

SARAH E. FAWCETT

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EDUCATION

Princeton University

Princeton, NJ

Ph.D. Candidate, Geosciences, Expected June 2012

Dissertation: *Dominance of nitrate assimilation by eukaryotic phytoplankton as a central characteristic of ocean productivity*

Advisors: Bess B. Ward and Daniel M. Sigman

M.A., Geosciences, September 2009

Project: *Phytoplankton succession and nitrogen utilization during the development of an upwelling bloom.*

Advisor: Bess B. Ward

Harvard University

Cambridge, MA

B.A. *cum laude*, Earth and Planetary Sciences, June 2006

Thesis: *Reassessment of the timing of the Holocene initiation of the Great Barrier Reef, and an investigation of climatic conditions during its growth.* Advisors: Daniel P. Schrag (Harvard University), Jody M. Webster (James Cook University)

Citation (minor) in Spanish Language and Literature

Studied abroad at the Universidad de Sevilla, Spain, January-July 2005

PUBLICATIONS

Fawcett, S.E., Lomas, M.W., Casey, J.R., Ward, B.B., Sigman, D.M., Assimilation of upwelled nitrate by small eukaryotes in the Sargasso Sea, *Nature Geoscience* **4**, 717-722 (2011)

Fawcett, S.E., Ward, B.B. Phytoplankton succession and nitrogen utilization during the development of an upwelling bloom, *Marine Ecology Progress Series* **428**, 13-31 (2011)

Fawcett, Sarah E., Reassessment of the timing of the Holocene initiation of the Great Barrier Reef, and an investigation of climatic conditions during its growth. Harvard College Library (BA thesis, Harvard University, 2006)

PUBLICATIONS IN PREPARATION

Fawcett, S.E., Lomas, M.W., Ward, B.B., Evans, D.G., Goldberg, S., Sigman, D.M., Effects of an anticyclonic eddy on flow cytometrically sorted phytoplankton N use in the North Atlantic subtropical gyre

Fawcett, S.E., Lomas, M.W., Casey, J.R., Goldberg, S., Ward, B.B., Sigman, D.M., Seasonal variability in taxon-specific N use as inferred by N isotope measurements of Sargasso Sea phytoplankton

Ward, B.B., **Fawcett, S.E.**, Changes in phytoplankton community composition and diversity during the development of an upwelling bloom

Treibergs, L.A., **Fawcett, S.E.**, Lomas, M.W., Ward, B.B., Sigman, D.M. Testing the N isotopes of marine particles as a tool to study nitrogen sources to phytoplankton in the subtropical ocean

CONFERENCE CONTRIBUTIONS
Presenter

Fawcett, S.E., Lomas, M.W., Ward, B.B., Casey, J.R., Sigman, D.M., "Coupling flow cytometry with measurements of particle ¹⁵N/¹⁴N to trace the sources of N supporting phytoplankton growth," poster presentation, Princeton Graduate Research Symposium in the Geosciences, November 2011

Fawcett, S.E., Sigman, D.M., Ward, B.B., Lomas, M.W., Casey, J.R., "Sources of nitrogen supporting phytoplankton growth in the Sargasso Sea," SOLAS international summer school, Corsica, September 2011

**Best student talk award*

Jacobson, M., Sigman, D.M., Altieri, K.E., **Fawcett, S.E.**, "Photochemical alteration of dissolved organic nitrogen in the surface ocean of the North Atlantic," PEI Seibel Energy Grand Challenge Summer of Learning Symposium, September 2011

Fawcett, S.E., Lomas, M.W., Ward, B.B., Casey, J.R., Sigman, D.M., "Eukaryotes dominate new production in the Sargasso Sea," poster presentation, Chemical Oceanography Gordon Conference, Proctor Academy, NH, August 2011

Fawcett, S.E., Lomas, M.W., Ward, B.B., Casey, J.R., Sigman, D.M., "Small eukaryotic phytoplankton

drive the Sargasso Sea's biological pump," ASLO, Puerto Rico, February 2011

Fawcett, S.E., Lomas, M.W., Ward, B.B., Casey, J.R., Sigman, D.M., "Eukaryotes dominate new production in the Sargasso Sea," poster presentation, AGU Fall meeting, San Francisco, CA, Dec 2010

Dresner, S., Treibergs, L.A., Sigman, D.M., **Fawcett, S.E.**, "The role of zooplankton in the Sargasso Sea N cycle: Developing methodology for zooplankton $\delta^{15}\text{N}$ fecal pellet analysis," PEI Seibel Energy Grand Challenge Summer of Learning Symposium, September 2010

Fawcett, S.E., Lomas, M.W., Sigman, D.M., Ward, B.B., "Coupling flow cytometry with natural abundance nitrogen isotope analysis in the Sargasso Sea," poster presentation, AGU/ASLO Ocean Sciences, Portland, February 2010

Treibergs, L.A., **Fawcett, S.E.**, Lomas, M.W., Sigman, D.M., "Isotope studies of N use by marine phytoplankton: Applications to both culture studies and the environment," PEI Seibel Energy Grand Challenge Summer of Learning Symposium, September 2009

Fawcett, S.E., Ward, B.B., "Succession and nitrogen utilization by phytoplankton in the development of an upwelling bloom," poster presentation, ASLO, Nice, January 2009

Fawcett, S.E., Ward, B.B., "Succession and nitrogen utilization by phytoplankton in upwelling systems," poster presentation, CLIMECO, Institut Universitaire Européen de la Mer, Brest, France, April 2008

INVITED SEMINARS

Fawcett, S.E., Eukaryotic phytoplankton dominate new and export production in the Sargasso Sea, Department of Marine Sciences Seminar Series, University of Connecticut, December 2011.

Fawcett, S.E., Nitrogen isotope evidence for eukaryotic phytoplankton control of the Sargasso Sea's biological pump, Environmental Geology and Geochemistry Seminar, Princeton University, December 2010

Fawcett, S.E., Coupling flow cytometry with natural abundance N isotope analysis in the Sargasso Sea: Summer results, Bermuda Institute of Ocean Sciences, March 2010

Fawcett, S.E., Isotope studies of nitrogen, production, and algal growth, Marine Research Institute Seminar Series, Department of Oceanography, University of Cape Town, South Africa, August 2009

Fawcett, S.E., Nitrogen, Carbon and Climate Change: Why should we care about the marine N cycle?, Princeton Energy and Climate Scholars Meeting, April 2009

HONOURS, AWARDS & RECOGNITION

Invited Participant, Surface Ocean Lower Atmosphere Study (SOLAS) International Summer School, Corsica, Summer 2011

**Best student talk award*

Seibel Energy Grand Challenge Program, "Photochemical Alteration of Dissolved Organic Nitrogen in the Surface Ocean of the North Atlantic," 12/2010, \$5000

Invited Participant, Ocean Biogeochemistry Time-series Scoping Workshop, Sea change: Charting the course for ecological and biogeochemical ocean time-series research, Honolulu, HI, September 2010

Seibel Energy Grand Challenge Program, "Measuring the $\delta^{15}\text{N}$ of zooplankton (biomass and fecal pellets) in the Sargasso Sea," 12/2009, \$5000

Charrock Foundation research grant, 2008-2010.

William G. Bowen Merit Fellowship for Graduate Studies, 2008-2010.

Princeton Energy and Climate Scholar, Seibel Energy Grand Challenge and Princeton Environmental Institute, 2008-2010

Seibel Energy Grand Challenge Program, "Isotope studies of N use by marine phytoplankton: Applications to both culture studies and the environment," 12/2008, \$5000

Princeton University First Year Fellowship in Science and Engineering, 2007-2008

Invited Participant, Discussion Mediator, Africa Centre for Climate and Earth Systems Science Advanced Seminar Series: Biogeochemistry and Climate, Cape Town, July 2008

Invited Participant, Climate Driving of Marine Ecosystem Changes: Training for young marine scientists, Institut Universitaire Européen de la Mer, Brest, France, April 2008

Thomas Temple Hoopes Prize for "outstanding scholarly research and writing" for undergraduate senior thesis, Harvard University, 2006

Finalist, Captain Jonathan Fay Prize (Radcliffe Institute for Advanced Study) for “most outstanding imaginative work or piece of undergraduate research in any field”, Harvard University, 2006
Dunster Shield for service and scholarship, Harvard College, 2006
Harvard College Merit Scholarship, 2003-2004

TEACHING

Assistant in Instruction, Fundamentals of Environmental Studies, Princeton University, Spring 2011
Instructor, Biological Oceanography module for Partnership for Observation of the Global Ocean (POGO) Center for Excellence in Observational Oceanography, Bermuda Institute of Ocean Sciences, Fall 2010
Co-ordinator, Senior Thesis Writing Group, Geosciences, Princeton University, 2009-2010
Teaching Assistant, Barrier Reef Field Course, James Cook University, Australia, Summer 2005

LEADERSHIP AND SERVICE

Organizer, Princeton University Department of Geosciences “Graduate Research Symposium”, November 2011 (<http://www.princeton.edu/geosciences/graduate/gradsymposium/>)
Mentor, Department of Geosciences undergraduate senior thesis student, Lija Treibergs, “Testing the N isotopes of marine particles as a tool to study nitrogen sources to phytoplankton in the subtropical ocean,” 2011-2012; Princeton Environmental Institute Siebel Energy Grand Challenge undergraduate internships: Max Jacobsen, Summer 2011; Lija Treibergs, Summer-Fall 2009, Summer 2010; Samuel Dresner, Summer 2010
Elected Representative, Graduate Student Work Committee, Princeton University Department of Geosciences, Fall 2007-Spring 2011
Organizer, Princeton Environmental Institute and University Center for Human Values seminar series, “Ethics and Climate Change”, Fall 2008-Spring 2009
Reviewer: Marine Environmental Research, Sea Research

RELEVANT FIELD EXPERIENCE

Bermuda Atlantic Time-series Study Research Cruises (*R/V Atlantic Explorer*): February 2012, October 2011, July 2011, December 2009, October 2009 (BVAL Transect Cruise, Puerto Rico to Bermuda), July 2009, March 2009, July 2008
Senior Thesis Research, Great Barrier Reef, Australia, Summer 2005
Seismology and Volcanology Field Course (1 week), Hawaii, September 2005
Research Cruise 194E (*SSV Robert C. Seamans*), San Diego (San Clemente Basin, Cortez Bank), September 2004
Great Barrier Reef Field Course: Tropical Coast and Shelf Sedimentology (Rainforest to Reef) (4 weeks), James Cook University, Australia, Summer 2004
Structural Geology Field Course (1 week), Canadian Rockies, September 2003

PROFESSIONAL AFFILIATIONS

Member, American Geophysical Union
Member, American Society of Limnology and Oceanography
Member, Earth Science Women's Network

REFERENCES

Bess B. Ward, William J. Sinclair Professor of Geosciences and Chair, Department of Geosciences, 217 Guyot Hall, Princeton University, Tel: 609-258-5150, Email: bbw@princeton.edu
Daniel M. Sigman, Dusenbury Professor of Geological and Geophysical Sciences, Department of Geosciences, M52 Guyot Hall, Princeton University, Tel: 609-258-2194, Email: sigman@princeton.edu
François M. M. Morel, Albert G. Blanke, Jr., Professor of Geosciences, Department of Geosciences, 153 Guyot Hall, Princeton University, Tel: 609-258-2416, Email: morel@princeton.edu
Deborah A. Bronk, Professor, Department of Physical Science, Chesapeake Bay Hall N311, The College of William and Mary, Virginia Institute of Marine Science, Tel: 804-684-7779, Email: bronk@vims.edu