

Carol Arnosti

Research Interests

- Organic carbon cycling by microbial communities in marine sediments and seawater
- Structural characterizations and transformations of macromolecular organic matter
- Development/application of novel methods to measure microbial enzyme activities
- Relationships between microbial community composition and function

Education

- Ph.D. M.I.T./Woods Hole Oceanographic Institution; Chemical Oceanography (1993)
B.A. Lawrence University, chemistry; *magna cum laude*, Phi Beta Kappa (1984)

Professional Experience

- Professor*, Department of Marine Sciences since 7/2006
Visiting Professor, Max Planck Institute for Marine Microbiology 2018 (Jan-June)
(Bremen, Germany)
Hanse Fellow, Hanse Institute for Advanced Studies 2015/16 (Dec.-June)
(Delmenhorst, Germany) 2014 (Sept-Dec.)
Associate Chair, Department of Marine Sciences 2005-2012
Guest Scientist, Alfred Wegener Institute for Polar and 2008 (Jan-May)
Marine Research (Bremerhaven, Germany)
Associate Professor, Department of Marine Sciences, 2001-6/2006
University of North Carolina-Chapel Hill
Hanse Fellow, Hanse Institute for Advanced Studies 2001-2002
(Delmenhorst, Germany)
Visiting Professor Max-Planck Institute for Marine Microbiology 1999 (Feb.-July)
(Bremen, Germany)
Assistant Professor, Department of Marine Sciences, 1995-2000
University of North Carolina-Chapel Hill
Fulbright and NSF/NATO Postdoctoral Fellow, 1993-1994
Max Planck Institute for Marine Microbiology
(Bremen, Germany)
Graduate Student, Joint Program in Chemical Oceanography, 1987-1993
Massachusetts Institute of Technology and
Woods Hole Oceanographic Institution
Fulbright Fellow, Technical University of Aachen, and 1984-1986
Institute for Petroleum and Organic Geochemistry
(KFA-Jülich, Germany)

Field work: 28 research cruises in the North Atlantic, Pacific, and Arctic Oceans, in coastal North Carolina, and the Gulf of Mexico. One month at McMurdo Station, Antarctica.

Graduate sponsor/postdoctoral advisor/undergraduate mentor to 3 postdocs, 9 graduate students, committee member for 30 graduate students, 47 undergraduate research students

Select publications from the last 5 years:

Reintjes, G., C. Arnosti, B. M. Fuchs, and R. Amann. (2018) Selfish, sharing, and scavenging bacteria in the Atlantic Ocean: a biogeographic study of microbial substrate utilisation. In press, *The ISME J*

Balmonte, John Paul, Andrew Buckley, Adrienne Hoarfrost, Sherif Ghobrial, Kai Ziervogel, Andreas Teske, Carol Arnosti (2018) Community structural differences shape microbial responses to high molecular weight organic matter. In press, *Environ. Microb.*

Arnosti, C., G. Reintjes, and R. Amann. (2018) A mechanistic microbial underpinning for the size-reactivity continuum of DOC degradation. *Marine Chemistry*. doi:10.1016/j.marchem.2018.09.008

Balmonte, JP, A. Teske, and C. Arnosti. (2018) Structure and function of high Arctic pelagic, particle-associated, and benthic bacterial communities. *Environmental Microbiology* 20: 2941-2954.

Dittmar, T., and C. Arnosti. (2018) An inseparable liaison: marine microbes and nonliving organic matter. Chapt. 6, *Microbial Ecology of the Ocean* (D. Kirchman and J. Gasol, eds.); pp. 189-230.

Bullock, A., K. Ziervogel, S. Ghobrial, S. Smith, B. McKee, and C. Arnosti. (2017) A multi-season investigation of microbial community activities in two temperate coastal North Carolina rivers: evidence of spatial but not seasonal patterns. *Frontiers in Microbiol.*, 8: 2589. doi: 10.3389/fmicb.2017.02589.

Reintjes, G., C. Arnosti, B. M. Fuchs, and R. Amann (2017) An alternative polysaccharide uptake mechanism of marine bacteria. *The ISME J*. 11: 1640-1650. doi:10.1038/ismej.2017.26

Arnosti, C., K. Ziervogel, T. Yang, and A. Teske (2016) Oil-derived marine aggregates – hot spots of polysaccharide degradation by specialized bacterial communities. *Deep Sea Res II* 129: 179-186.

Bullock, A., K. Ziervogel, S. Ghobrial, A. Jalowska, and C. Arnosti. (2015) Organic matter degradation by microbial communities at three contrasting sites in the coastal North Atlantic: Variations in DOC turnover times and potential for export off the shelf. *Marine Chemistry* 177: 388-397.

Neumann, Anna Maria, John Paul Balmonte, Martine Berger, Helge-Ansgar Giebel, Carol Arnosti, Thorsten Brinkhoff, Meinhard Simon, and Matthias Wietz (2015) Different utilization of alginate and other algal polysaccharides by marine *Alteromonas macleodii* ecotypes. *Environ. Microbiol.* 17: 3857-3868. doi:10.1111/1462-2920.12862

Prairie JC, Ziervogel K, Camassa R, McLaughlin RM, White BL, Dewald C., Arnosti C. (2015) Delayed settling of marine snow: effects of density gradient and particle properties and implications for carbon cycling. *Marine Chem.* 175: 28-38.

Arnosti, C. (2015) Contrasting strategies in microbial degradation of organic matter in the water column and sediments: An example from Arctic fjords of Svalbard. *Marine Chem.* 168: 151-156. doi.org/10.1016/j.marchem.2014.09.019

Steen, A.D and C. Arnosti (2014) Picky, hungry eaters in the cold: persistent substrate selectivity among polar pelagic microbial communities. *Frontiers Microbiol.* 5: 527 doi: 10.3389/fmicb.2014.00527

Cardman, Z., C. Arnosti, A. Durbin, K. Ziervogel, C. Cox, A.D. Steen, and A. Teske (2014) Verrucomicrobia: candidates for polysaccharide-degrading bacterioplankton in an Arctic fjord of Svalbard *Appl. Environ. Microbiol.* 80: 3749-3756.

Arnosti, C., C. Bell, D.L. Moorhead, R.L. Sinsabaugh, A.D. Steen, M. Stromberger, M. Wallenstein, M. Weintraub. (2014) Extracellular enzymes in terrestrial, freshwater, and marine environments: perspectives on system variability and common research needs. *Biogeochemistry*, 117:5-21. DOI 10.1007/s10533-013-9906-5