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
Hanse Fellow, Hanse Institute for Advanced Studies (Delmenhorst, Germany)	2014 (Sept-Dec.); 2015/16 (Dec-June) 2001-2002
Guest Scientist, Alfred-Wegener-Institute for Polar and Marine Research (Bremerhaven, Germany)	2008 (Jan-May)
Associate Professor, Department of Marine Sciences, University of North Carolina-Chapel Hill	2001-6/2006
Visiting Scientist, Max-Planck Institute for Marine Microbiology (Bremen, Germany)	1999 (Feb.-July)
Assistant Professor, Department of Marine Sciences, University of North Carolina-Chapel Hill	1995-2000
Fulbright and *NSF/NATO Postdoctoral Fellow*, Max-Planck Institute for Marine Microbiology (Bremen, Germany)	1993-1994
Fulbright Fellow, Technical University of Aachen, and Institute for Petroleum and Organic Geochemistry (KFA-Jülich, Germany)	1984-1986

Field work in the North Atlantic, Pacific, and Arctic Oceans, in coastal North Carolina, the Baltic Sea, and the Gulf of Mexico. One month at McMurdo Station, Antarctica.

Graduate sponsor/postdoctoral advisor/undergraduate mentor to 2 postdocs, 7 graduate students, member of 29 graduate student committees, 40 undergraduate research assistants

Recent professional service

American Association for the Advancement of Science, Section on Atmospheric and Hydrospheric Sciences; Member-at-large (2015-)
Ocean Carbon and Biogeochemistry scientific steering committee, member (2013-)
Associate Editor, *Geochimica et Cosmochimica Acta* (2001-2012)

Select publications from the 5 years

Arnosti, C., K. Ziervogel, T. Yang, and A. Teske (2015) Oil-derived marine aggregates – hot spots of polysaccharide degradation by specialized bacterial communities. In press, *Deep Sea Res II.*

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.

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.

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

D'Ambrosio, L., K. Ziervogel, B. MacGregor, A. Teske, C. Arnosti (2014) Composition and enzymatic function of particle-associated and free-living bacteria: a coastal/offshore comparison. *The ISME J,* 8: 2167-2179.

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

Arnosti, C. and A.D. Steen. (2013) Patterns of extracellular enzyme activities and microbial metabolism in an Arctic fjord of Svalbard and in the northern Gulf of Mexico: Contrasts in carbon processing by pelagic microbial communities. *Frontiers in Microbiol.* 4: 318. doi: 10.3389/fmicb.2013.00318

Steen, A.D., and Arnosti, C. (2013) Extracellular peptidase and carbohydrate hydrolase activities in an Arctic Fjord (Smeerenburgfjord, Svalbard) *Aq. Microb. Ecol*. 69:93-99.

Arnosti, C., B. Fuchs, R. Amann, and U. Passow. (2012) Contrasting extracellular enzyme activities of particle associated bacteria from distinct provinces of the North Atlantic Ocean. *Frontiers in Microbiology*, 3*:*425. doi: 10.3389/fmicb.2012.00425

Steen, A.D, K. Ziervogel, S. Ghobrial, and C. Arnosti. (2012) Functional variation among polysaccharide-hydrolyzing microbial communities in the Gulf of Mexico. *Marine Chem*. 138: 13-20.

Ziervogel, K., L. McKay, B. Rhodes, C.L. Osburn, J. Dickson-Brown, C. Arnosti, A. Teske. (2012) Microbial activities and dissolved organic matter dynamics in oil-contaminated seawater from the Deepwater Horizon oil spill site. *PLoS ONE* 7(4): e34816. doi:10.1371/journal.pone.0034816

Arnosti, C., A.D. Steen, K. Ziervogel, S. Ghobrial, and W.H. Jeffrey. (2011) Latitudinal gradients in degradation of marine dissolved organic carbon. *PLoS ONE* 6(12): e28900. doi: 10.1371/journal.pone.0028900

Arnosti, C., H.P. Grossart, M. Mühling, I. Joint, and U. Passow. (2011) Dynamics of extracellular enzyme activities in seawater under changed atmospheric pCO_2: A mesocosm investigation. *Aq Microb Ecol*. 64: 285-298.

Teske, A., A. Durbin, K. Ziervogel, C. Cox, and **C. Arnosti**. (2011) Microbial community composition and function in permanently cold seawater and sediments from an Arctic fjord of Svalbard. *Appl. Environ. Microbiology* 77: 208-218.

Arnosti, C. (2011) Microbial extracellular enzymes and the marine carbon cycle *Ann. Review of Marine Science*, 3: 401-425.

Steen, A.D. and C. Arnosti. (2011) Long lifetimes of β-glucosidase, leucine aminopeptidase, and phosphatase in Arctic seawater. *Marine Chem.* 123: 127-132.