

**Amy S. Bower**

Physical Oceanographer

Senior Scientist

Dept. of Physical Oceanography, MS#21

Woods Hole Oceanographic Institution

Woods Hole, Massachusetts 02543

Tel.: 508-289-2781

Fax: 508-457-2181

E-mail: [abower@whoi.edu](mailto:abower@whoi.edu)Home page: [www.whoi.edu/scientist/abower/](http://www.whoi.edu/scientist/abower/)**EDUCATION**

Sea Semester, 1979, Sea Education Association, Woods Hole, MA

B.S., Tufts University (Physics), 1981

Ph.D., University of Rhode Island (Oceanography), 1988

**PROFESSIONAL EXPERIENCE**

Graduate Research Assistant, 1981–1988, University of Rhode Island

Postdoctoral Research Associate, 1988, University of Rhode Island

Postdoctoral Scholar 1988–1989, Woods Hole Oceanographic Institution

Postdoctoral Investigator, 1989–1990, Woods Hole Oceanographic Institution

Assistant Scientist, 1990–1995, Woods Hole Oceanographic Institution

Associate Scientist, 1995–2005, tenure awarded, 1999, Woods Hole Oceanographic Institution

Doherty Chair in Ocean Studies, March 2003–June 2004, Sea Education Association

Department Chair, Physical Oceanography, 2018-2022, Woods Hole Oceanographic Institution

Senior Scientist 2005–present, Woods Hole Oceanographic Institution

**AWARDS**

N. Hobbs Knight Scholarship Prize in Physics, Tufts University, June 1981

Thomas J. Carroll Award for Employment 2003 Blind Employee of the Year in Massachusetts  
by The Carroll Center for the Blind and the Massachusetts Commission for the Blind, June  
2003Unsung Heroine of Massachusetts Award by The Massachusetts Commission on the Status of  
Women, May 2010 (for science outreach with the Perkins School for the Blind)

Fellow of the American Meteorological Society, 2010

Chrysalis Award, The Center for Vision Loss, Allentown, PA, September 2012

Henry Bryant Bigelow Chair for Excellence in Oceanography, WHOI, 2014

URI Distinguished Achievement Dean's Award from Graduate School of Oceanography,  
October 2014**PROFESSIONAL AFFILIATIONS**

Member, American Geophysical Union

Member, The Oceanography Society

Member and Fellow, American Meteorological Society

Member, European Geophysical Union

Member, Sigma Xi

Member, Society for Women in Marine Science

## RESEARCH INTERESTS

Observation and analysis of large- and meso-scale ocean circulation; structure and dynamics of western boundary currents; inter-gyre exchange processes; structure and dynamics of isolated vortices and their role in the distribution of water properties; marginal sea circulation and overflows; pathways and fluxes of the Atlantic Meridional Overturning Circulation; Lagrangian methods.

## PROFESSIONAL ACTIVITIES

*Woods Hole Oceanographic Institution (Non Education Related):*

Department of Physical Oceanography Seminar Coordinator, 1992

WHOI Ethics Program Committee, 1992–1999

WHOI Trustees Partnership Program, 1994–1997

Department of Physical Oceanography Recruitment Committee, 1995–2002, 2010–2015  
(chair 2012-2015)

WHOI Access to the Sea Strategic Planning Committee, 1996–1998

Speaker, WHOI Associates Day of Science, 1996

WHOI Gender Equity Committee, 1999–2000

WHOI Mary Sears Pioneer Woman in Oceanography Selection Committee, 2001

WHOI Mentoring Task Force, 2001–2003

Department of Physical Oceanography Chair Search Committee, 2001–2002

WHOI Tenured Scientists Executive Committee, 2002–2005

WHOI Instrumentation website – RAFOS Floats: Contributor of main content, 2004

WHOI Access to the Sea Task Force, 2004

WHOI Dean Search Committee, 2004–2005

Department of Physical Oceanography Chair Search Committee, 2005–2006 (chair)

WHOI President and Director Search Committee, 2006–2008

Ad Hoc Review Committee for Mellon, Interdisciplinary and Wheeler proposals, May 2009

Ad Hoc Review Committee for Paul Allan Foundation LOIs, June 2013

Co-facilitator (with Young-Oh Kwon) of WHOI PO AMOC Journal Club, 2016-present

Panelist, WHOI Postdoctoral Association Workshop on Interviewing and Negotiating, February 2017

Guest lecture to visiting Harvard undergraduate students, “Deep Currents in the Gulf of Mexico: Slow and Boring or Fast and Furious?” Apr 2018

Internal Award Review Panels: Seaver September 2019; Technical Staff Training November 2019; MRI Pre-proposals November 2019, October 2021; IR&D November 2019, April 2020, November 2021; Research Opportunities December 2019; Burke OOI April 2020; Sr. Scientist Chairs July 2020, October 2021; Sr. Technical Staff Awards July 2020, October 2021.

Co-Chair, Presidential Search Committee, Dec 2019-June 2020

Staff Council Retreat, September 2020, January 2022

Panel Discussion on Allyship, invited panelist (sponsored by GLOW and CDEI) June 2021

Staff Council 2018-2022

Appointments and Promotions Sub-Committee \_\_\_\_\_ - 2022

*Outside Woods Hole Oceanographic Institution (other than attendance at society/national meetings):*

WOCE Core Project 3 Working Group, 1992–1995  
 RAFOS Float Technology Workshop (coordinator), Woods Hole, MA, January 1994  
 Various positions as Overseer, Member of the Board of Trustees, Dean Search Committee, Sea Education Association, Woods Hole, 1997–present  
 North Atlantic RAFOS Mini-Workshop, IfM/Kiel, Germany, (co-chair), May 2001  
 Mentoring Physical Oceanography Women to Increase Retention (MPOWIR, Steering committee member, 2004–2007; Mentor Group Leader 2009-2012 and 2013-2014)  
 NSF “CAREER” Proposal Review Panel, Washington, DC, November 2004  
 UNOLS ADA (Americans with Disabilities Act) Advisory Committee, February–October 2006  
 US AMOC Science Team (Task Team 2), 2009-present  
 Guest Editor for *Deep-Sea Research II, Special Issue in honor of H. Thomas Rossby*, 2011–2012  
 Awards Nominations Committee, American Meteorological Society, 2013-present, (chair-elect 2014)  
 NSF Virtual Panel, OCE Postdoctoral Research Fellowships, March 2015  
 Reviewer for *Nature, Journal of Physical Oceanography, Deep-Sea Research, Journal of Geophysical Research-Oceans, Geophysical Research Letters* and other professional publications.  
 October 2015, "AMOC and OSNAP" – Invited guest lecture for Oceans and Climate Semester, Sea Education Association.  
 OSNAP briefing to General Sullivan, U.S. Army (ret), October 2016  
 New Zealand MOANA Project, Connectivity Technical Advisory Group, Member, March 2020-present.  
 Member, Ocean Studies Board, National Academies of Science, Engineering and Medicine, January 2022-present)  
 UGOS-3 Project Director Team, March 2022-present  
 Mathworks Customer Advisory Board (CAB) on MATLAB Accessibility, January 2022-present

*Outreach and Public Education*

Guest, “Women in Science,” Massachusetts Corporation for Educational Telecommunications live broadcast, December 1993  
 Guest lecturer, Sea Education Association, February 1995, July 1999  
 Featured in educational video for the SETQuest project, a series of videos and interactive laser disks on careers in science, engineering and technology, October 1995  
 Guest speaker, Woods Hole Children’s School of Science, July 1996  
 Guest speaker, Mashpee Middle School, Mashpee, MA, 100 students, April 1997

Guest speaker, Morse Pond School, Falmouth, MA, 800 students, April 1997

Guest speaker, Latin School of Chicago, 250 students, January 1998

Invited speaker on physical oceanography and use of adaptive equipment, Lowell Lecture Series and Climate Change Lecture Series, Boston Museum of Science, January 2003 and February 2007

Commencement speaker, "Sea Lab," New Bedford Public Schools, MA, August 2003

Guest speaker on physical oceanography, Latin School of Chicago, 700 middle and high school students, March 2004

Guest speaker on physical oceanography, Morse Pond School, 45 students, April 2004

Profiled on "Remarkable Careers in Oceanography: Women Exploring the Oceans" web site (<http://www.womenoceanographers.org>), 2004

Featured in "Science is Golden: Interviews with Four Scientists Who are Visually Impaired" in *AccessWorld* (technology magazine for people with vision impairment), American Foundation for the Blind, 6, No. 1, January 2005  
<http://www.afb.org/afbpres/pub.asp?DocID=aw060105>

Guest speaker on careers in science, Jo Taylor Leadership Institute, American Foundation for the Blind, Boston, MA, March 2005

Organized and led one-day field trip for Prof. Eli Tziperman's Harvard graduate course in Physical Oceanography, November 2005

Created and maintain Ocean InSight, an NSF-funded outreach program with Perkins School for the Blind for visually impaired students (<http://web.who.edu/OceanInsight>), 2007-present

Texas FOCUS Conference, keynote speaker at conference for teachers and counselors of visually impaired students, Austin, TX, June 2008

Outreach and research activities featured in two articles in *Oceanus* (Vol. 46, No. 2, April 2008) (see also <http://www.who.edu/oceanus/viewArticle.do?id=31946&sectionid=1001>, <http://www.who.edu/oceanus/viewArticle.do?id=34687&sectionid=1002>, <http://www.who.edu/oceanus/viewArticle.do?id=34106>)

TEDX Woods Hole, "Science without Sight," October 2010

Guest speaker, Red Sea Research Center Inauguration, KAUST, "Eddies in the Red Sea," Jeddah, Saudi Arabia, April 2011

Commencement Speaker, Perkins School for the Blind, Watertown, MA, June 2011

Invited Speaker at the National Library Service's 2012 Conference of Librarians Serving Blind and Physically Handicapped Individuals, Newport, RI, May 2012

Interview for *Horizons*, radio program by the Massachusetts Commission for the Blind, about oceanography career and outreach activities with Perkins School, November 2012.

Interview with FSCast (Freedom Scientific, maker of JAWS screen reader) podcast on science, oceanography, and career as visually impaired scientist, November 2012

Speaker, Conferences for Undergraduate Women in Physics, Yale University, October 2012

Interview for "Eyes on Success" and ACB Radio's "Speaking Out for the Blind" on career as visually impaired scientist, September 2014

Co-organized and hosted field trip to WHOI for Perkins School for the Blind students, including presentations on ocean acidification by Heather Benway and Hannah Barkley, April 2014, March 2015

Co-hosted and organized field trip for Perkins School for the Blind featuring a boat trip with

Rob Reynolds, May 2014

Designed and led all-day field trip to WHOI by students from Perkins School for the Blind with support from the WHOI Discovery Center, May 2022

Rhode Island Insight Field Trip to WHOI, program coordinator and host for ~10 visually impaired middle and high school students and 4 chaperones, July 2014

Started outreach blog aimed at blind and visually impaired students at <http://web.who.edu/OceanInsight>, October 2014

Presenter with Perkins School for the Blind teacher Kate Fraser at 2014 Ocean Literacy Summit (MBL), "Currents – Go with the Flow," November 2014

Keynote Speaker, Society for Women in Marine Science (SEMS), MIT, October 2015

Host and Presenter for Perkins School field trip to WHOI for six Intro to Physics students (ocean currents, Knorr tour, and Zephyr Foundation boat trip), June 2015

Coordinator and host for field trip by 15 blind and visually impaired middle school students from Perkins School Outreach Program (coral reefs and ocean acidification, Knorr tour, sea creatures and marine mammals, boat trip with Zephyr Foundation), June 2015

"OceanInsight: An Science Outreach Program for Blind and Visually Impaired Students", NE Employment and Rehabilitation Symposium (annual conference for professionals working with blind and visually impaired people), Seacrest Resort, N. Falmouth, MA, November 2015

New England Aquarium, Day of Science for 7th- to 12th-grade blind and visually impaired students, member of panel of professional scientists, March 2016

Guest on "Living Lab" radio program at WCAI discussing life as a scientist with visual impairment, May 2016

All-day Perkins School for the Blind Field Trip to WHOI, program coordinator and host for six K-6 grade visually impaired students, June 2016

Keynote Speaker, Conferences for Undergraduate Women in Physics, Harvard University, November 2016

Classroom demonstration and discussion for three classes at Perkins School for the Blind, Watertown, MA, January 2017

Organized and hosted annual all-day field trips for blind students from the Perkins School Outreach Program (3 speakers, dock tour, boat trip, hands-on activities), June 2017-present  
STEM Career Showcase for Students with Disabilities, Raleigh Museum of Natural Science, Raleigh, NC, Nov 2017, panelist.

Classroom science and career discussions with blind and visually impaired students at Perkins School for the Blind, Watertown, MA, Feb 2018.

Industry mentor for blind Arizona high school student as part of the NSF-funded Project POEM, Apr 2018-present.

Blog posts from *R/V Armstrong* for *OceanInsight* (<http://web.who.edu/OceanInsight>), a resource for blind and visually impaired students and adults to learn about life as a blind scientist, Jun 2018.

Researched and installed indoor navigation system for visually impaired on *R/V Armstrong*, Jun 2018

All-day Perkins School for the Blind Field Trip to WHOI, program coordinator and host for six K-6 grade visually impaired students, June 2019

Guest on "Ocean Encounters" virtual series hosted by WHOI, "Stories We Tell: From Ancient Oral Traditions to Modern Day Pirates," October 2020.

Interview with WGBH “Science for the Public” segment on ocean circulation, September 2020.  
 Bower, A. Ocean Insight: Bringing ‘Inner Space’ Science to Blind and Visually Impaired Students’ (invited), AGU Fall Meeting December 2019, San Francisco, CA (M. Harrigan from WHOI Ocean Discovery Center attended and presented talk prepared by A. Bower).  
 Panelist “Writing Science in Braille,” 6<sup>th</sup> International Day of Girls and Women in Science Assembly, United Nations, February 2021  
 Provided data and context for graphics used in New York Times article on AMOC, March 2021  
 Interview “Study: Major Atlantic Current Showing Signs it May Shut Down. Not all Scientists Agree.” Cape Cod Times, August 10, 2021.  
 Interviewed for NBC 10 Boston for “Adjusting for Climate Change: Rising Seas – The Consequences of Melting Glaciers” series, March 2021  
 Cape Ann Climate Coalition Arts webinar, Invited Panelist, March 2021  
 Classroom visits (virtual) at Perkins School for the Blind, March and July 2021.  
 Interview with NBC 10 Boston on “Adjusting to Climate Change: Rising Seas – The Consequences of Melting Glaciers,” March 2021

## **PARTICIPATION IN WHOI EDUCATION PROGRAM**

MIT/WHOI Joint Program, Biology Mega-Course, Physical Oceanography lectures: January 1991, February 1992, February 1993  
 Summer Student Fellow Lecture Series, July 1992, July 1995, July 1999, July 2001, June 2003, August 2010  
 MIT Undergraduate Independent Activities Program (IAP) Course in Oceanography (with J. Marshall): January 1993, January 1994  
 Co-taught 12.808 Introduction to Observational Physical Oceanography with Jim Price, Fall Semester, 2006, 2007  
 Guest lecturer, 12.808, “Lagrangian Techniques in Physical Oceanography,” November 2012  
 Taught “Writing a Better Research Proposal,” Summer 2013, Winter 2014-2015, Summer 2016, 2017, 2018.

## **SUPERVISION AT WHOI**

Heather Furey, Research Specialist, 1996- present  
 Jim Valdes, Emeritus Research Scholar, 2015-present  
 Viviane Menezes, Postdoc Investigator, 2015-present  
 Jian Zhao, Postdoc Scholar, 2016-2018  
 Anna Simpson, Guest Student, June-August 2016  
 Masatoshi Miyamoto, Guest Student, Jan-May 2018  
 Andree Ramsey, 2017-present  
 Mindy Hall, 2017-2022  
 Frank Bahr, 2018-2022  
 James Churchill, 2018-2019  
 Paul Fucile, 2018-2022  
 Dave Wellwood, 2018-2022  
 Rick Trask, 2018-2022  
 Sarah Xander, 2018-2022  
 Chris Ross, 2020-2022

Sijia Zou, Postdoc Scholar, 2019-2021  
 Thomas Meunier, Research Associate, 2020-present  
 Gregory Koman, Postdoctoral Investigator, 2021-present

*Students Advised:*

Deborah (Slater) Shoosmith, Guest Ph.D. student, Southampton Oceanography Center, co-advisor, Fall 2000  
 Shinichiro Kida, Ph.D. student, WHOI/MIT Joint Program, thesis committee member, 2003-2006  
 Fengchao Yao, Ph.D. student, Division of Meteorology and Physical Oceanography, RSMAS, University of Miami, thesis committee member, 2004–2008  
 Christie L. Wood, Ph.D. student, WHOI/MIT Joint Program, summer advisor, 2005  
 Anne-Marie E. G. Brunner, M. S. student, SMAST, UMass/Dartmouth, Dartmouth, MA, thesis committee member, 2005–2007  
 Tatiana Rykova, Ph.D. student, WHOI/MIT Joint Program, M. S. and PhD. thesis committee member, 2005–2010  
 Wilken-Jon von Appen, WHOI Summer Student Fellow, 2007  
 Elise Olson, Ph.D. student, WHOI/MIT Joint Program, summer advisor, 2008.  
 Daniel Amrhein, WHOI Summer Student Fellow, 2009  
 Ping Zhai, Ph.D. student, WHOI/MIT Joint Program, principal advisor, 2008–2014  
 Isabela Le Bras, WHOI/MIT Joint Program, committee member, 2013-present  
 Paige Logan, WHOI Summer Student Fellow, 2013  
 Sijia Zou, Ph.D. student, Duke University, thesis committee member, 2014-2019  
 Gregory Koman RSMAS/U. Miami., Ph.D. thesis committee member  
 Astrid Pacini, WHOI/MIT JP, Ph.D. thesis committee member

**CRUISE PARTICIPATION (since 1989)**

*RRS Charles Darwin*, August 1989: SYNOP East Gulf Stream moorings  
*R/V Endeavor*, June 1990: DWBC–Gulf Stream Crossover  
*R/V Oceanus*, July 1991: SYNOP East Gulf Stream moorings.  
*R/V Le Suroit*, May 1992: Eastern Atlantic float test cruise.  
*R/V Oceanus*, April–May 1993: Med Undercurrent and Meddies (AMUSE) (chief scientist)  
*Kialoa II*, June–July 1993: AMUSE XBTs and RAFOS floats (co-chief scientist)  
*Kialoa II*, August–September 1993: 3 AMUSE XBT and RAFOS float cruises (chief scientist)  
*R/V Endeavor*, October 1994: DWBC Variability I (chief scientist)  
*R/V Endeavor*, November 1994: DWBC Variability II (co-chief scientist).  
*R/V Oceanus*, May–June 1995: DWBC Variability III (co-chief scientist)  
*R/V Knorr*, February–March 2001: Red Sea Outflow (REDSOX-I) (co-chief scientist)  
*R/V Maurice Ewing*, August–September 2001: REDSOX-II (chief scientist)  
*R/V Oceanus*, July 2003: Export Pathways (chief scientist)  
*R/V Knorr*, September 2007: Irminger Ring mooring deployment (chief scientist)  
*R/V Oceanus*, October–November 2008: A-II Deep Complex Area, Red Sea (chief scientist)  
*R/V Aegaeo*, March 2010: Coastal Hydrography and Circulation of the Red Sea (chief scientist)

*R/V Aegaeo*, October–November 2011: KAUST: Coastal Hydrography and Circulation of the Red Sea (chief scientist)

*R/V Knorr*, July 2014: Overturning in the Subpolar North Atlantic Program (OSNAP)

*R/V Armstrong*, June 2018; Lead Scientist for Overturning in the Subpolar North Atlantic Program (OSNAP)

***Other Project Cruises (Sent technicians to deploy instrumentation)***

*Kialoa II*, 1993–1994: 18 AMUSE cruises

*R/V Knorr*, 1996–1997: three WOCE Atlantic Circulation and Climate Experiment (ACCE) cruises,

*CSS Hudson*, *CSS Teleost*, *CCGS Cowley*, 2003–2006: Export Pathways repeated RAFOS float deployments

*R/V Knorr*, September–October 2009: Recovery of the Irminger Ring mooring in the Labrador Sea

*R/V Meteor*, August–September 2010: Deployment of eight moorings in the Charlie-Gibbs Fracture Zone

*R/V Pelican*, July 2011: Deployment of sound source moorings, RAFOS floats and APEX floats in the Gulf of Mexico

*R/V Pelican*, January 2012: Replacement of one sound source and re-deploy RAFOS and APEX floats in eastern Gulf of Mexico.

*R/V Justo Sierra*, July 2012: CICESE cruise to deploy RAFOS and APEX floats in western Gulf of Mexico.

*R/V Merian*, June-July 2012: Recovery of CGFZ moorings

*R/V Justo Sierra*, September 2012: Deployment of RAFOS, 1 APEX, western Gulf of Mexico.

*R/V Bellows*, September 2012: Deployment of RAFOS floats and one APEX in eastern Gulf of Mexico.

*R/V Acadiana*, September 2012: Deployment of RAFOS floats, central Gulf of Mexico.

*R/V Weatherbird II*, February 2013: Replacement of source 1b in Gulf of Mexico.

*R/V Pelican* May 2013: FSU Sound source turnaround, swap sources.

*R/V Justo Sierra*, June-July 2013: Deployment of RAFOS floats, south central Gulf of Mexico.

*R/V Pelican*, July-August 2013: Deployment of RAFOS floats in eastern Gulf of Mexico

*R/V Knorr*, OSNAP Summer 2014 Leg 1, June 2014: RAFOS Float and Sound source mooring deployments

*R/V Knorr*, OSNAP Summer 2014 Leg 3, August 2014: RAFOS Float and Sound Source mooring deployments

*R/V Thallassa*, June 2015: Coordinated deployment of moorings into the Bight Fracture Zone via IFREMER mooring cruise.

*R/V Pelagia*, OSNAP East Leg 1, July 2015: Deployment of Slocum glider in the Iceland Basin.

*R/V Pelagia*, OSNAP East Legs 1 and 2, July 2015: Deployment of 50 deep RAFOS floats.

*R/V Pelican*, June 2016, P reparation of four sound source moorings and 25 RAFOS floats for deployment in DWDE.

*RRS Discovery*, OSNAP, July-August 2016: Two legs with RAFOS float and glider deployments.

November 2015 and July 2016, OSNAP glider rescue missions. Two cruise legs for rescue purposes, one on a German fisheries research vessel transiting past the glider location and

one on an Icelandic Search and Rescue (SAR) vessel that transited 250 nm south of Iceland to the glider position.

*R/V Pelican*, October 2016: Oversaw preparation of 25 RAFOS floats for deployment for cruise DWDE #2.

*R/V Pelican*, April 2017: Oversaw preparation of 25 RAFOS floats for deployment on cruise DWDE #3.

*R/V Thallassa*, July 2017: Oversaw preparation for recovery of two moorings and deployment of 10 RAFOS floats.

*R/V Armstrong*, September 2020: My group participated in a major OSNAP cruise on *R/V Armstrong* (AR46). Research Specialist Heather Furey led our planning efforts and sailed as co-chief scientist while I stayed on shore serving as department chair

*R/V Armstrong*, July 2022: My group carried out the OSNAP mooring array turnaround in the Irminger Sea while I stayed on shore serving as department chair.

## PUBLICATIONS

### *Refereed:*

1. Bower, A. S., H. T. Rossby, and J. L. Lillibridge, 1985. The Gulf Stream – barrier or blender? *Journal of Physical Oceanography*, **15**(1), 24–32, doi.org/10.1175/1520-0485(1985)015<0024:TGSOB>2.0.CO;2.
2. Rossby, H. T., A. S. Bower, and P.-T. Shaw, 1985. Particle pathways in the Gulf Stream. *Bulletin of the American Meteorological Society*, **66**(9), 1106–1110, doi.org/10.1175/1520-0477(1985)066<1106:PPITGS>2.0.CO;2.
3. Bower, A. S., 1989. Potential vorticity balances and horizontal divergence along particle trajectories in Gulf Stream meanders east of Cape Hatteras. *Journal of Physical Oceanography*, **19**(11), 1669–1681, doi.org/10.1175/1520-0485(1989)019<1669:PVBAHD>2.0.CO;2.
4. Bower, A. S., and T. Rossby, 1989. Evidence of Cross-Frontal Exchange Processes in the Gulf Stream Based on Isopycnal RAFOS Float Data. *Journal of Physical Oceanography*, **19**(9), 1177–1190, doi.org/10.1175/1520-0485(1989)019<1177:EOCFEP>2.0.CO;2.
5. Bower, A. S., 1991. A simple kinematic mechanism for mixing fluid parcels across a meandering jet. *Journal of Physical Oceanography*, **21**(1), 173–180, doi.org/10.1175/1520-0485(1991)021<0173:ASKMFM>2.0.CO;2.
6. Bower, A. S., and N. G. Hogg, 1992. Evidence for barotropic wave radiation from the Gulf Stream. *Journal of Physical Oceanography*, **22**(1), 42–61, doi.org/10.1175/1520-0485(1992)022<0042:EFBWRF>2.0.CO;2.
7. Bower, A. S., and M. S. Lozier, 1994. A closer look at particle exchange in the Gulf Stream. *Journal of Physical Oceanography*, **24**(6), 1399–1418, doi.org/10.1175/1520-0485(1994)024<1399:ACLAPE>2.0.CO;2.
8. Bower, A. S., L. Armi, and I. Ambar, 1995. Direct evidence of meddy formation off the southwest coast of Portugal. *Deep-Sea Research I*, **42**(9), 1621–1630, doi:10.1016/0967-0637(95)00045-8.
9. Bower, A. S., and N. G. Hogg, 1996. Structure of the Gulf Stream and its recirculations at 55°W. *Journal of Physical Oceanography*, **26**(6), 1002–1022, doi.org/10.1175/1520-0485(1996)026<1002:SOTGSA>2.0.CO;2.

10. Lozier, M. S., T. J. Bold, and A. S. Bower, 1996. The influence of propagating waves on cross-stream excursions. *Journal of Physical Oceanography*, **26**(9), 1915–1923, doi.org/10.1175/1520-0485(1996)026<1915:TIOPWO>2.0.CO;2.
11. Bower, A. S., L. Armi, and I. Ambar, 1997. Lagrangian observations of meddy formation during A Mediterranean Undercurrent Seeding Experiment. *Journal of Physical Oceanography*, **27**, 2545–2575, doi: http://dx.doi.org/10.1175/1520-0485(1997)027<2545:LOOMFD>2.0.CO;2.
12. Ambar, I., L. Armi, A. S. Bower, and T. C. Ferreira, 1999. Some aspects of time variability of the Mediterranean Water off south Portugal. *Deep-Sea Research I*, **46**, 1109–1136, doi: 10.1016/S0967-0637(99)00006-0.
13. Bower, A. S., and H. D. Hunt, 2000a. Lagrangian observations of the Deep Western Boundary Current in the North Atlantic Ocean. Part I: Large-scale pathways and spreading rates. *Journal of Physical Oceanography*, **30**(5), 764–783, http://dx.doi.org/10.1175/1520-0485(2000)030<0764:LOOTDW>2.0.CO;2.
14. Bower, A. S., and H. D. Hunt, 2000b. Lagrangian observations of the Deep Western Boundary Current in the North Atlantic Ocean. Part II: The Gulf Stream–Deep Western Boundary Current crossover. *Journal of Physical Oceanography*, **30**(5), 784–804, doi: http://dx.doi.org/10.1175/1520-0485(2000)030<0784:LOOTDW>2.0.CO;2.
15. Bower, A. S., H. D. Hunt, and J. F. Price, 2000. Character and dynamics of the Red Sea and Persian Gulf outflows. *Journal of Geophysical Research -Oceans*, **105**(C3), 6387–6414, doi: 10.1029/1999JC900297
16. LaCasce, J. H., and A. Bower, 2000. Relative dispersion in the subsurface North Atlantic. *Journal of Marine Research*, **58**(6), 863–894, doi.org/10.1357/002224000763485737.
17. Richardson, P. L., A. S. Bower, and W. Zenk, 2000. A census of meddies tracked by floats. *Progress in Oceanography*, **45**(2), 209–250, doi: 10.1016/S0079-6611(99)00053-1.
18. Bower, A. S., D. M. Fratantoni, W. E. Johns, and H. Peters, 2002. Gulf of Aden eddies and their impact on Red Sea Water. *Geophysical Research Letters*, **29**(21), doi:10.1029/2002GL015342.
19. Bower, A. S., B. Le Cann, T. Rossby, W. Zenk, J. Gould, K. Speer, P. L. Richardson, M. D. Prater, and H.-M. Zhang, 2002. Directly measured mid-depth circulation in the northeastern North Atlantic Ocean. *Nature*, **419**, 603–607, doi:10.1038/nature01078.
20. Bower, A. S., N. Serra, and I. Ambar, 2002. Structure of the Mediterranean Undercurrent and Mediterranean Water spreading around the southwestern Iberian Peninsula. *Journal of Geophysical Research*, **107**(C10), 3161, doi:10.1029/2001JC001007.
21. Gordon, A. L., C. F. Giulivi, C. M. Lee, H. H. Furey, A. Bower, and L. Talley, 2002. Japan/East Sea intrathermocline eddies. *Journal of Physical Oceanography*, **32**(6), 1960–1974, doi.org/10.1175/1520-0485(2002)032<1960:JESIE>2.0.CO;2
22. Swift, S. A., and A. S. Bower, 2003. Formation and circulation of dense water in the Persian/Arabian Gulf. *Journal of Geophysical Research*, **108**(C1), 3004, doi:10.1029/2002JC001360.
23. Bower, A., E. Zettler, and G. Gawarkiewicz, 2004. Science Under Sail: Ocean Science Education Program Combines Traditional Vessels with State-of-the-Art Technology. *Oceanography*, **17**, 42–51, http://dx.doi.org/10.5670/oceanog.2004.29.
24. Bower, A. S., W. E. Johns, D. M. Fratantoni, and H. Peters, 2005. Equilibration and circulation of Red Sea Outflow Water in the western Gulf of Aden. *Journal of Physical Oceanography*, **35**, 1963–1985, doi.org/10.1175/JPO2787.1.

25. Furey, H. H., and A. S. Bower, 2005. Synoptic temperature structure of the East China and southeastern Japan/East Seas. *Deep-Sea Research II*, **52**, 1421–1442, doi: 10.1016/j.dsr2.2003.07.022.
26. Peters, H., W. E. Johns, A. S. Bower, and D. M. Fratantoni, 2005. Mixing and entrainment in the Red Sea Outflow Plume: I. Plume Structure. *Journal of Physical Oceanography*, **35**, 569–583, doi.org/10.1175/JPO2679.1.
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*Non-refereed Publications:*

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11. Dataset: de Jong, M. F., Bower, A. S., Søiland, Henrik, Furey, Heather H., Ramsey, Andree L., "Pathways to the Denmark Strait Overflow: A Lagrangian Study in the Iceland Sea", 2019-09, DOI:10.26025/1912/24573, <https://hdl.handle.net/1912/24573>
12. Dataset: Bower, Amy Sue, Heather Hunt Furey, Paula Pérez-Brunius, Andrée LaFlamboy Ramsey. Trayectoria de Flotadores Subsuperficiales Rastreados Acústicamente en el Oeste del Golfo de México como parte del experimento de dispersión de aguas profundas; Compilación de Datos (Base de Datos), Registro Público del Derecho de Autor, Número de Registro: 03-2019-120510230900-01, December 2019.

*Thesis and Technical Reports:*

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*Other Products:*

RAFOS Deep Water Dispersion Experiment (DWDE) data set,  
<https://zenodo.org/deposit/4509473>

Dataset: de Jong, M.F., A.S. Bower, H. Søiland, H. Furey, A. Ramsey. Pathways to the Denmark Strait Overflow: A Lagrangian study in the Iceland Sea. doi:10.26025/1912/24573,  
<https://hdl.handle.net/1912/24573>

## **INSTRUMENT AND TECHNIQUE DEVELOPMENT**

Collaborated with J. Valdes (WHOI) to redesign isopycnal floats for the DWBC, 1994 (first use at WHOI).

Collaborated with J. Valdes (WHOI) to modify the “float park” technique (originally developed by W. Zenk) for REDSOX, 2000 (first use at WHOI).

Developed an algorithm to use temperature and pressure measured by sensors on a mooring to automatically release profiling floats in the cores of warm eddies, 2006-2007

## **PAPERS PRESENTED AT MEETINGS AND INVITED LECTURES**

“Potential Vorticity Balances and Horizontal Divergence along RAFOS Float Trajectories in the Gulf Stream”

University of Miami, November 1988

Florida State University, November 1988

AGU Spring Meeting, Baltimore, MD, May 1989

“A Simple Kinematic Mechanism for Mixing Fluid Parcels across the Gulf Stream”

Department of Physical Oceanography, WHOI, November 1990

“Evidence for Barotropic Wave Radiation from the Gulf Stream Based on Historical Current Meter Data”

AGU Ocean Sciences Meeting, New Orleans, LA, February 1990

Massachusetts Institute of Technology, February 1990

University of Rhode Island, March 1990

Florida State University, April 1990

Department of Physical Oceanography, WHOI, June 1990

“A Mediterranean Undercurrent Seeding Experiment, A Program to Study the Formation of Mediterranean Salt Lenses”

Buoy Lunch seminar WHOI, November 1991

University of Washington, May 1993

“Particle Motion in the Gulf Stream”

University of Washington, November 1991

University of Hawaii, November 1991

University of Toronto, Canada, October 1992

“Energetics of the Gulf Stream at 55W”

AGU Ocean Sciences Meeting, New Orleans, LA, January 1992

“Potential Vorticity Variability in the Gulf Stream”

Harvard University, April 1992

Department of Physical Oceanography, WHOI, May 1992

“Do RAFOS Floats Really Cross the Gulf Stream”

WHOI Summer Student Fellow Lecture Series, July 1992

Massachusetts Institute of Technology, October 1992

“A Closer Look at Particle Exchange in the Gulf Stream”

New England Physical Oceanography Seminar Series, WHOI, March 1993

University of Washington, May 1993

“AMUSE Update I: Science Under Sail”

Buoy Lunch WHOI, November 1993

“AMUSE Update II: RAFOS Float Performance”

Buoy Lunch WHOI, November 1993

“AMUSE: A Mediterranean Undercurrent Seeding Experiment”

- University of Rhode Island, February 1994
- “AMUSE: Part Two - Preliminary Results from Seeding Experiment”  
AGU Ocean Sciences Meeting, San Diego, CA, February 1994
- “The State of the Gulf Stream at 55W”  
Department of Physical Oceanography, WHOI, August 1994
- “Lagrangian Observations of Meddy Formation and Mediterranean Water Spreading Patterns”  
New England Physical Oceanography Seminar Series, Massachusetts Institute of Technology, January 1995  
WHOI Summer Student Fellow Lecture Series, July 1995  
IAPSO Meeting, Honolulu, Hawaii, August 1995  
Department of Physical Oceanography, WHOI, September 1995  
Information and Communications Departments, WHOI, October 1995  
Florida State University, January 1996  
University of Miami, January 1996  
AGU Fall Meeting, San Francisco, CA, December 1996  
University of Rhode Island, June 1997
- “The Red Sea and Persian Gulf Outflows”  
AGU Fall Meeting, San Francisco, CA, December 1996  
Department of Physical Oceanography, WHOI, July 1997  
University of Washington, July 1997
- “The Pathways and Kinematics of Meddies in the Iberian Basin”  
AGU Ocean Sciences Meeting, San Diego, CA, February 1998  
European Geophysical Society General Assembly, Nice, France (invited), April 1998
- “The Gulf Stream –Deep Western Boundary Current Crossover: Results from Float Observations”  
European Geophysical Society General Assembly, Nice, France, April 1998  
WOCE Conference, Halifax, Nova Scotia, Canada, May 1998  
Department of Physical Oceanography, WHOI, November 1998
- “Dynamics of the Red Sea and Persian Gulf Outflows”  
University of Rhode Island, April 1999  
Florida State University, May 1999
- “The Red Sea Outflow: Modeling Results and a Proposed Field Program”  
WHOI Buoy Lunch Seminar, April 1999
- “The Red Sea and Persian Gulf Outflows”  
Arabian Marginal Seas and Gulfs Workshop, U.S. NRL, Stennis Space Center, May 1999
- “Lagrangian Observations of the DWBC in the North Atlantic”  
University of Miami, May 1999
- “Warm Water Pathways in the Northeastern North Atlantic”  
AGU Spring Meeting, Boston, MA, June 1999  
WHOI Summer Student Fellow Lecture Series, July 1999
- “Direct Observations of Warm Water Pathways in the Northern North Atlantic”  
European Geophysical Society Meeting, Nice, France, April 2000
- “Mixing and Dynamics of the Red Sea and Persian Gulf Outflows”  
European Geophysical Society Meeting, Nice, France, April 2000

- “Spreading of Mediterranean Water Around the Iberian Peninsula”  
LAPCOD (Lagrangian Analysis and Prediction of Coastal and Oceanic Dynamics) Meeting,  
Ischia, Italy, October 2000
- “Red Sea Outflow Experiment (REDSOX)”  
Brown Bag Administrative Seminar, WHOI, January 2001
- “Preliminary Results from the Red Sea Outflow Experiment (REDSOX)”  
IfM/Kiel, Germany, May 2001
- “REDSOX Cruise Report”  
WHOI Buoy Lunch Seminar, May 2001
- “From Inspiration to Observation: The ABCs of Conducting Research at Sea”  
WHOI Summer Student Lecture Series, July 2001
- “Red Sea Outflow Experiment (REDSOX): New, Deep-Reaching, Energetic Eddies in the Gulf  
of Aden and Their Impact on Red Sea Water Spreading”  
AGU Ocean Sciences, Honolulu, HI, February 2002
- “On the Mid-Depth Circulation in the Northeastern North Atlantic”  
EGS-AGU-EUE Joint Assembly, Nice, France, April 2003 (invited)  
WHOI Summer Student Fellow Lecture Series, June 2003
- “Red Sea Outflow Experiment (REDSOX): Descent and Initial Spreading of Red Sea Water in  
the Northwestern Indian Ocean”  
EGS-AGU-EUE Joint Assembly, Nice, France, April 2003
- “Direct Observations of Red Sea Water Spreading in the Northwestern Indian Ocean from  
Floats”  
AGU Ocean Sciences Meeting, Portland, Oregon, February 2004
- “Equilibration of Red Sea Outflow Water”  
Gravity Current Climate Process Team Meeting, Providence, RI, November 2004  
WHOI PO Seminar, April 2005
- “Pathways of the North Atlantic Current Over the Mid-Atlantic Ridge”  
PO Wednesday Lunch Chat, November 2004
- “Zonal Currents over the Mid-Atlantic Ridge North of 50N”  
“From Soup to Nuts: How Oceanographic Research at Sea Happens”  
WHOI Summer Student Lecture Series, June 2005
- “A Short History of Nearly Everything I’ve Learned Using RAFOS Floats”  
Lagrangian Summer School, GSO/URI, July 2005
- “MPOWIR: Mentoring of Physical Oceanography Women to Increase Retention”  
CORE Ocean Sciences Education Retreat, WHOI, October 2005  
WHOI PO Department, November 2005
- “Export Pathways Update”  
Buoy Lunch, December 2005
- “Irminger Rings Proposal Overview”  
WHOI PO Lunch Chat, February 2006
- “Labrador Sea Water Export Pathways from the Subpolar North Atlantic”  
AGU Ocean Sciences Meeting, February 2006
- “Observed and Modeled Particle Trajectories in the Western North Atlantic”  
WHOI PO Lunch Chat, March 2006
- “Export Pathways of Labrador Sea Water from the Subpolar North Atlantic: New Float Results”

- EGU General Assembly, Vienna Austria, April 2006 (solicited)
- “Red Sea Outflow Experiment (REDSOX): New, Deep-Reaching, Energetic Eddies in the Gulf of Aden and Their Impact on Red Sea Water Spreading”
- AGU Ocean Sciences Meeting, Honolulu, HI, February 2006
- AGU Ocean Sciences Meeting, Orlando, FL, February 2008
- “Export Pathways of Labrador Sea Water from the Subpolar North Atlantic”
- University of Rhode Island, December 2006
- “Commotion in the Ocean”
- Boston Museum of Science Climate Change Lecture Series, February 2007
- “Rings and Things: An Innovative Method for Observing Irminger Rings in the Labrador Sea and Outreach to Students with Disabilities”
- WHOI 2008 Summer Student Fellow Lecture Series, June 2008
- “Hydrography and Circulation of the Red Sea”
- KAUST Special Partners Symposium, Jeddah, Saudi Arabia, October 2008
- KAUST Red Sea Symposium, Jeddah, Saudi Arabia, March 2010
- “An Irminger Ring Mooring in the Labrador Sea” and “Export Pathways from the Subpolar North Atlantic”
- Labrador Sea Workshop, Bedford Institute of Oceanography, November 2008
- Variations of seminar on “Export Pathways of Labrador Seawater from the Subpolar North Atlantic”
- University of Rhode Island, December 2006
- Labrador Sea Workshop, Halifax, NS, November 2008
- First International Symposium in Honor of the Science of Fritz Schott, Kiel, Germany, April 2009 (invited)
- European Geosciences Union Meeting, Vienna, Austria, April 2009
- Atlantic Meridional Overturning Circulation Workshop, Annapolis, MD, May 2009 (invited)
- Canadian Meteorological and Oceanographic Society Meeting, Halifax, Nova Scotia, Canada, June 2009 (invited plenary speaker)
- GSO/URI, Narragansett, RI, June 2009 (invited)
- WHOI PO Seminar, August 2010
- Washington School of Oceanography, January 2011
- “An Irminger Ring Mooring in the Labrador Sea”
- EGU General Assembly, Vienna, Austria, April 2009
- “The First KAUST-WHOI Large-Scale Hydrographic Survey in the Red Sea: March 2010”
- WHOI, Buoy Lunch, May 2010
- “Red Sea Oceanography: A Saudi-U.S. Collaboration”
- WHOI, Science Made Public, July 2010
- WHOI Summer Student Fellow Lecture Series, June 2010
- “Spreading Pathways of Labrador Sea Water from the Subpolar North Atlantic: A Lagrangian Data-Model Comparison
- AGU Ocean Sciences Meeting, February 2010
- “Are Labrador Sea Water Eddies an Important Transport Mechanism in the AMOC?”
- EGU General Assembly, Vienna, Austria April 2011
- “Eddies in the Red Sea”

KAUST, April 2011

“From Meddies to Leddies: High-Resolution Lagrangian Observations of Sub-Mesoscale Coherent Vortices”

Symposium in honor of Tom Rossby, University of Rhode Island, November 2011

“Direct Observations of Formation and Propagation of Subpolar Eddies into the Subtropical North Atlantic”

LAPCOD Meeting, Miami, FL June 2012

“New Lagrangian Experiments Proposed for the Gulf of Mexico and Subpolar North Atlantic”

LAPCOD Meeting, Miami, FL June 2012

“New observations of eddies and boundary currents in the Red Sea”

EGU General Assembly, Vienna, Austria, April 2013

“New Direct Estimates of Iceland-Scotland Overflow Water Transport Through Charlie-Gibbs Fracture Zone”

AGU Ocean Sciences Meeting, Honolulu, HI, February 2014

AGU Fall Meeting, December 2014

“A Career in Ocean Physics”

GSO/URI Talk, October 2014

Society for Women in Marine Science Symposium 2015, MIT, Boston, MA, keynote speaker

“New Direct Estimates of Iceland-Scotland Overflow Water Transport through the Charlie-Gibbs Fracture Zone and its Relationship to the North Atlantic Current”

EGU General Assembly, invited talk, April 2015

“An Armada of Floats Observing the Deep Circulation of the Gulf of Mexico”

Summer Lecture Series, WHOI, July 2015

“A Review of High-Resolution Subsurface Lagrangian Observations in the Ocean”

AmeriMech Symposium on Fluid Transport and Non-Linear Dynamics, WHOI, May 2016, invited talk

“The Charlie-Gibbs Fracture Zone: A Crossroads of the Atlantic Meridional Overturning Circulation”

WHOI PO Seminar, June 2016

”A Lagrangian Study of the Deep Circulation in the Gulf of Mexico: Western Gulf”

NAS Gulf Research Program Data Synthesis Project Annual PI Meeting, Scripps, September 2016

“Going with the Flow: Lagrangian Oceanography Using Acoustically Tracked Subsurface Floats”

Ocean Sciences Meeting, New Orleans, LA, February 2016

“Oceans and Climate”

Conferences for Undergraduate Women in Physics (CUWIP), Harvard University, January 2017 (invited talk)

“ISOW Transport through the Charlie-Gibbs Fracture Zone and the Impact of the North Atlantic Current”

Graduate School of Oceanography, University of Rhode Island, February 2017

“Deep Circulation in the Gulf of Mexico as Observed with RAFOS Floats”

CIGOM Conference, CICESE, Ensenada, Mexico (invited plenary talk), April 2017

“Overflow Water Pathways in the Subpolar North Atlantic Observed with Deep Floats”

EGU General Assembly, Vienna, Austria (invited talk), April 2017

- US AMOC Science Team Meeting, Santa Fe, NM, May 2017
- “Transport of the Iceland-Scotland Overflow plume along the eastern flank of Reykjanes Ridge”  
Irminger Sea Regional Workshop, NOC, Southampton, UK, November 2017
- “Effects of westward mountain-gap wind jets on the Red Sea Eastern Boundary Current” Ocean Sciences Meeting, Portland, Oregon, February 2018
- “Mesoscale eddies modulate meridional heat flux variability in the subpolar North Atlantic”  
Ocean Sciences Meeting, Portland, Oregon, February 2018
- “Hydrography of the Gulf of Mexico using Autonomous Floats”  
Ocean Sciences Meeting, Portland, Oregon, February 2018
- “Abundant cyclonic eddies in the deep boundary current around southern Greenland”  
EGU General Assembly, Vienna, Austria, April 2019
- “The circulation of dense waters in the Iceland Sea”  
EGU General Assembly, Vienna, Austria, April 2019
- “Pathways of the Atlantic Meridional Overturning Circulation: A Lagrangian Perspective”  
(invited)  
AGU Fall Meeting December 2019, San Francisco, CA (H. Furey attended meeting and presented talk prepared by A. Bower)
- “Ocean Insight: Bringing ‘Inner Space’ Science to Blind and Visually Impaired Students”  
(invited)  
AGU Fall Meeting December 2019, San Francisco, CA (M. Harrigan from WHOI Ocean Discovery Center attended and presented talk prepared by A. Bower)
- “LC-Floats: Near-real-time Hydrography and Deep Velocity in the Loop Current System using Autonomous Profilers”  
NAS UGOS Annual Meeting, Oral presentation, Washington, D.C., January 2020
- “Redrawing the Iceland-Scotland Overflow Water Pathways in the North Atlantic”  
Ocean Sciences, PC21A-03, Oral presentation, February 2020.
- “Our Changing Oceans” (keynote speaker)  
Community Boating, Inc. Annual Fund-Raising Dinner, Boston, MA, January 2020.
- “Lagrangian Perspective on the Origins of Denmark Strait Overflow”  
Ocean Sciences, HE33A-03, February 2020.
- “LC Floats: Near-real-time Hydrography and Deep Velocity in the Loop current System using Autonomous Profilers”  
NAS UGOS Annual Meeting, February 2021 (virtual) (H. Furey presented)
- “Iceland-Scotland Overflow Water Transport Variability through the Deep Bight Fracture Zone”  
EGU General Assembly, April 2021 (virtual), (H. Furey presented)
- “A Deep Water Dispersion Experiment in the Gulf of Mexico”  
EGU General Assembly, April 2021 (virtual) (T. Meunier presented)
- “Observed Denmark Strait Overflow Cyclones around Greenland”  
EGU General Assembly, April 2021 (virtual) (S. Zou presented)
- “36 Months of Autonomous Profiling Float Observations in the Loop Current”  
AGU Fall Meeting, December 2021 (T. Meunier presented)
- “Overflow Water Pathways in the North Atlantic: New Observations from the OSNAP Program”  
AGU Fall Meeting, December 2021 (S. Lozier presented)  
Ocean Sciences Meeting, February 2022 (S. Lozier presented)  
EGU General Assembly, April 2022 (S. Lozier presented)
- “Six Years of Continuous Observations of the Deep Western Boundary Current from Cape Farewell”

EGU General Assembly, April 2022 (G. Koman presented)