (David Halpern, series editor). pp. 323–362. doi: 10.1016/S0422-9894(06)74010-7.
1. Deming J. W., Yager P. L. (1992) Natural bacterial assemblages in deep-sea sediments: towards a global view. In: Rowe G.T., Pariente V. (eds) *Deep-Sea Food Chains and the Global Carbon Cycle*. NATO ASI Series (Series C: Mathematical and Physical Sciences), vol 360. Springer, Dordrecht. pp. 11–27. doi: 10.1007/978-94-011-2452-2\_2.

### EDITED BOOKS

Cochran, J.K., H. Bokuniewicz, P.L. Yager (2019). *Encyclopedia of Ocean Sciences (3rd Edition)*. Academic Press. 4560 pp. ISBN: 9780128130810.

### PUBLISHED DATA SETS

Yager, Patricia L., Sherrell, Robert M. (2019). ASPIRE station data used to develop 1-D and 3-D numerical models from the *Nathaniel B. Palmer* in the Amundsen Sea from 2010-12-14 through 2011-01-05. 2019-04-17, DOI:10.1575/1912/bco-dmo.765081.1, <https://hdl.handle.net/1912/24030>

Sipler, Rachel E., Bronk, Deborah, Yager, Patricia L (2017). Nitrogen fixation rates from samples collected in the Chukchi Sea, Arctic Ocean near Barrow, Alaska in August of 2011 (ArcticNITRO project)", 2017-06-08, DOI:10.1575/1912/bco-dmo.704528, <https://hdl.handle.net/1912/9027>.

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## RESEARCH GRANTS

**Lead PI** on collaborative extramural grants (includes non-UGA components): **\$12.3 million**

**Lead PI** on extramural grants to UGA: **\$6 million**

**Total grants to Yager Lab: \$3.4 million**

- 2020 **Private donor.** *The Climate Rescue Project Fund.* \$100k. A perpetual fund to motivate and support research, teaching, and service at the University of Georgia on how to solve the global climate crisis. **Yager is PI.**
- 2018 **Ray C. Anderson Foundation.** *Georgia Climate Project.* \$100K, 3 yr. **Yager is PI** for UGA subcontract. Project led by D. Rochberg (Emory University) with 5 co-PIs for a total of \$650K;
- 2017 **National Academy Keck Futures Initiative (NAKFI).** *Mapping Deep Blue Habitats in a Changing Climate.* \$100K, 2 yr. **Yager is lead PI** with 2 co-PIs: J. Spivey (UGA) and C. Deutsch (UW).
- 2016 **Gordon and Betty Moore Foundation.** *Supplement to ROCA for special feature in Frontiers Aquatic Microbiology Journal.* \$25K, 2 yr. **Yager was PI.**
- 2015 **National Science Foundation** – Office of Polar Programs. *Collaborative research: investigating the role of mesoscale processes and ice dynamics in carbon and iron fluxes in a changing Amundsen Sea (INSPIRE; ANT-1443604).* \$50K, 3 yr. Project led by P. St-Laurent (ODU) with 5 co-PIs for total of \$300K.
- 2014 **Gordon and Betty Moore Foundation** – Marine Microbiology Initiative. *Supplement to ROCA – High-throughput functional gene fitness measurements for microbial models.* \$41K, 2 yr. Project led by M. A. Moran (UGA) with 2 co-PIs for a total of \$165K.
- 2014 **National Aeronautics and Space Administration** – Interdisciplinary Studies. *From the Ice Sheet to the Sea (ISS): An interdisciplinary study of the impact of extreme melt on ocean stratification and productivity near West Greenland (NNH12ZDA001N-IDS).* \$150K, 4 yr. Project led by T. Mote (UGA), with 5 co-PIs for total of \$1.5 million.
- 2013 **Gordon and Betty Moore Foundation** – Marine Microbiology Initiative. *Supplement to ROCA for data synthesis meeting.* \$25K, 1 yr. **Yager was lead PI** for the project with 9 co-PIs on subcontracts.
- 2011 **Gordon and Betty Moore Foundation** – Marine Microbiology Initiative. *Supplement to ROCA for additional sampling effort (GBMF-2928).* \$504K, 1 yr. **Yager was lead PI** for the project with 9 co-PIs on subcontracts.
- 2010 **Gordon and Betty Moore Foundation** – Marine Microbiology Initiative. *The River Ocean Continuum of the Amazon (ROCA; GBMF-2293).* \$2.4 million, 3 yr. **Yager was lead PI** for the project with 9 co-PIs on subcontracts.
- 2009 **National Science Foundation** – Emerging Topics in Biogeochemistry. *Collaborative Research: ETBC: Amazon influence on the Atlantic: carbon export from nitrogen fixation by diatom symbioses (ANACONDAS; OCE-0934095).* \$478K, 4 yr. **Yager was lead PI** for the project and sole PI at UGA, with 9 co-PIs for a total of \$3.2 million.
- 2009 **National Science Foundation** – Office of Polar Programs. *Collaborative Research: does competition for nitrogen between autotrophs and heterotrophs control carbon fluxes in the western coastal Arctic (ARC-0910252)?* \$314K, 3 yr. **Yager was lead PI** and sole PI at UGA, with 2 co-PIs for a total of \$950K.
- 2009 **National Science Foundation** – Office of Polar Programs. *Collaborative Research onboard Icebreaker Oden: ASPIRE: Amundsen Sea Polynya International Research Expedition (ANT-0839069).* \$290K, 30 mo. **Yager was lead PI** and sole PI at UGA, with 4 co-PIs for a total of \$1.5 million.
- 2008 **National Science Foundation** – Office of Polar Programs. *Collaborative Research: Controls on climate-active gases by Amundsen Sea ice biota (ANT-0836144; OSO-2008).* \$192K, 2 yr. **Yager was lead PI**

- and sole PI at UGA, with 2 co-PIs for a total of \$700K.
- 2007 **National Science Foundation** – Office of Polar Programs. *SGER: Science-of-opportunity aboard Icebreaker Oden - Antarctic bacterial remineralization (ANT-0741409; OSO 2007)*. \$80K, 1 yr. **Yager sole PI.**
- 2007–10 **National Oceanic and Atmospheric Administration** – Oceans and Human Health Initiative. *Georgia Oceans and Health Initiative (GOHI) Graduate Training Consortium*. \$518K, 3 yr. PI was E. Lipp (Env. Health), Yager was one of 6 co-PIs.
- 2002–05 **National Oceanic and Atmospheric Administration** – Office of Global Programs – Global Carbon Cycle Program. *Underway pCO<sub>2</sub> measurements in the western equatorial North Atlantic and subtropical North Pacific: The Importance of synchronous supporting measurements (GC02-373)*. \$127K, 3 yr. **Yager was PI.**
- 2002–06 **U.S. Department of Energy** – Ocean Carbon Sequestration Research Program. *The impact of nitrogen fixation on carbon sequestration: a reassessment of the inorganic carbon system in LNLC regions (DE-FG02-02ER63472)*. \$150K, 3 yr. **Yager was PI.**
- 2002–06 **National Aeronautics and Space Administration** – Earth System Science Fellowship. *Quantifying the role of the western tropical Atlantic Ocean in global carbon budgets: the intersection of physics, chemistry, and biology. (O25074-01–Earth System Science Fellowship to S. Cooley, doctoral student)*. \$72K, 3 yr. **Yager was PI** and advisor of fellow.
- 2002 **University of Georgia** – Faculty Research Grant. *The microbial fate of anthropogenic dissolved organic nitrogen in Georgia coastal waters: developing a method for combining identification techniques with substrate uptake kinetics*. \$5K, 1 yr. **Yager was PI.**
- 2001 **University of Georgia** – Faculty Research Grant. *The effects of enhanced marine nitrogen fixation on atmospheric carbon dioxide transport into the tropical Atlantic Ocean*. \$10K, plus \$1.5K matching from Marine Sciences, 1 yr. **Yager was PI.**
- 2000 **University of Georgia** – Faculty Research Grant. *Investigating viral control of bacterial community structure and carbon cycling in Arctic seas*. \$6500, 1 yr. **Yager was PI,**
- 1997–99 **National Science Foundation** – Professional Opportunities for Women in Research and Education. POWRE, Research Enhancement Award; *An Arctic Ocean time series of dissolved inorganic carbon (NSF OCE-9753170)*. \$85K plus \$34K matching, 2 yr. **Yager was PI.**
- 1997 **Florida State University** Council on Research and Creativity (CRC) – First-Year Assistant Professor Award. *Arctic Ocean uptake of atmospheric carbon dioxide: using stable carbon isotopes to detect potential feedbacks to global climate change*. \$10K, 1 yr. **Yager was PI.**
- 1995 **University Corporation for Atmospheric Research (UCAR)** – Postdoctoral fellowship in Ocean Modeling. \$36K, 1 yr. Yager was the postdoctoral fellow.
- 1991–96 **Department of Energy** – Graduate Fellowship for Global Change. \$74K, 4.5 yr. Yager was the graduate fellow.

#### OTHER AWARDS AND HONORS

- 2017 **Franklin International Faculty Exchange (FIFE)** award. University of Georgia - Universidade Federal Fluminense (Niteroi, Brazil). With Alberto Figueiredo (Depto. de Geologia - LAGEMAR). Franklin College of Arts and Sciences, University of Georgia.
- 2013 **Science without Borders (Ciência sem Fronteiras)** - Visiting Professorship at UFRJ in Rio de

- Janeiro, Brazil. One month per year for three years.
- 2012 **Antarctic Service Medal** of the United States of America. National Science Foundation. For exemplary service as Chief Scientist onboard a two-month, oceanographic expedition to Antarctica.
- 2011 **American Academy of Microbiology.** Invited participant. Colloquium: Incorporating Microbial Processes into Climate Change Models. February 21–23, 2011. Dallas, Texas. Report available online: <http://academy.asm.org/index.php/colloquium-program/browse-all-reports/396-incorporating-microbial-processes-into-climate-models>
- 2000 **Invited Co-chair,** Arctic Microbial Ecology. American Society of Limnology and Oceanography (ASLO) International Meeting, Copenhagen, Denmark. June 2000.
- 1999–11 **Gordon Research Conferences on Polar Marine Sciences:** Invited discussion leader in 1999, 2007; Invited speaker in 2003; elected Vice Chair of 2009 meeting, and **elected Chair of 2011 meeting.** Ventura, California (March 1999, 2003, 2007, 2011); Il Ciocco, Italy (March 2009).
- 1997 **DIALOG II:** Dissertations Initiative for the Advancement of Limnology and Oceanography, invited participant. Bermuda. October 1997.
- 1997 **Invited Chair,** Biogeochemical Cycles and Fluxes IV: Oxygen and CO<sub>2</sub>, American Society of Limnology and Oceanography, Aquatic Sciences Meeting, Santa Fe, New Mexico. February 1997.
- 1996 **DISCO XIII:** Dissertations Symposium on Chemical Oceanography, invited participant. Honolulu, Hawaii. May, 1996.

## CONTRIBUTIONS TO THE EDUCATION AND TRAINING OF FUTURE SCHOLARS

*My appointment at the University of Georgia is 9-month salary with 0.5 research and 0.25 teaching EFT. I teach 1–3 courses per year. I teach undergraduate and graduate classes to students both from within and from outside Marine Sciences. I am frequently invited to give guest lectures in other department's courses. An important component of my instructional program occurs outside of the classroom in mentoring research and career development at the undergraduate, graduate, and postdoctoral levels. I also participate in other **early-career mentoring** programs at AGU and ASLO annual meetings, and serve as a supportive senior faculty to junior faculty in my department and elsewhere, including them in larger group proposals and supporting their career development.*

### TEACHING

*I have taught or co-taught more than 17 different courses during my faculty career. To illustrate my commitment to training the next generation, I briefly describe three courses below that I developed and have taught for several years.*

**Example undergraduate non-science majors' course: MARS 1025H: Biology of the Marine Environment – Honors.** In this class, I emphasize teaching students the process of scientific inquiry by assigning group projects for environmental monitoring of real time data and independent research papers on topics of student interests. Although a class for non-science majors, every year at least one student expresses an interest at the end in doing marine research or changing their major to marine science.

**Example undergraduate science majors' course: MARS 4200/6200 - Biological and Chemical Oceanography.** This mixed-level grad/undergrad course provides an introduction to life in the ocean and the processes controlling its distribution and productivity, including ecology and biogeochemistry. We also explore the distribution of salts, gases, and other compounds to discover how they support life in the ocean. Oceanography is a highly interdisciplinary field of study, and we use coastal and open-ocean environments around the world to illustrate key principles. Students have individual and team assignments that have them actively interacting with both on-line data and the scientific literature. This is an elective course for Biology majors, but required for Marine Biology concentrators. Graduate students who arrive with little marine science background also take this class before they take our grad core curriculum.

**Example graduate course: MARS 8050 - Climate, Oceans, and Marine Biosphere.** This graduate-level course focuses on the climatic role of the ocean and its biosphere, with particular emphasis on connections between human activities, climate, ocean circulation, and marine ecosystems; it is open to all graduate students. We read and discuss classic and recent papers of climate change and carbon cycle science. Each time this class is taught, I update it to include new material from this rapidly changing field and tailor it to meet the needs and interests of a diverse group of graduate students from across campus (Marine Sciences, Geography, Geology, Ecology, Anthropology and Environmental Health Sciences). Each student leads a paper discussion and prepares a research proposal, review, or original research paper as their final term project.

## MENTORING AND DIRECTING INDEPENDENT RESEARCH

### Undergraduate mentoring at UGA

**Undergraduate Research.** I have recently increased my already significant efforts to train and mentor UGA undergraduates in marine science research, through the MARS 3900, MARS 4960 or BIOL 4960 series. I host at least 1 and recently up to 3 undergraduate researchers in my lab each semester, who also interact with graduate students and postdocs during weekly lab group meetings. Many of these students return for a second or third semester of independent research or thesis. Some become co-authors on research papers. I help these students find summer REU programs, help with grad school decisions, and write them letters of recommendation for further education or careers. Most have gone on to medical or dental school, or graduate school in marine or other environmental sciences. I was nominated this year (by a student) for a **Research Mentoring Award** from UGA Center Undergraduate Research Opportunities.

**Directed independent research for undergraduates** (BIOL 4960, 4960H; MARS 4960, MIBO 4900L, MIBO4960H). I have supervised independent research for more than 40 undergraduates between 1998–2019: (34 since 2008; 28 female, 12 male; 7 non-white, since 1999): J. Levitt, J.G. Harper, R. Nishimuta, B. Glover, N. Harris, J. Bauman, L. Gardner, A. Goodrich, C. Lozo, E. Wright, S. Mitchell, M. Patel, L. Jarrell, M. Camp, J. Diaz, and M. Dhillon, B. Heimlich, C. Barber, W. Spence, M. Shill, J. Loevenich, A. MacDougall, M. Floyd, C. Hammond, K. Karle, C. Young, S. Collins, A. DuPont, P. Cray, D. Goetz, H. Fabian, S. Burns, J. Melara, A. Speese, T. Eberhard, H. Campbell, J. Honeycutt, E. Malsbury, E. Barber, P. Houlihan, J. Wenclawiak, J. Oberlander, E. Smith, L. Bruegger, S. Ghag, K. White, S. Brown.

**Undergraduate thesis advisor or committee member:** Principal thesis advisor for 6 undergraduates (A. Goodrich, J. Diaz (honors), M. Shill, D. Goetz, S. Burns (honors), A. Speese, E. Malsbury (honors). Committee member for 2 other undergraduate IDS majors in Marine Science (J. Oliver, D. Tamarack).

**Mentor to visiting undergraduate intern:** Summer intern S. Davis (U. Chicago).

### Graduate student mentoring at UGA

**Graduate research** at UGA Marine Science is supported primarily by Research Assistantships. Without an undergraduate major we have limited Teaching Assistantships for students. We do not accept graduate students without being able to support them financially. **Masters level** students are best to take on with a typical 3-year research grant cycle, so that is what I have done usually. My philosophy with masters-level students is to get them quickly doing science, analyzing samples and data, attending scientific meetings, and writing a paper. They are always first author of their thesis papers. When I recruit **doctoral** students, it is often via extramural (UGA Presidential Scholars, NASA, NOAA, NSF) graduate fellowships for which I assist the student in applying. My doctoral students have been successful getting these awards. I believe that doctoral students should be the primary drivers of their research; I provide support but encourage as much independence as possible. I take them to meetings and introduce them around the first few years and then encourage them to attend meetings on their own wherever possible. They are also first and corresponding authors on their dissertation papers.

**Masters thesis advisor:** Principal advisor for 8 students: T. Connelly, L. Hodges, E. Romer, A. Mass, K. Bakker, C. Williams, L. Mu. L. Townsell.

**Masters thesis committee member** for 9 other students: T. Popp, K. Liptay, R. Wong, H. Tian, A. Johnson, J. Green, J. Xiang, J. Wang, M. O'Malley (Environmental Health Science).

**Doctoral advisor** for 4 Ph.D. students (S. Cooley, A. Vislova, H. Oliver, L. Mu).

**Doctoral committee member** for 14 other Ph.D. students: A. deBoer (FSU), R. Ji, G. LeClerc, C. Burbage, J. Fisher, L.-Q. Jiang, W.-J. Huang, B. Chen, C. Shen, J. Westrich (UGA Environ. Health Sci), V. Ramenzoni (UGA Anthropology), J. Weger (UGA Anthropology), K. Mattingly (UGA Geography), S. Plummer.

**Mentor / host for visiting graduate student:** S. Zhang (Institute of Oceanology, Chinese Academy of Sciences, PR China).

**Post-doctoral mentoring at UGA:** T. Connelly (UTMSI, Memorial U.), A. Mehring (Scripps).

### Other Training Activities:

**Young Dawgs.** Summer research internships for high school students. A. Whitford, A. Lewis.

**Visiting Professorship in Brazil** (August 2013, Sept 2014, Oct 2016). **Graduate short course** (1 week at 8 h per day) taught at Federal University of Rio de Janeiro, Rio de Janeiro, Brazil. 20 graduate students and postdocs. When I was at UFRJ (and also UENF), much of my time was spent working with Brazilian graduate and undergraduate students there. My grant supported the participation of nine Brazilian graduate students onboard the 2012 Amazon expedition where I was Chief Scientist. Several others were involved with expeditions in the lower reach of the Amazon River. I've stayed in touch with many of them and tried to support their career development.

**PolarTrec Researcher (2007–present).** Part of teacher-researcher partnerships (<http://www.polartrec.com>) aimed at improving the teaching of K–12 science through research. Teacher partners: **Lollie Garay**, **Jeff Peneston**. Peneston went on to win “New York Teacher of the Year.” Garay and I continued to work together on all three of the field efforts, published a paper together, and have chaired several science education panels at Ocean Sciences Meetings. I supported Garay’s Toyota Tapestry grant that established long distance connections and relationships between Garay’s students in Houston, Texas and middle school science classrooms in Barrow, Alaska (the SMORE project).

**Research professionals:** **C. Tilburg** (became the EcoSystem Indicator Project, Gulf of Maine Council on the Marine Environment); **K. Sines** (now working in health sciences); **B. Page** (now at NASA), **J. Ebert** (still working with me).

### SERVICE TO MY DEPARTMENT, UNIVERSITY, PROFESSION, AND SOCIETY

**Director, Georgia Initiative for Climate and Society** (GICS; [climateandsociety.uga.edu](http://climateandsociety.uga.edu)), a faculty-driven network of faculty and professional staff working on climate issues at UGA. Our mission is to foster a scientific community that will: 1) *investigate* the processes, effects, risks, and potential impacts of climate variability and change, and develop strategies and solutions for mitigation and adaptation. 2) *integrate* research, outreach and instructional efforts to build adaptive capacity and resilience to climate variability and change; and 3) *engage* users and stakeholders in developing information and tools needed to prepare for and respond to the challenges of climate variability and change.

**Leadership Team, Georgia Climate Project** ([georgiaclimatoproject.org](http://georgiaclimatoproject.org)): a multi-university consortium of

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faculty and staff working on climate change in Georgia; with Emory University and Georgia Institute of Technology.

**Board member, Clarke County School District, Board of Education, District 4**

(<https://www.clarke.k12.ga.us/domain/98>).

**Member, Subcommittee on *Ocean-Atmospheric Interactions***, Ocean Carbon & Biogeochemistry (OCB; [www.us-ocb.org](http://www.us-ocb.org)) program.

**Research planning boards:** Steering committee member for WAIS (since 2016) and co-author of West Antarctic Ice Sheet Initiative Science Plan (2016). American Society for Microbiology: *Incorporating Microbial Processes into Climate Models* (2011). Plenary speaker and working group contributor to National Academy's Polar Research Board report on *Frontiers in Understanding Climate Change and Polar Ecosystems* (2010). Co-author of white paper produced (2006) for the North Pacific Research Board intended to set priorities for future research in the Bering and Chukchi Seas.

**Editorial: co-Editor-in-Chief**, *Encyclopedia of the Oceans* (Elsevier / Science Direct; 2017–2019), **Associate Editor**, *Frontiers* journal (2015–2017).

**Proposal reviewer and panelist**, *National Science Foundation* (individual proposals and panelist), *NASA* (individual proposals and panelist), *NOAA Global programs* (panelist), Ocean Frontier Institute (Canada), Ocean Research Frontiers (Canada); *NOAA National Estuarine Research Reserve System*, *US Environmental Protection Agency* (individual proposals and STAR panelist), *Natural Environmental Research Council* (NERC; UK) *Maryland SeaGrant*, *Florida SeaGrant*, etc.

**Member, Committee of Visitors.** National Science Foundation, Division of Ocean Sciences (2019); Polar Programs (2006). A COV is assembled every 4-5 years to assess program operation effectiveness.

**Manuscript reviewer**, *Nature*, *Journal of Geophysical Research*, *Global Biogeochemical Cycles*, *Scientific Reports*, *Geology*, *Limnology and Oceanography*, *Marine Ecology Progress Series*, *Hydrobiologia*, *Aquatic Microbial Ecology*, *Deep-Sea Research (I & II)*, *Geophysical Research Letters*, *Polar Biology*, *ISME-J*, *Journal of Sea Research*, *Simon & Schuster*, *AGU Antarctic Research Series*, *McGrawHill*, etc.

**Outreach:** *Young Dawks*: summer research experience for local high school students; UGA Summer Undergraduate Research Program (*SURP*), minority recruitment program; public speaker on oceanography and other topics as a public service to Georgia's citizens (schools, Kiwanis club, Rotary Club, OLLI, churches, etc); mentor for *PolarTrec* teachers on Antarctic and Arctic expeditions, includes some curriculum development; more than a dozen local school (K–12) presentations about my research; mentor for *Scientists in the Classroom*, a one-to-one middle school science student mentorship program . Currently on Local School Governance Team (*LSGT*; 2016–2019), assisting with improving STEM education at Cedar Shoals High School, Athens, GA.

**University Committees:** Currently serving on Franklin College of Arts and Sciences, Promotion and Tenure Committee (Life Sciences); UC Executive Committee; Integrated Life Sciences program, Climate Change Interdisciplinary Group (Lead); Marine Sciences Graduate Affairs Committee; Marine Sciences Strategic Planning Committee (Chair). Past service on UC Human Resources Committee (Chair); University of Georgia - Research Foundation Board; Marine Sciences Undergraduate Committee; Provost's Gender Trend – Equity committee.

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**OTHER EVIDENCE OF NATIONAL AND INTERNATIONAL STATURE**
**INVITED PRESENTATIONS****International meetings**

- 2019 **Southern Ocean Observing System – Amundsen Sea Working Group.** *The effects of glacier-driven upwelling on the Amundsen Sea ecosystem.* Incheon, Korea. May 8 – 10, 2019.
- 2016 **Gordon Research Conference** on Molecular Basis of Microbial One-Carbon Metabolism: Exploring, Understanding and Applying the Diversity of One-Carbon Metabolism. *Melting ice and green oceans: climate sensitive carbon cycling in the Amundsen Sea Polynya, Antarctica.* Waterville Valley, New Hampshire. July–August 2016.
- 2016 **Ocean Sciences Meeting.** *Climate-sensitive carbon cycling on the western Antarctic continental shelf: results from the Amundsen Sea Polynya International Research Expedition (ASPIRE).* AGU-ASLO-TOS. Abstract #HE54C-1593, Ocean Sciences Meeting, New Orleans, Louisiana. February 2016.
- 2015 **West Antarctic Ice Sheet workshop.** *Coastal marine ecosystems and the West Antarctic Ice Shelf.* 2015 WAIS Workshop. Loveland, Colorado. September 2015.
- 2014 **Gordon Research Conference** on Oceans & Human Health: Anthropogenic Impacts on Coastal Communities and Ecosystems. *Climate change and the ocean's health.* Biddeford, Maine. June 2014.
- 2014 **American Society of Microbiology – General Meeting.** *Climate change and marine microbial ecosystems.* Boston, Massachusetts. May.
- 2013 **American Geophysical Union – Fall Meeting.** **Yager, P. L.,** J Richey, B Page, N Ward, A Krusche, S Weber, S. Burns, J Montoya, and C Rezende. *Contributions from the Amazon River mouth to the carbonate and nutrient dynamics of the tropical Atlantic Ocean.* Invited abstract #OS51C-05. San Francisco, California. December.
- 2013 **American Geophysical Union – Fall Meeting.** Crump, B., M. Doherty, C. Fortunato, A. Krusche, D. Brito, A. Cunha, M. Fernandes, B. Satinsky, B. Zielinski, C. Smith, N. Ward, J. Richey, **P. L. Yager.** *Microbial community structure and metagenomics across the river-to-ocean continuum of the Amazon River.* Invited abstract #OS51C-06. San Francisco, California. December.
- 2011 **Gordon Research Conference** on Polar Marine Science: Exploring Complex Systems in Polar Marine Science. *Climate and the polar marine biosphere: complex responses and emergent feedbacks.* Ventura, California. March 2011.
- 2011 **Mathematical Biosciences Institute – Workshop 6: Ocean Ecologies and Their Physical Habitats in a Changing Climate.** Organizers: Ken Golden, Chris Jones, Hans Kaper, and Mary Lou Zeeman. <http://mbi.osu.edu/2010/ws6abstracts.html>. *Climate connections to marine ecosystems; from Amazon to Antarctica.* June 20 – July 1, 2011.
- 2003 **Gordon Research Conference** on Polar Marine Science. *Does shelf depth matter to climate change?* Ventura, California. March 2003.
- 2000 **ASLO Aquatic Sciences Meeting.** *Microbial ecology of the Arctic Ocean - a tutorial discussion of old boundaries and new insights on low temperature microbial ecosystems.* Copenhagen, Denmark. May.
- 1997 **Dissertations Initiative for the Advancement of Limnology and Oceanography (DIALOG II).** *The microbial fate of carbon in high-latitude seas: impact of the microbial loop on oceanic uptake of CO<sub>2</sub>.* Bermuda. October 1997.
- 1996 **Dissertations Symposium on Chemical Oceanography (DISCO XIII).** *The microbial fate of carbon*



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*in high-latitude seas: impact of the microbial loop on oceanic uptake of CO<sub>2</sub>*. Honolulu, Hawaii. May 1996.

#### National or regional symposia

- 2018 **National Academy Keck Futures Initiative (NAKFI)** *Mapping Deep Blue Habitat in a Changing Climate*. Discovering the Deep Blue Sea - mid-project meeting. Irvine, California. June 19-21, 2018.
- 2017 Amazon Day at the **American Museum of Natural History**. *The Amazon River plume and reef ecosystem*. New York, New York. April 8.
- 2016 **National Academy Keck Futures Initiative (NAKFI)** 2016 Conference Discovering the Deep Blue Sea. *Melting enhances coastal biological productivity*. Irvine, California. November 9–12.
- 2016 **Portland Public Library** – The Maine Arctic Speaker Series. Sponsored by University of New England. *Climate change impacts on polar marine ecosystems*. Portland, Maine. September 12.
- 2015 **Rutgers Climate Institute**. Regional Climate Symposium: Climate Change and Polar Regions: Natural and Social System Implications. *Climate connections to polar marine ecosystems*. Rutgers University, New Brunswick, New Jersey. November 2015.
- 2015 **Barrow Arctic Research Center** – Schoolyard Saturday. *What did we learn during Arctic Nitro?* Barrow, Alaska. February.
- 2011 **Institute of Native American Studies (UGA)** – The Impact of Climate Change on Tribal Resource Management. *Global climate change*. Invited plenary speaker. Organized by Jace Weaver. Athens, Georgia. August 26, 2011.
- 2010 **U.S. National Academy of Sciences** – Frontiers in Understanding Climate Change and Polar Ecosystems. *Climate and the Polar Marine Biosphere: complex responses and emergent feedbacks*. Plenary talk. Cambridge, Maryland. August.
- 2010 **Barrow Arctic Science Consortium** – Schoolyard Saturday. *Microbial control on the productivity of Barrow's coastal waters - Will the battle for nitrogen intensify under climate change?* Barrow, Alaska. February 2010.
- 1996 **Oak Ridge National Laboratory (DOE)** – A Forum for Integrating Multidisciplinary Research to Advance the Science of Global Change. *The high-latitude marine carbon cycle: responses and feedbacks to climate change*. Oak Ridge, Tennessee. October 1996.

#### University seminars (not UGA)

- 2019 **University of Virginia** - Department of Environmental Sciences. **Keynote speaker**. *Melting ice sheets impact more than sea level*. 2019 EnviroDay Research Forum and Symposium. February 22, 2019.
- 2018 **University of Southern Mississippi** – Gulf Coast Research Laboratory – Coastal Sciences Speaker Series. *Melting ice sheets and coastal productivity in the Amundsen Sea, Antarctica*. October 25, 2018.
- 2018 **University of Manitoba** - Centre for Earth Observation Science (CEOS). *Melting ice sheets, rivers, and polynyas: how coastal productivity and CO<sub>2</sub> sinks are impacted by the intricacies of fresh water cycling in a changing climate*. February 6, 2018.
- 2017 **University of Rhode Island** – Graduate School of Oceanography – **Vetlesen Distinguished Speaker Series**. *Climate change impacts on Antarctic marine ecosystems*. October 18, 2017.
- 2016 **Universidade Federal do Rio de Janeiro**. *A new reef along the river-ocean continuum of the Amazon*. October 2016.
- 2015 **Old Dominion University** – Center for Coastal Physical Oceanography. *Climate change and the*

- coastal Antarctic ecosystem: results from the ASPIRE project*. Norfolk, Virginia. September 2015.
- 2015 **University of Alaska, Fairbanks** – Institute of Marine Sciences. *Antarctic connections between climate and the marine carbon cycle: a report from the Amundsen Sea Polynya International Research Expedition (ASPIRE)*. Fairbanks, Alaska. February 18.
- 2015 **Duke University** – Division of Earth and Ocean Sciences. *Microbes, carbon, and climate change along the River-Ocean Continuum of the Amazon*. Raleigh, North Carolina. January 30.
- 2014 **Skidaway Institute of Oceanography**. *Climate connections to the marine biosphere: the Amundsen Sea Polynya International Research Expedition*. Savannah, Georgia.
- 2014 **Universidade Estadual do Norte Fluminense**. *Carbon, microbes, and climate change in the river-ocean continuum of the Amazon*. Darcy Ribeiro, Campos dos Goytacazes - Rio de Janeiro, Brazil. August 25.
- 2014 **Universidade Federal do Rio de Janeiro**. *Microbes, carbon, and climate in the river-ocean continuum of the Amazon*. Rio de Janeiro, Brazil. August 21.
- 2009 **Skidaway Institute of Oceanography**. *The River Ocean Continuum of the Amazon*. Savannah, Georgia. October.
- 2000 **University of Maryland** – Chesapeake Biological Laboratories. *A dynamic bacterial and viral response to an Arctic algal bloom – connections to the global carbon cycle*. Solomons, Maryland.
- 2000 **Rutgers University** – Institute of Marine and Coastal Sciences. *Microbial activities in Arctic seas: links to seasonal primary productivity and the global CO<sub>2</sub> cycle*. New Brunswick, New Jersey. April.
- 1998 **Texas A & M University** – Department of Oceanography. *Carbon cycling in the Arctic: Why go all the way to the North Pole to study climate change?* College Station, Texas. May 1998.
- 1998 **Florida A & M University** – Department of Engineering. *The Arctic Ocean carbon cycle: why go all the way to the North Pole to study climate change?* Tallahassee, Florida. January 1998.

#### UGA and other Georgia venues

- 2019 **Georgia College and State University** – Climate Change and Human Health. Environmental Health panel. Milledgeville, Georgia. October 9, 2019.
- 2018 **Ocean Initiative** – Undergraduate Marine Science organization. *Careers Panel*. Athens, Georgia. November 29, 2018.
- 2018 **GA Society for Conservation Biology**. *The Amazon River Plume and Reef Ecosystems*. Athens, Georgia. November 28, 2018.
- 2018 **UGA Institute of Ecology** – Ecology Seminar. *Melting Ice Sheets and Coastal Productivity*. Athens, Georgia. October 16, 2018.
- 2018 **Ocean Initiative** – Undergraduate Marine Science organization. *Climate Change and Antarctic Marine Ecosystems*. Athens, Georgia. October 4, 2018.
- 2018 **Marine Science Graduate Student Association (MSGSA)**. *Finding a faculty position after grad school*. Athens, Georgia. April 5.
- 2017 **UGA Institute of Ecology** – Conservation Seminar Series (ECL 8400). *Climate change impacts on coastal Antarctic ecosystems*. Athens, Georgia. November 1.
- 2017 **Ciné Athens**. Invited panelist for discussion following the showing of *An Inconvenient Sequel*, a US film about climate change. Athens, Georgia. August 17.
- 2017 **Georgia Museum of Art** – Healing the World thru the Arts. *The common ground between environmental science and art*. Athens, Georgia. April 28.

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- 2017 **Gwinnett School of Mathematics, Science, and Technology.** *An exciting career in oceanography.* Lawrenceville, Georgia. February 17.
- 2017 **Ciné Athens.** Invited panelist for discussion following the showing of *Demain*, a French film about sustainability. Athens, Georgia, January 11.
- 2016 **UGA School of Marine Programs.** *Climate change and the coastal Antarctic ecosystem: results from the Amundsen Sea Polynya.* Athens, Georgia. November 10.
- 2016 **UGA Institute of Ecology – EDGE seminar series.** *Climate change and the coastal Antarctic ecosystem: results from the Amundsen Sea Polynya.* Athens, Georgia. October 28.
- 2016 **Osher Lifelong Learning Institute – Luncheon Program.** *Climate, the Ocean, and the Marine Biosphere.* Athens, Georgia. Sept 20.
- 2016 **Athens Clarke County Library – Poem-Making and Nature panel.** **The Big Read:** Robinson Jeffers' Observations in nature: eco-poetry and sustainability in today's Georgia. *A climate scientist inspired by nature poetry.* Athens, Georgia. April 12.
- 2015 **Women in Science (WiSci) Career Symposium – mapping your path in science.** Keynote address: *What would you attempt to do if you knew you could not fail? Cultivating bravery and persistence during a career in science.* Athens, Georgia. November 14.
- 2015 **UGA Institute of Ecology – Conservation Seminar Series (ECL 8400).** *The effects of climate change on coastal Antarctic ecosystems.* Athens, Georgia.
- 2015 **UGA Retired Educators Association.** *Climate and the ocean.* Athens, Georgia.
- 2013 **UGA Department of Geography.** *Climate connections to the marine biosphere - from the Amazon to Antarctica.* Departmental Seminar. Athens, Georgia. October 22.
- 2013 **UGA Institute for Women's Studies – Friday Speaker Series.** *Climate Change and the ocean ecosystem: hot spots and cool adventures on the high seas.* Athens, Georgia. November 15.
- 2013 **UGA Institute of Ecology – Conservation Seminar Series (ECL 8400).** *The effects of climate change on Antarctic ecosystems.* Athens, Georgia. November 20.
- 2011 **Gainsville Rotary.** *Climate connections to marine ecosystems from the equator to the poles.* Gainsville, Georgia. February 27.
- 2011 **Georgia Initiative for Climate and Society – Working Group 1 - Brown Bag Seminar Series.** *Climate connections to marine ecosystems; from Amazon to Antarctica.* Athens, Georgia. May 18.
- 2011 **UGA Department of Comparative Literature.** *Global climate change and feedbacks.* Invited lecture: CMLT 3210. Ecocriticism. Athens, Georgia.
- 2011 **UGA Department of Geology.** *Climate connections to the marine carbon cycle.* Athens, Georgia. February 24.
- 2007 **UGA Department of Geology.** *Climate and the marine biosphere.* Athens, Georgia. April.
- 2007 **UGA Institute for Women's Studies** *Women in Oceanography – a case study for women in science.* Athens, Georgia. April.
- 2000 **UGA Department of Geology – Geochemistry Seminar.** *The Arctic Ocean: a climate sensitive source or sink for atmospheric CO<sub>2</sub>?* Athens, Georgia. April.
- 1999 **UGA School of Marine Programs.** *Microbial activities in arctic seas: links to seasonal primary productivity and the global CO<sub>2</sub> cycle.* Athens, Georgia. October.

**BROADCAST INTERVIEWS:**

- 2020 **World Affairs Council of Atlanta:** From Polar Bears to Peaches. May 5, 2020.
- 2019 **Georgia Public Broadcasting;** Classic City Science; WUGA; April Sorrows and Kodiak Sauer
- 2019 **Gwen O’Looney (WXAG).** Climate change and social justice.
- 2018 **Georgia Public Broadcasting – Savannah Morning Edition.** *Research Roadmap Poses Climate Change Questions for Scientists and Public.* E. Jones. June 19, 2018
- 2016 **SciTech Now,** Corporation for Public Broadcasting / PBS. *Discovering 600 miles of coral reef.* Interviewer: A. Vasquez. November 1, 2016.
- 2016 **Quirks and Quarks,** CBCradio. *Amazon River hiding a massive reef ecosystem.* Interviewer: B. MacDonald. April 30, 2016.
- 2016 **Radio FM Colombia.** *Amazon Reef.* Interviewer: A. Ruiz. April 29, 2016.
- 2016 **CJAD Radio Montreal,** BellMedia. *Amazon Reef.* Interviewer: D. Spector. April 27, 2016.
- 2016 **Top of Mind,** byuradio. *Climate Change, Amazon Coral Reef, Chinese Pipa Virtuosa.* Interviewer: Julie Rose. April 27, 2016.
- 2016 **Forum,** KQED (San Francisco Public Radio). *As Coral Bleaching Devastates Australia’s Great Barrier Reef, Scientists Look for Solutions.* Interviewer: Michael Krasny. April 26, 2016.

**PRINT INTERVIEWS:**

- 2018 **Atlanta Journal-Constitution.** *Floods, fire and hurricanes: Dire warnings for Georgia in climate report.* Interviewer: Joshua Sharpe. December 1, 2018.
- 2018 **Atlanta Journal-Constitution.** *Georgia needs better research and resources to deal with changes in climate, new report says.* Interviewer: Eric Stirgus. May 23, 2018.
- 2018 **Red and Black.** *Scientist of the Week: Patricia Yager’s love for discovery.* K. Meyes. January 21, 2018.
- 2017 **Research Features.** *Exploring the links between melting ice and ecosystems.* 121:14–17. [http://cdn.researchfeatures.com/3d\\_issues/issue121/html5/index.html](http://cdn.researchfeatures.com/3d_issues/issue121/html5/index.html)
- 2016 **Live Science.** *Amazon: Earth’s Mightiest River.* T. Pedersen. December 19.
- 2016 **Revista Piauí.** *O Recife que ninguém viu. Um ecossistema insuspeito sob as águas turvas da foz do Amazonas.* B. Esteves. December 1.
- 2016 **Oceanography Journal,** Ripple Marks - The story behind the story. *Coral Reef Discovered in an Unlikely Locale.* C.L. Dybas. September 1.
- 2016 **Interesting Sh!t.** *The Amazon River’s Coral Reef Madness.* J. Moon. July 1.
- 2016 **Voice of America.** *Amazing Amazon Hides Atlantic’s Coral Reef.* A. Ball. May 8.
- 2016 **Upstream.** *Discovery of reef likely to affect permitting process.* G. Chetwynd. May 2.
- 2016 **How Stuff Works.** *An ‘Impossible’ Coral Reef System Discovered at Amazon River Mouth.* J. Shields. April 28.
- 2016 **Cosmos.** *Huge coral reef discovered at mouth of Amazon.* B. Condie. April 26, 2016.

- 2016 **Take Part**, *There Is a Giant Reef Under the Amazon's Muddy Waters*. T. Hill. April 26.
- 2016 **Washington Post**. *Scientists find a massive coral reef just chilling in the Amazon*. S. Kaplan. April 25.
- 2016 **Live Science**. *Massive Coral Reef Discovered in the Amazon River*. Ghose T. April 24.
- 2016 **Science Alert**. *Scientists just discovered a 1,000-km-long coral reef at the mouth of the Amazon*. *Whoa. Just whoa*. F. Macdonald. April 22.
- 2016 **Los Angeles Times**. *Scientists discover coral reef near the mouth of the Amazon River*. A. Khan. April 22.
- 2016 **National Geographic**. *Surprising, Vibrant Reef Discovered in the Muddy Amazon*. C. Welch. April 22.
- 2016 **The Atlantic**. *Scientists Have Discovered a 600-Mile Coral Reef - It's at the mouth of the Amazon River*. R. Meyer. April 21.
- 2015 **AGU Blogosphere**. *In Antarctica, melting ice drives unusual phytoplankton growth*. A.F. Takemura.
- 2014 **University of California Press Blogs**. *Patricia L. Yager Explains the Significance of the ASPIRE Special Feature*.

#### CONTRIBUTED ABSTRACTS

- Yager, P.L., H. Oliver**, P. St-Laurent, R. M. Sherrell, S. E. Stammerjohn (2020). High-resolution ocean model illustrates how ice-ocean interactions impact the CO<sub>2</sub> uptake of an Antarctic coastal polynya. Abstract #HE52A-03. *Ocean Sciences Meeting*, San Diego, California. February 16–21, 2020.
- Oliver, H.**, R. M. Castelao, **P.L. Yager** (2020). A sensitivity analysis to determine conditions necessary for meltwater-enhanced nutrient export from Greenland's glacial fjords. Abstract HE1A-01. *Ocean Sciences Meeting*, San Diego, California. February 16–21, 2020.
- Yager, P.L.**, J. Spivey, **J. Ebert**, **J. Wenclawiak**, C.A. Deutsch (2020). Mapping Deep Blue Habitats. Abstract #ED11B-02 (ePoster available online). *Ocean Sciences Meeting*, San Diego, California. February 16–21, 2020.
- Bricher, P., P. Gorringer, S. Diggs, **P.L. Yager** (2020). Finding Just the Data You Need: New Developments in Online Oceanographic Data Discovery Tools. Tutorial TT13C. *Ocean Sciences Meeting*, San Diego, California. February 16–21, 2020.
- Yager, P.L.**, P. St-Laurent, **H. Oliver**, R. M. Sherrell, S. E. Stammerjohn, M. Dinniman (2019). How ice-shelf-ocean interactions impact the carbon cycle of an Antarctic coastal polynya. Korea Polar Research Institute (KOPRI) *25th International Symposium on Polar Sciences*, May 13-15, Incheon, Republic of Korea.
- Yager, P. L.**, P. St-Laurent, **H. Oliver**, R. M. Sherrell, S. Stammerjohn, M. Dinniman (2018). High-resolution ocean model illustrates how ice-sheet ocean interactions impact the biological pump of an Antarctic coastal polynya. Abstract #415135 (C12B-07). Am. Geophysical Union, Annual Meeting. Washington D.C. December 2018.
- Oliver, H.**, P. St-Laurent, R. M. Sherrell, **P. L. Yager** (2018). Controls on summer phytoplankton blooms in a highly productive Antarctic coastal polynya. Abstract # OS34B-06. Am. Geophysical Union, Annual Meeting. Washington D.C. December 2018. \*Received AGU Outstanding Student Presentation Award.
- Yager, P. L.**, P. St-Laurent, R. M. Sherrell, **H. Oliver**, M. Dinniman, S. Stammerjohn (2018) High-resolution model illustrates how melting ice impacts coastal carbon cycle. West Antarctic Ice Sheet Initiative - Annual Meeting. Stony Point, New York. October 2018.
- Dinniman, M., P. St-Laurent, K. Arrigo, E. Hofmann, J. Klinck, R. Sherrell, S. Stammerjohn, and P.L. Yager. Ice shelf meltwater pump contribution to vertical exchange around Antarctica, 2018 SCAR/IASC Open Science Conference, Davos, Switzerland, June 15-26, 2018.

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- Oliver, H., P. St-Laurent, R.M. Sherrell, P.L. Yager, Does light or iron control the Amundsen Sea Polynya phytoplankton bloom? presentation at the Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole MA, June 25-28, 2018.
- Oliver, H., P. St-Laurent, R. M. Sherrell, **P. L. Yager** (2018). What controls the massive phytoplankton bloom in the Amundsen Sea Polynya? Abstract #HE14B-2850, presented at 2018 Ocean Sciences Meeting, Portland, OR, 12-16 Feb.
- Sherrell, R. M., **P. L. Yager**, P. St-Laurent, M. S. Dinniman, S. E. Stammerjohn, M. Lagerstrom, K. M. Harazin (2018). High iron in outflow waters from the Dotson Ice Shelf cavity, Amundsen Sea, West Antarctica: is glacial meltwater really the source? Abstract #CT31A-04, presented at 2018 Ocean Sciences Meeting, Portland, OR, 12-16 Feb.
- Dinniman, M.S., P. St-Laurent, K. R. Arrigo, E. E. Hofmann, J. M. Klinck II, R. M. Sherrell, S. E. Stammerjohn, **P. L. Yager**. The ice shelf meltwater pump contribution to vertical exchange over the open shelf in the Amundsen Sea and elsewhere around Antarctica. Abstract #HE41A-04, presented at 2018 Ocean Sciences Meeting, Portland, OR, 12-16 Feb.
- Ward, N.D., I. Joshi, A. de Matos Valerio, E. J. D'Sa, C. L. Osburn, T. S. Bianchi, D. Ko, D. Oveido-Vargas, A. Arellano, H. O. Sawakuchi, A. C. Cunha, J. E. Richey, **P. L. Yager** (2018). Remote sensing of carbon dioxide fluxes in coastal ecosystems across scales. Abstract # BN41A-03, presented at 2018 Ocean Sciences Meeting, Portland, OR, 12-16 Feb.
- Yager, P.L.**, P. St-Laurent, R.M. Sherrell, M.S. Dinniman and S.E. Stammerjohn (2017). 'Meltwater pump' mechanism directly links the extreme Amundsen Sea phytoplankton bloom to the melting ice shelf, presentation at the WAIS meeting, Coupeville WA, Oct. 8-11, 2017.
- Oliver, H., P. St-Laurent, R. M. Sherrell, **P. L. Yager** (2017). Physical and biological controls on phytoplankton blooms in the Amundsen Sea Polynya. Goldschmidt Conference. Paris, France. August 2017.
- Oliver, H., P. St-Laurent, R. M. Sherrell, **P. L. Yager** (2017). Controls on phytoplankton blooms in an Antarctic coastal polynya. Southeastern Biogeochemistry Symposium, Athens Georgia, March 2017.
- Oliver, H., P. St-Laurent, R. M. Sherrell, **P. L. Yager** (2017). What makes a bloom in the Amundsen Sea Polynya? A 1-D biogeochemical modeling perspective. Gordon Research Conference for Polar Marine Science, Ventura, California, March 2017.
- Oliver, H., H. Luo, R. M. Castelao, G. van Dijken, K. S. Mattingly, J. J. Rosen, T. L. Mote, **P. L. Yager**, et. al. (2016). Extreme surface melting of the Greenland Ice Sheet increases growth potential for light-limited phytoplankton in the Labrador Sea. American Geophysical Union, Annual meeting. San Francisco, California. December 2016.
- Rennermalm, AK, M Tedesco, LC Smith, LH Pitcher, TL Mote, **PL Yager**, S Moustafa, MG Cooper, D van As, B Hasholt, AB Mikkelsen (2016). Understanding Greenland Ice Sheet Runoff Losses. American Geophysical Union, Annual meeting. San Francisco, California. December 2016.
- Yager, P. L.**, P. St. Laurent, R. M. Sherrell, H. Oliver, M. Dinniman, E. Hofmann, S. Stammerjohn. Melting ice sheet enhances coastal biological productivity. West Antarctic Ice Sheet Initiative - Annual Meeting. Sterling, Virginia. October 2016.
- St-Laurent, P, M. Dinniman, **P. L. Yager**, et al., (2016). Transport pathways of nutrients in the Amundsen Sea, Antarctica. Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.
- Mu, L., **P. L. Yager**, P. St Laurent, R. Sherrell, M. Dinniman, E. Hofmann, H. Oliver, S. Stammerjohn (2016). Investigating the role of mesoscale processes and ice dynamics in carbon and iron fluxes in a changing Amundsen Sea (INSPIRE). Abstract #HE44D-1545. Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.

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- Oliver, H., H Luo, KS Mattingly, JJ Rosen, **Yager P. L.** (2016). Modeling the sensitivity of coastal ocean primary production to extreme melting of the Greenland Ice sheet. Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.
- Garay, L., **P. L. Yager** (2016). The SMORE Project: a model for transforming authentic research into classroom curricula. Abstract #ED23A-08, Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.
- Yager, P. L.**, Garay L, Warburton J (2016). ASPIRE: Teachers and researchers working together to enhance student learning. Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.
- Seidel, M., T. Dittmar, N. Ward, A. Krusche, J. Richey, **P. L. Yager**, P Medeiros (2016). Molecular transformations of dissolved organic matter in the lower Amazon River. Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.
- Coles, V., R. Hood, M. Stukel, M. A. Moran, J. Paul, B. Satinsky, B. Zielinski, **P. L. Yager** (2016). Modeling the nitrogen cycle one gene at a time. Abstract #B31B-08, Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.
- He, D., W. Berelson, P. L. Yager, P. M. Medeiros (2018). Influence of the Amazon River on the composition of particulate organic carbon in the western tropical Atlantic Ocean. Abstract #EC43A-07, Ocean Sciences Meeting. February 2016. New Orleans, Louisiana.
- Miles, T., O. Schofield, S. H. Lee, **P. L. Yager**, H. K. Ha (2016). Glider observations of the Dotson Ice Shelf outflow and its connection to the Amundsen Sea polynya. Abstract #HE44B-1501, Ocean Sciences Meeting. February 21–26, 2016. New Orleans, Louisiana.
- Goes, J., H. Gomes, K. McKee, T. Galina, T. Chen, M. D. Turkowsky, **P. L. Yager** (2016). Assessing the impacts of ocean acidification on phytoplankton functional types from space - a case study for the Amazon River plume. Ocean Sciences Meeting. February 21–26, 2016. New Orleans, Louisiana.
- Yager, P. L.**, H. Oliver, R. Castelao, H. Luo, K. Mattingly, J. Rosen, G. van Dijken, A. Rennermalm, M. Tedesco, and T. Mote (2016). Ice sheet meltwater impacts on coastal biological productivity - models and remote observations for southwest Greenland. 2016 PARCA Meeting. Greenbelt, Maryland. January 2016.
- Mote, T., K. Arrigo, R. Castelao, A. Rennermalm, M. Tedesco, **P. Yager**, H. Luo, and G. van Dijken (2016). The impact of extreme melt on ocean stratification and productivity near West Greenland. 2016 PARCA Meeting. Greenbelt, Maryland. January 2016.
- Yager, P. L.**, H. Oliver, R. Sherrell, S. Stammerjohn, P. St-Laurent, E. Hofmann, T. Mote, M. Tedesco, A. Rennermalm, and R. Castelao (2015). Ice sheet meltwater impacts on biological productivity in high-latitude coastal zones - observations and model results for West Antarctica and Southwest Greenland. American Geophysical Union - Fall Meeting. San Francisco, California. Dec. 2015.
- Coles, V., R. Hood, M. Stukel, M. A. Moran, J. Paul, B. Satinsky, B. Zielinski, **P. L. Yager** (2015). Merging marine ecosystem models and genomics. American Geophysical Union - Fall Meeting. San Francisco, California. December 2015.
- Oliver, H., R. Castelao, H. Luo, K. Mattingly, J. Rosen, and **P. L. Yager**, 2015: Coastal ocean primary production sensitivities to extreme melting of the Greenland ice sheet, *Regional Climate Symposium at Rutgers University*: Climate Change and Polar Regions: Natural and Social System Implications. Rutgers Climate Institute, New Brunswick, New Jersey, November 20, 2015
- Mote, T., K. Arrigo, R. Castelao, A. Rennermalm, M. Tedesco, **P. Yager**, H. Luo, and E. Noble (2015). The impact of extreme melt on ocean stratification and productivity near West Greenland. Ilulissat Climate Days. Ilulissat, Greenland. June 2015.
- Yager, P. L.**, R. Sherrell, S. Stammerjohn, O. Schofield, H. Ducklow, S. Wilson, A. Alderkamp (2015). An

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ELEMENTA special feature: The Amundsen Sea Polynya International Research Expedition (*ASPIRE*). Gordon Research Conference on Polar Marine Science. Il Ciocco, Italy. March 2015.

- Oliver, H., P. L. Yager, R. Castelao, and H. Luo (2015). Modelling the responses of primary production to extreme melting of the Greenland Ice Sheet. Gordon Research Conference on Polar Marine Science. Il Ciocco, Italy. March 2015.
- Sherrell, R. M., **P. L. Yager**, S. Stammerjohn, et al., Ocean-Ice shelf interactions in the Amundsen Sea Polynya; implications for Fe supply and C cycling. Gordon Research Conference on Polar Marine Science. Il Ciocco, Italy. March 2015.
- Buck, K. R., K. Walz, L. Khunz, **P. L. Yager** and J. P. Barry (2015). Deep-sea sediment communities: infaunal and megafaunal biomass and metabolism. ASLO Aquatic Sciences Meeting, Granada, Spain. February 2015.
- Sherrell, R., M. Lagerström, M. Séguret, K. M. Harazin, K. Forsch, O. Schofield, S. E. Stammerjohn, **P. L. Yager**, M. P. Meredith (2014). Fe availability and bioactive metal dynamics in Antarctic shelf systems: Amundsen Sea Polynya vs. western Antarctic Peninsula. Goldschmidt Conference, Sacramento California. June 2014.
- Wilson, S. E.; Swalethrop, R.; Kjellerup, S.; Ducklow, H. W.; **Yager, P. L.** (2014); Meso and macro-zooplankton community structure of the Amundsen Sea Polynya, Antarctica (Summer 2010–2011). American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract #16271. February 2014.
- Dinasquet, J, Richert I, **Yager P. L.**, Bertilsson S, Riemann L (2014). Mixing of water masses caused by a drifting iceberg affects bacterial activity, community composition, and substrate utilization in the Southern Ocean. American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract #16279. February 2014.
- Sherrell, R. M., M. Lagerström, S. Stammerjohn, **P. L. Yager**, O. Schofield (2014). Workings of an intense natural iron fertilization region during climate warming: bioactive metal dynamics in Amundsen Sea Polynya, West Antarctica. American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract #16434. February 2014.
- Ingall, E. D.; Diaz, J. M.; Longo, A. F.; **Yager, P. L.**; Brandes, J. A. (2014) Role of diatoms in the removal of iron from Antarctic seas. American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract #16531. February 2014.
- Delmont, T.; Ducklow, H.; **Yager, P.**; Post, A. (2014). Bacterial community structures in the Amundsen Sea Polynya are shaped by *Phaeocystis antarctica* blooms. American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract # 16616. February 2014.
- Zielinski, B. L.; Coles, V. J.; Satinsky, B.; **Yager, P. L.**; Paul, J. H. (2014). Patterns of microeukaryotic gene expression parallel biogeochemical measurements in the Amazon River Plume. American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract #16925. February 2014.
- Yager, P. L.**, R. M. Sherrell, A. C. Alderkamp, E. D. Ingall, H. W. Ducklow (2014). Net community production and export in the Amundsen Sea Polynya (Western Antarctica) with comparisons to Arctic polynyas and a link to climate sensitivity. American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract #17007. February 2014.
- Coles, V. J.; Hood, R. H.; Stukel, M. R.; **Yager, P. L.** (2014). Modeling metagenomics and metatranscriptomes along the Amazon River Plume gradient. American Geophysical Union / ASLO/ TOS Ocean Sciences Meeting. Honolulu, Hawaii. Abstract # 17476. February 2014.
- Wang, P.; Burd, A. B.; Hood, R. R.; Coles, V. J.; Moran, M. A.; **Yager, P. L.** (2013). Incorporating genomic and transcriptomic information into a simplified marine biogeochemical model. Association for the Sciences of



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- Limnology and Oceanography, Aquatic Sciences Meeting. New Orleans, Louisiana. Abstract #10691. February 2013.
- Baer, S. E.; Connelly, T. L.; **Yager, P. L.**; Bronk, D. A. (2013). Ammonium uptake and nitrification in a warming arctic. Association for the Sciences of Limnology and Oceanography, Aquatic Sciences Meeting. New Orleans, Louisiana. Abstract #11564. February 2013.
- Zielinski, B. L., Sharma, S., Satinsky, B. M.; Smith, C. B.; Doherty, M.; Coles, V.; Crump, B.; **Yager, P.**; Moran, M.; Paul, J. H. (2013). Using metatranscriptomics to reveal the eukaryotic phytoplankton's response to dynamic environments within the Amazon River Plume. Association for the Sciences of Limnology and Oceanography, Aquatic Sciences Meeting, New Orleans, Louisiana. Abstract # 11646. February 2013.
- Mu, L., and **P.L. Yager** (2013). Spatial Variability of sea surface pCO<sub>2</sub> in the Amundsen Polynya. Gordon Research Conference on Polar Marine Sciences. Ventura, California, March 2013.
- Williams, C., and **P.L. Yager** (2013). Heterotrophic microbial activity in the Amundsen Sea Polynya. Gordon Research Conference on Polar Marine Sciences. Ventura, California, March 2013.
- Zielinski, B. L.; Sharma, S.; Smith, C. B.; Satinsky, B. M.; Fortunato, C.; Doherty, M.; Coles, V.; Crump, B.; **Yager, T.**; Moran, M. A. (2012). Making the connection between meta-transcriptomics and biogeochemical cycles in the Amazon River plume. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #9481. February 2012.
- Goes, J., Gomes, H. R.; Chekalyuk, A.; Carpenter, E. J.; Montoya, J. P.; Coles, V.; **Yager, P. L.**; Hafez, M. (2012). Biogeography and ecophysiology of phytoplankton communities of the Amazon River plume. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #9907. February 2012.
- Medeiros, P. M.; Ward, N.; Niggemann, J.; **Yager, P. L.**; Krusche, A. V.; Dittmar, T. (2012). Tracking the fate of dissolved organic matter in the Amazon River to ocean continuum. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #10321. February 2012.
- Yeung, L. Y.; Berelson, W. M.; Young, E. D.; Prokopenko, M. G.; Coles, V. J.; Montoya, J. P.; Carpenter, E. J.; **Yager, P. L.** (2012). Impact of diatom-diazotroph associations on carbon export in the Amazon River plume. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #10484. February 2012.
- Coles, V. J.; Brooks, M. T.; Hood, R. R.; Montoya, J. P.; Stukel, M. R.; **Yager, P. L.** (2012). The role of the Amazon River plume in structuring the upper ocean stratification, biogeochemistry, and biological communities in the western tropical North Atlantic. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #11346. February 2012.
- Yager, P. L.**; Coles, V. J.; Goes, J.; Montoya, J.; Steinberg, D.; Berelson, W.; Hood, R.; Capone, D.; Carpenter, E. (2012). ANACONDAS: Amazon influence on the Atlantic: carbon export from nitrogen fixation by diatom symbioses. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract # 12013. February 2012.
- Connelly, T. L.; Sines, K. A.; **Yager, P. L.** (2012). A three-season study of heterotrophic microbial activity and the response to short-term warming in a nearshore Arctic environment. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #12027. February 2012.
- Garay, L. V.; **Yager, P.** (2012). The broad-spectrum benefits of research partnerships between teachers and marine scientists. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #12038. February 2012.
- Green, J. L.; **Yager, P. L.**; Miller, W. L.; Goes, J.; Medeiros, P.; Effects of sunlight on the Amazon River plume: exploring the dynamic relationship between photochemistry and the microbial response. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #12076. February 2012.

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- Page, B. P.; Coles, V. J.; Goes, J.; **Yager, P.**; Surface measurements of pCO<sub>2</sub> in the western tropical North Atlantic: quantifying the influence of the Amazon River plume on gas exchange. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #12359. February 2012.
- Mu, L.; **Yager, P.L.** (2012) Atmospheric CO<sub>2</sub> uptake by a super-productive Antarctic polynya. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #12213. February 2012.
- Williams, C. M.; Connelly, T. L.; Sines, K. A.; **Yager, P. L.** (2012). Pelagic microbial heterotrophy in a highly productive Antarctic polynya. *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #12236. February 2012.
- Alderkamp, A. C.; Van Dijken, G. L.; Lowry, K. E.; Schofield, O.; Sherrell, R. M.; **Yager, P. L.**; Arrigo, K. R. (2012). Iron and light effects on phytoplankton primary productivity in the Amundsen Sea (Antarctica). *Eos, Transactions American Geophysical Union* 93, Ocean Sci. Meet. Suppl., Abstract #12544. February 2012.
- Yeung, L.Y., W.M. Berelson, E.D. Young, M.G. Prokopenko, E. J. Carpenter, **P.L. Yager** (2011). Oxygen triple-isotope evidence for enhancement of export production efficiency by diatom-diazotroph assemblages in a giant river plume. Goldschmidt 2011 Conference, Prague, Czech Republic. Abstract published online. August 2011.
- Coles, V., **P. Yager**, W. Berelson, et al. (2011). ANACONDAS: Amazon iNfluence on the Atlantic: CarbOn export from Nitrogen fixation by DiAtom **Symbioses**. Research at the intersection between OCB and CLIVAR. OCB Workshop, Woods Hole, Massachusetts. July 2011.
- Yager, P.L.**, and J.B. Heimlich (2010). Bacterial Growth and Respiration in Polynyas and Sea Ice Communities of the Pacific Sector of the coastal Antarctic: is the Biological Pump Sensitive to Climate? *AGU Ocean Sciences Meeting*, Portland, Oregon. *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT44C-08. February 2010.
- Bakker, K.M. and **P.L. Yager** (2010). Bacterial community analysis of the Southern Oceans Amundsen Sea polynya and its surrounding sea ice. *AGU Ocean Sciences Meeting*, Portland, Oregon. *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT45I-08. February 2010.
- Fransson, A., M. Chierici, **P.L. Yager**, M. Mattsdotter, M. Nilsson, K. Sines. Sea-ice carbonate system dynamics in the Amundsen and Ross Seas, Antarctica. *AGU Ocean Sciences Meeting*, Portland, Oregon. *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl. Abstract CO-35C-06. February 2010.
- Yager, P.L.** (2008). How Amazon River inorganic carbon and nutrient concentrations likely determine the extent of carbon sequestration in the western tropical North Atlantic. *AGU Ocean Sciences Meeting*, Orlando, Florida. March 2008.
- Buck, K., J. P. Barry, and **P. Yager** (2006). Deep-sea respiration rates under the low pH stress of deep CO<sub>2</sub> injection. Deep Sea Biology Symposium, Southampton, UK. July 2006.
- Yager, P.**, S. Cooley, A. Subramaniam, R. Shipe, C. Mahaffey, K. Bjorkman, S. Sanudo-Wilhelmy, A. Tovar-Sanchez, E. Carpenter, and D. Capone (2006). Diatom-Diazotroph Associations in the Amazon River Plume are Linked with Carbon Sequestration in the Western Tropical North Atlantic. *AGU Ocean Sciences Meeting*, Honolulu, Hawaii. February 2006.
- Cooley, S. R. and **P. L. Yager** (2006). Biologically induced seasonality in the Amazon Plume carbon sink. *AGU Ocean Sciences Meeting*, Honolulu, Hawaii. February 2006.
- A. Subramaniam, E.J. Carpenter, R. Shipe, **P. Yager**, D. G. Capone (2005). The diatom express. *American Society of Limnology and Oceanography*, Santiago, Spain. June 2005.
- Cooley, S. R., and **P. L. Yager** (2005). Intra- and interannual variation in the Western Tropical Atlantic inorganic carbon system. *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, Salt Lake City, UT. February 2005.

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- Carpenter, E. J., A. Subramaniam, J. Burns, S. Cooley, J. Finzi, T. Gunderson, R. Shipe, **P. Yager**, D. Capone, C. Mahaffey (2005). Carbon and nitrogen fixation in the Western Tropical North Atlantic (WTNA) Ocean. *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, Salt Lake City, UT. February 2005.
- Cooley, S. R., and **P. L. Yager** (2003). Distinguishing summertime biological inorganic carbon drawdown from physical effects in the western tropical Atlantic Ocean. *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, Salt Lake City, UT. February 2003.
- Fisher, J. C. and **P. L. Yager** (2003). Temporal and spatial changes in dissolved inorganic carbon and alkalinity in the Arctic halocline during Ice Station SHEBA. *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, Salt Lake City, UT. February 2003.
- Yager, P. L.**, and A. Goodrich (2003). Contributions to the inorganic carbon budget of Arctic Ocean surface waters: implications for freshwater inputs and the balance of autotrophy versus heterotrophy. *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, Salt Lake City, UT. February 2003.
- Hodges, L. R., N. Bano, J. T. Hollibaugh, and **P. L. Yager** (2002). Bacterial community structure in the Chukchi Sea: differences between free-living and particle-associated assemblages in high and low POM environments. *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, Victoria, B.C. June 2002.
- Cooley, S. R. and P. L. Yager (2002). The dissolved inorganic carbon system during the 2001 MANTRA/PIRANA Expeditions in the Western Tropical Atlantic. *Eos. Trans. AGU*, 83 (4), Ocean Sciences Meet. Suppl., Abstract OS32E-166, 2002.
- Yager, P. L.** (2002). An Arctic Ocean time series of dissolved inorganic carbon. *AGU/ASLO 2002 Ocean Sciences Meeting*. Honolulu, Hawaii, February 2002.
- Miller, L. A., **P. L. Yager**, K.A. Erickson, J. Bâcle, J.K. Cochran, M.-È. Garneau, M. Gosselin, D.J. Hirschberg, B. Klein, B. LeBlanc, and W.L. Miller (2001). Physical Constraints on Carbon Distributions and Fluxes: The North Water, Northern Baffin Bay, 1998 and 1999. *International Polynya Symposium 2001: Polynyas in Changing Polar Seas*. Quebec City, Canada, September 2001.
- Miller, L. A., T. Noji, **P. L. Yager** (2001). Carbon Sinks in Seasonally Ice-Covered Seas: Physics and Biogeochemistry. *International Geosphere-Biosphere Programme*, Global Change Open Science Conference, Amsterdam, the Netherlands, July 2001.
- Yager, P. L.** (2000). Microbial Ecology of the Arctic Oceans - a tutorial discussion of old boundaries and new insights on low temperature microbial ecosystems. *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, Copenhagen, Denmark. May 2000.
- Yager, P. L.**, T. L. Connelly, B. Mortazavi, K. E. Wommack, N. Bano, J. E. Bauer, and J. T. Hollibaugh (2000). Dynamic Microbial Response to Springtime Algal Bloom at Sub-Zero Temperatures. *AGU/ASLO 2000 Ocean Sciences Meeting*. San Antonio, Texas, January 2000.
- Yager, P. L.** (1999). The effects of an Arctic Spring-bloom progression on microbial community activity and composition. Gordon Research Conference on Polar Marine Science. Ventura, CA March 1999.
- Wheeler, P.A., B. F. Sherr, E. B. Sherr, and **P. L. Yager** (1999). Biological Production and Carbon Cycling in the Central Arctic Ocean. SHEBA/FIRE Workshop. Tuscon, AZ, January 1999.
- Yager, P. L.** (1997). A sensitivity analysis of air-sea carbon flux in a marine biosphere model. *ASLO 1997 Aquatic Sciences Meeting*. Santa Fe, New Mexico, February 1997.
- Yager, P. L.**, and J. W. Deming (1996). Microbial activity in the Northeast Water Polynya: testing for temperature and substrate interactions using a kinetic approach. *AGU/ASLO 1996 Ocean Sciences Meeting*. San Diego, California, February 1996.
- Yager, P. L.**, J. W. Deming, T. Sime-Ngando, and K. Juniper (1995). Pelagic microbial activity in the Northeast Water Polynya: implications for the inorganic carbon cycle. *International Northeast Water Polynya Symposium*.

Helsingør, Denmark, May 1995.

**Yager, P. L.**, and J. W. Deming (1993). Collaborative research on the Northeast Water polynya (NEW 1992): pelagic microbial dynamics. *International Workshop on Arctic Polynyas*. Seattle, Washington, January 1993.

Deming, J. W., and **P. L. Yager** (1991). Benthic bacterial populations in the Greenland Sea corridor: response to increased carbon flux and temperature. *Fall Meeting, American Geophysical Union*. San Francisco, California, December 1991.

**Yager, P. L.**, A. R. M. Nowell, and P. A. Jumars (1989). Enhanced deposition to pits: the effect of microtopography on food sources for deposit feeders. *Annual meeting, North American Benthological Society*. Guelph, Ontario, May 1989.

#### PROFESSIONAL SOCIETIES:

**ASLO:** Association for the Sciences of Limnology and Oceanography.

**AGU:** American Geophysical Union.

**TOS:** The Oceanography Society

**AAAS:** American Association for the Advancement of Science

**ASM:** American Society for Microbiology

**ISME:** International Society for Microbial Ecology

#### ADDITIONAL EDUCATION:

1997 **Fall 1997 College Teaching Conference.** Program for Instructional Excellence, Office of Graduate Studies, Florida State University. August 1997.

1994 **NASA-NOAA-JPL Summer School for Earth Sciences**, California Institute of Technology, Pasadena, California. Processes of Global Change. Drs. S. K. Ride and D. J. McCleese.

1992–93 **Research practicum** (DOE fellowship program), Brookhaven National Laboratory, Ocean and Atmospheric Sciences Division, Department of Applied Science, Upton, New York. Advisor: Dr. D.W.R. Wallace.

1991–92 **University of Georgia - Institute of Ecology and Department of Microbiology.** Courses in *Microbial Ecology*, *Microbiology*, and *Biochemistry*. Drs. Hodson, Pomeroy, Moran, Wiebe, Whitman, Shimkets, Wiegell, and Dailey. Athens, Georgia.

1991 **Friday Harbor Marine Laboratories**, University of Washington. Summer course: *Climate and the Marine Biosphere*. Dr. R.H. Gammon. Friday Harbor, Washington.

1989 **Friday Harbor Marine Laboratories**, University of Washington. Summer course: *Polychaetes*. Drs. K. Fauchald, S. Woodin, H. Wilson. Friday Harbor, Washington.

1984 **Friday Harbor Marine Laboratories.** University of Washington. Summer course: *Biological Sedimentary Dynamics*. Drs. A.R.M. Nowell, P.A. Jumars, and R.C. Aller. Friday Harbor, Washington.

1984 **S.E.P.M. Short Course**, Geological Society of America. Course: *Mechanics of Sediment Movement*. Drs. G.V. Middleton and J.B. Southard. Providence, Rhode Island.

1984 **Brown University** - Department of Geology. Micropaleontology Short Course in Benthic Foraminifera. Dr. W. A. Berggren. Providence, Rhode Island.

1983 **Friday Harbor Marine Laboratories**, University of Washington. Summer courses: *Marine*

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*Invertebrate Zoology* (Drs. E. Kozloff and T. Suchanek), *Comparative Invertebrate Embryology* (Dr. A. Whiteley). Friday Harbor, Washington.

**FIELD EXPERIENCE:**

- 2019 **Georgia Bight** – Savannah to the Gulf Stream, onboard *RV Savannah*, April 26–28, 2019; September 27–29, 2019; November 22–24, 2020. Field experience for Marine Science undergraduate and graduate students, including research on coastal carbonate system and ocean acidification.
- 2010–12 **Western tropical North Atlantic** - Barbados to Barbados, Onboard *RV Knorr*, May 22–June 25, 2010; *RV Melville*, Sept 3–Oct 8, 2011, *RV Atlantis* July 13–29, 2012. Chief Scientist for NSF- and GBMF-funded project investigating biology and biogeochemistry of the Amazon River Plume.
- 2010–12 **Chukchi and Beaufort Seas**, Coastal Arctic - National Arctic Research Laboratory, Barrow Alaska. Lead investigator of “ArcticNITRO” microbial ecology and carbon cycling.
- 2010–11 **Amundsen Sea, Antarctica** - Punta Arenas, Chile to McMurdo, Antarctica. Onboard *Icebreaker Nathaniel B. Palmer*, November 26, 2007–January 18, 2011. Chief scientist and Lead Investigator of ASPIRE project, in charge of investigating carbonate system and pelagic microbial ecology.
- 2008–09 **Pacific sector of coastal Antarctica** - Montevideo, Uruguay to McMurdo Station, Antarctica. Onboard *Icebreaker Oden*, November 29, 2008–January 13, 2009. Principal investigator in charge of investigating sea ice microbial ecology and biogeochemistry.
- 2007–08 **Pacific sector of coastal Antarctica** - Punta Arenas, Chile to McMurdo Station, Antarctica. Onboard *Icebreaker Oden*, November 26, 2007 – January 9, 2008. Principal investigator in charge of investigating pelagic microbial ecology and biogeochemistry.
- 2006 **Pacific Continental Rise** southwest of Monterey Bay (35.8°N, 122.6°W; 3300 m) aboard the *RV Western Flyer* and remotely operated vehicle *ROV Tiburon*, January 2006. Principal investigator collecting deep-sea sediment for analysis of bacterial abundance and activity following deep injection of liquid CO<sub>2</sub>. Invited participant in DOE Carbon Sequestration research (Jim Barry, PI).
- 2001 **Western Equatorial Atlantic** (6–30°N, 41–75°W) aboard *RV Seward Johnson*, January–February 2001. Principal investigator for analysis of seawater for CO<sub>2</sub>. Invited participant in NSF-Biocomplexity project to study tropical carbon cycle.
- 1999 **Northwater Polynya** (72–79°N, 72–79°W) aboard Canadian Coast Guard icebreaker *Pierre Radisson*, August 21–September 16, 1999. Principal investigator for collection and analysis of seawater for CO<sub>2</sub>, other carbon inventories, and microbial activity.
- 1998 **Ice Station SHEBA, Canada Basin, Arctic Ocean** (75–81°N, 142–168°W) aboard Canadian Coast Guard icebreaker *Des Groseillers*, September 5–October 17, 1998). Principal investigator involved with hydrographic sampling. Collection and analysis of seawater for total dissolved inorganic carbon concentration and microbial activity.
- 1996–98 **Bering, Chukchi, and Beaufort Seas** (66–76°N, 157–168°W) aboard USCGC *Polar Sea*, May 29–June 25, 1996, June 1–July 7, 1998). Principal investigator in charge of microbial ecology and hydrologic biogeochemistry.
- 1992–93 **Northeast Water (NEW) Polynya** (77–81°N, 6–17°W), aboard USCGC *Polar Sea*, July–August 1992, 1993. Graduate student, part of interdisciplinary research team (funded by NSF Arctic System Science) studying carbon cycling in arctic polynyas.
- 1993 **Northeast Water Polynya**, aboard German icebreaker *FS Polarstern*. Collaboration with Canadian and German research team studying Arctic polynyas.

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- 1991 **Santa Catalina Basin, California**, aboard RV *Atlantis II* and DSRV *Alvin*. Effects of whale carcass eutrophication on deep-sea benthic community.
- 1990 **Norwegian Sea**, aboard German research vessel, FS *Meteor*. Effects of pressure and temperature on deep-sea benthic microbial processes. Collaborated with Drs. G. Graf and L. A. Meyer-Reil.
- 1987–88 **Hydrodynamics Laboratory**, Friday Harbor Laboratories, San Juan Island, Washington. Masters thesis research: experiments using race-track, straight-through, and annular flumes to study effect of biogenic microtopography on deposition of particles.
- 1987 **Santa Catalina Basin, California**. Onboard research platform using Remote Underwater Manipulator (*RUM II*). Deep-sea biological-sedimentary interactions.
- 1987 **Santa Catalina Basin, California**, aboard RV *Atlantis II* and DSRV *Alvin*. Deep-sea biological-sedimentary interactions; *Alvin* dive to 1200 m.
- 1986 **California continental shelf**, aboard RV *Thomas G. Thompson*. STRESS project: sediment transport and storm effects on continental shelf and slope.
- 1985 **Hundred Acre Cove**, Barrington, Rhode Island. Fieldwork using canoe and motorized raft. Undergraduate research project: collected estuarine benthic samples using grabs and corers for sediment analysis and hydrodynamics study.
- 1984 **False Bay, San Juan Island**, Washington. Intertidal fieldwork. Effect of biogenic roughness density on local erosion and deposition.