

Andrew D Barton

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Current Position

2016 - present Assistant Professor, Scripps Institution of Oceanography and Section of Ecology, Behavior and Evolution, University of California San Diego

Education

2011 PhD Climate Physics and Chemistry, Program in Atmospheres, Oceans, and Climate, Massachusetts Institute of Technology (Supervisor: Dr. Michael J Follows)
Dissertation: Trait-based Approaches to Marine Microbial Ecology

2001 MS Geological Sciences, Department of Earth and Atmospheric Sciences, Cornell University (Supervisors: Prof. Charles Greene and Dr. Bruce Monger)

2000 BA Science of Earth Systems, Cornell University

Professional Experience

2015 – 2016 Associate Research Scholar, National Oceanic and Atmospheric Administration (NOAA) Geophysical Fluid Dynamics Laboratory, Princeton University. Marine Ecosystem Tipping Points and Earth System Modeling initiatives.

2013 - 2014 Postdoctoral Associate, hosted jointly by the Nicholas School of the Environment, Duke University (Supervisor: Prof. Susan Lozier) and the School of Environmental Sciences, University of Liverpool, United Kingdom (Supervisor: Prof. Richard Williams). *Fellowship funded by NSF International Research Fellowship program.*

2012 Postdoctoral Associate, Environmental Science Program, Mt. Allison University, Canada (Supervisor: Prof. Zoe Finkel)

2005 - 2011 Graduate Research Assistant, Program in Atmospheres, Oceans, and Climate, MIT (Supervisor: Prof. Michael J Follows)

2004 - 2007 Physical Scientist, National Oceanographic Data Center (NODC), NOAA, Silver Spring, MD

2002 - 2004 Satellite Oceanographer, QSS Group Inc, Contracted to NOAA and NODC's work with the Coral Reef Conservation Program, Silver Spring, MD

2000 - 2001 Graduate Research Assistant, Department of Earth and Atmospheric Science, Cornell University (Supervisors: Prof. Charles Greene and Dr. Bruce Monger)

1999 Undergraduate Research in Satellite Oceanography, NASA Space Grant Recipient, Department of Earth and Atmospheric Science, Cornell University (Supervisors: Prof. Charles Greene and Dr. Bruce Monger)

Awards and Honors

2013 - 2014	National Science Foundation International Research Fellow (Hosts: Duke University and University of Liverpool, United Kingdom)
2005 - 2008	Jule Charney Prize, Program in Atmospheres, Oceans, and Climate, MIT
2005 - 2007	Presidential Fellow, MIT
2000 - 2001	National Science Foundation GK-12 Fellow, Cornell University
1999	NASA Space Grant Recipient, Cornell University

Research Interests

Plankton physiology; plankton population and community ecology, biodiversity, biogeography, and macroecology; marine biogeochemistry; climate; impacts of climate change on marine organisms and ecosystems

Publications

Barton, A.D., Irwin, A.J., Finkel, Z.V., and C. Stock (2016). Anthropogenic climate change drives shift and shuffle in North Atlantic phytoplankton communities. *Proceedings of the National Academy of Sciences USA* 113: 2964-2969.

Dave, A.C., Barton, A.D., Lozier, M.S., and G.A. McKinley (2015). What drives seasonal change in oligotrophic area in the subtropical North Atlantic? *Journal of Geophysical Research Oceans* 120, doi:10.1002/2015JC01078.

Barton, A.D., Ward, B.A., R.G. Williams, and M.J. Follows (2014). The impact of small-scale fluid turbulence on phytoplankton nutrient uptake rates and community structure. *Limnology and Oceanography Fluids and Environments* 4, 34-49.

Barton, A.D., Williams, R.G., and M.S. Lozier (2014). Physical controls of variability in North Atlantic phytoplankton communities. *Limnology and Oceanography* 60, 181-197.

Barton, A.D., Pershing, A.J., Litchman, E., Record, N.R., Edwards, K.F., Finkel, Z.V., Kiørboe, T., and B.A. Ward (2013). The biogeography of marine plankton traits. *Ecology Letters* 16, 522-534.

Barton, A.D., Finkel, Z.V., Ward, B.A., Johns, D.G., and M.J. Follows (2013). On the roles of cell size and trophic strategy in North Atlantic diatom and dinoflagellate communities. *Limnology and Oceanography* 58 (1), 254-266.

Mariani, P., Andersen, K.H., Visser, A.W., Barton, A.D., and T. Kiørboe (2013). Control of plankton seasonal succession by adaptive grazing. *Limnology and Oceanography* 58 (1), 173-184.

Ward, B.A., Dutkiewicz, S., Barton, A.D., and M.J. Follows (2011). Biophysical aspects of resource acquisition and competition in algal mixotrophs. *The American Naturalist* 178 (1), 98-112.

Barton, A.D., Dutkiewicz, S., Flierl, G., Bragg, J., and M.J. Follows (2010). Response to Comment on “Patterns of diversity in marine phytoplankton.” *Science* 329, 512-d.

Barton, A.D., Dutkiewicz, S., Flierl, G., Bragg, J., and M.J. Follows (2010). Patterns of diversity in marine phytoplankton. *Science* 327, 1509-1511.

Barton, A.D., and K.S. Casey (2005). Climatological context for large-scale coral bleaching observed since 1979. *Coral Reefs* 24 (4), 536-554.

Barton, A.D., Greene, C.H., Monger, B.C., and A.J. Pershing (2003). The Continuous Plankton Recorder Survey and North Atlantic Oscillation: Interannual- to multidecadal-scale patterns of phytoplankton variability in Northwest Shelf, Northeast Shelf, and Central North Atlantic Ecosystems. *Progress in Oceanography* 58, 337-358.

Meeting and Workshop Participation

Barton, A.D., Dutkiewicz, S., Irwin, A.J., Finkel, Z.V., and C.A. Stock (2016). How does anthropogenic climate change impact plankton biogeography and biodiversity? **Invited** oral presentation at the Gordon Research Conference on “Ocean Global Change Biology”, Waterville Valley, NH, July 17-22.

Barton, A.D., González-Taboada, F., Atkinson, A., and C.A. Stock, (2016). Environmental variability and plankton population dynamics in the English Channel. Oral presentation at the Ocean Sciences Meeting, New Orleans, LA, February 22-26.

González-Taboada, F., Barton, A.D., and C.A. Stock, (2016). Predicting global oceanic net primary productivity with reduced-dimension, linear dynamical spatiotemporal models. Poster presented by González-Taboada at the Ocean Sciences Meeting, New Orleans, LA, February 22-26.

Barton, A.D., González-Taboada, F., Atkinson, A., and C.A. Stock, (2015). Drivers of regime shifts in marine plankton communities. Poster presented at the “Trait-based Approaches to Ocean Life” workshop, Waterville Valley, NH, October 5-8.

Barton, A.D. (2015). Toward a global plankton trait database. **Invited** oral presentation at the EMODnet Biology Workshop, Heraklion, Greece, June 9-10.

Barton, A.D., Ward, B.A., Williams, R.G., and M.J. Follows (2015). The roles of turbulence and zooplankton grazing in shaping phytoplankton community structure and carbon export. **Invited** oral presentation at the ASLO Aquatic Sciences Meeting, Granada, Spain, February 22-27.

Barton, A.D., Irwin, A.J., Finkel, Z.V., and C.A. Stock (2014). The responses of North Atlantic phytoplankton communities to climate change. Poster presented at the Gordon Research Conference on “Interactive Effects of Multiple Global Change Variables”, Waterville Valley, NH, July 6-11.

Barton, A.D., Irwin, A.J., Finkel, Z.V., and C.A. Stock (2014). Estimating the responses of North Atlantic phytoplankton communities to climate change. Poster presented at the Ocean Sciences Meeting, Honolulu, HI, February 23-28.

Barton, A.D., Irwin, A.J., Finkel, Z.V., and C.A. Stock (2013). Estimating the responses of North Atlantic phytoplankton communities to climate change. Oral presentation given at the Trait-based Approaches to Ocean Life Meeting, Copenhagen, Denmark, August 26-28.

Barton, A.D., Finkel, Z.V., Ward, B.A., and M.J. Follows (2012). Regional variations in the seasonal succession of diatoms and dinoflagellates in the North Atlantic. Poster presented at the AGU/TOS/ASLO Ocean Sciences Meeting, Salt Lake City, UT, February 19-24.

Barton, A.D., Dutkiewicz, S., Flierl, G., Bragg, J., and M.J. Follows (2011). Patterns of diversity in marine phytoplankton. **Invited** oral presentation at the American Mathematical Society's 2011 Spring Eastern Sectional Meeting, College of the Holy Cross, Worcester, MA, April 9-10.

Barton, A.D., Finkel, Z., Ward, B.A., and M.J. Follows (2011). Linking phytoplankton functional traits to ecological dynamics in the North Atlantic Ocean. Oral presentation given at the ASLO Aquatic Sciences Meeting, San Juan, PR, February 14-18.

Barton, A.D., Ward, B.A., and M.J. Follows (2011). Bigger is better: the impact of small-scale fluid turbulence on nutrient uptake in marine phytoplankton. Poster presented at the Aspen Ocean Symposium "Microenvironments modulating biological interactions in the ocean", Aspen Center for Physics, Aspen, CO, January 17-21.

Barton, A.D., Ward, B.A., Finkel, Z., and M.J. Follows (2010). Metabolic basis for phytoplankton community dynamics in the North Atlantic Ocean. Poster presented at the "Metabolic Basis of Ecology" Gordon Research Conference, University of New England, Biddeford, ME, July 18-23.

Barton, A.D., Ward, B.A., Finkel, Z., and M.J. Follows (2010). Mechanisms for the seasonal succession in diatoms and dinoflagellates. Poster presented at the AGU Ocean Sciences Meeting, Portland, OR, February 22-26.

Barton, A.D., M.J. Follows, S. Dutkiewicz, and J. Bragg (2009). What Regulates Spatial Gradients in Marine Phytoplankton Diversity? Oral presentation given at the ASLO Aquatic Sciences Meeting, Nice, France, January 25-30.

Barton, A.D., M.J. Follows, S. Dutkiewicz, and J. Bragg (2008). What Regulates Spatial Gradients in Marine Phytoplankton Diversity? Poster presented at AGU Fall Meeting, San Francisco, CA, December 15-19.

Barton, A.D., M.J. Follows, S. Dutkiewicz, and J. Bragg (2008). What regulates patterns of phytoplankton diversity? Oral presentation given at the PICES "Effect of Climate Change on World's Oceans" Meeting, Gijon, Spain, May 19-23.

Barton, A.D., M. Follows, and S. Dutkiewicz (2007). Climate change impacts on ecosystem structure and function in a model ocean. Poster presented at SOLAS Summer School 2007, Cargèse, Corsica, France, October 22-November 3.

Barton, A.D. (2005). Peru's Cordillera Huayhuash: Changing climate and people. Oral presentation given to the National Oceanographic Data Center and National Ocean Service seminar series, Silver Spring, MD, March 17.

Barton, A.D., and K.S. Casey (2004). An improved QuikSCAT weekly wind data set for coastal and high latitude applications. Poster presented at AGU Fall Meeting, San Francisco, CA, December 13-17.

Barton, A.D., and K.S. Casey (2004). An improved QuikSCAT weekly wind speed data set for coastal and high latitude applications. Poster presented at International Summer School of Oceanography's "An integrated view of oceanography: Ocean weather forecasting in the 21st century," La Londe Les Maures, France, September 20-October 1.

Casey, K.S., A.D. Barton, and E.J. Kearns (2004). A New Global 4 km Sea Surface Temperature Data Set for Coral Reefs. Oral presentation given by A.D. Barton at the 10th International Coral Reef Symposium, Okinawa, Japan, June 28-July 2.

Barton, A.D., and K.S. Casey (2004). Climatological context for large-scale coral bleaching observed since 1979. Oral presentation given at the 10th International Coral Reef Symposium, Okinawa, Japan, June 28-July 2.

Barton, A.D., and K.S. Casey (2004). Climatological context for large-scale coral bleaching observed since 1979. Poster presented at 1st International CLIVAR Science Conference, Baltimore, MD, June 21-25.

Barton, A.D., and K.S. Casey (2004). Climatological context for large-scale coral bleaching observed since 1979. Oral presentation given at the TOS/ASLO Ocean Research Conference, Honolulu, HI, February 15-20.

Barton, A.D., and K.S. Casey (2003). Evidence from a 129 year historical sea surface temperature record for coral bleaching. Poster presented at the Coral Reefs, Climate, and Coral Bleaching Workshop, Oahu, HI, June 18-20.

Barton, A.D., and K.S. Casey (2003). Evidence from a 129 year historical sea surface temperature record for coral bleaching. Poster presented at Oceanology International 2003, New Orleans, LA, June 4-6.

Barton, A.D. (2000). North Atlantic Oscillation related changes in North Atlantic phytoplankton dynamics observed by in-situ and satellite measurements. Poster presented at the Chapman Conference on The North Atlantic Oscillation, University of Vigo, Galicia, Spain, November 28-December 1.

Membership in Professional Organizations

American Society of Limnology and Oceanography (ASLO)
American Geophysical Union (AGU)

Other Professional Activities

2011 Organized session, "Mechanistic descriptions of diverse plankton communities: from observations to models," with Dr. Andy Pershing at the ASLO Aquatic Sciences meeting, San Juan, PR, February 14-18.

2012 Organized session, "Understanding plankton biogeography by putting functional traits on the map," with Drs. Andy Pershing and Elena Litchman at the AGU Ocean Sciences meeting, Salt Lake City, UT, February 19-24.

- 2015 Organizing “Trait-based approaches to ocean life” workshop for autumn 2015, bringing together biologists, chemists, mathematicians, and physicists working on all aspects of trait-based descriptions of life in the oceans across all trophic levels and scales, Waterville Valley, NH, October 5-8, 2015. This workshop has received funding from US Ocean Carbon and Biogeochemistry Program, the Simons Foundation, and the Gordon and Betty Moore Foundation.
- 2015 Working group member, observed long-term changes in biodiversity in the plankton. Working group funded by the German Centre for Integrative Biodiversity Research (iDiv).
- 2016 Organized session, “Plankton diversity: patterns, process, and methods,” with Drs. Sergio Vallina and Pedro Cermeño at the AGU Ocean Sciences meeting, New Orleans, LA, February 21-26.
- 2017 Organizing session, “Spatial and temporal trends in marine biodiversity” with Drs. Aleksandra Lewandowska and Derek Tittensor at the ASLO Aquatic Sciences meeting, Honolulu, HI, February 26 – March 3.
- 2010 – present Reviewer, National Science Foundation, *Nature Climate Change*, *Nature*, *Nature Scientific Reports*, *Ecology Letters*, *Remote Sensing of Environment*, *Limnology and Oceanography*, *Journal of Plankton Research*, *PLoS ONE*, *Global Change Biology*, *ICES Journal of Marine Science*, *PNAS*
- 2015 – present Member, Scientific Steering Committee, US Ocean Carbon and Biogeochemistry Program