

Michael A. Spall

Physical Oceanographer

Senior Scientist

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Home page: whoi.edu/science/PO/people/mspall/index.html**EDUCATION:**

B.S., Clarkson College of Technology, 1980 (Mechanical Engineering)

M.S., Clarkson College of Technology, 1982 (Mechanical Engineering)

S.M., Harvard University, 1984 (Applied Mathematics)

Ph.D., Harvard University, 1988 (Applied Mathematics)

PROFESSIONAL EXPERIENCE:

Senior Scientist June 2002-present; Associate Scientist, 1993-June 2002; tenure awarded 1997; Assistant Scientist, 1990-1993; Woods Hole Oceanographic Institution

Visiting Scientist, Institut für Meerskunde, Kiel, Germany, 1992

Visiting Scientist, National Center for Atmospheric Research, Boulder, Colorado, 1988-1989

Research Assistant, Harvard University, 1984-1988

Staff Engineer, TRW, Redondo Beach, California, 1982-1983

AWARDS:Citation for Excellence in refereeing, *Journal of Geophysical Research* 2002, 2020

Bjerknes Visiting Fellow, Bergen, Norway, November 2011

Henry Bryant Bigelow Chair for Excellence in Oceanography, WHOI, 2017-2019

PROFESSIONAL AFFILIATIONS:Editorial Board Member, *Dynamics of Atmospheres and Oceans*, 1998-2007Associate Editor, *Journal of Geophysical Research: Oceans*, 1999-2004Guest editor, Special Issue on Ocean Fronts, *Dynamics of Atmospheres and Oceans*, 2002Editor, *Journal of Physical Oceanography*, 2002-2016 (Chief Editor 2009-2016)

Member, Ocean Research Priorities Plan Implementation Team for the Atlantic Meridional Overturning Circulation Near Term Priority 2007-2008

Editorial Board Member, *Journal of Marine Science and Engineering*, 2012-2015

Member, American Geophysical Union

Member, American Meteorological Society

Member, AMOC Science Team 2015-2022

Member, AMOC Executive Committee, 2017-2022

AMOC Task Team 3, Vice Chair 2017, Chair 2018-2022

Member, Assessment Board for the University of Oslo Associate Professor search, Dept. of Geosciences, 2015

RESEARCH INTERESTS:

Dynamics of mid-latitude subtropical and subpolar gyres, frontal dynamics and mesoscale variability, thermohaline circulation, water mass transformation in marginal seas.

PROFESSIONAL ACTIVITIES:**WHOI (Non Education Related):**

Member, Physical Oceanography Department Recruitment Committee, 1992-1993, 1996-2006, 2014-2015(Chair 2003-2006), 2021, 2022 (chair), 2023 (chair)
Member, IS Advisory Committee, 2021-present
Scientific Advisory Committee on Computing, 1994-1996
Information Systems Council, 1995-1996
CIS Director Search Committee, 1996
WHOI Promotion Committee for Jiayan Yang, 1998
Panel Member, WHOI Independent and Interdisciplinary Study Awards, 2003
Member, Scientific Staff Executive Committee (SSEC), 2004-2006 (Chair 2006-2007)
Member, Tenured Scientist Executive Committee (TenSEC), 2005
UCAR Member Representative for WHOI 1994-2002
Ad hoc promotion committee for Young-Oh Kwon, 2010
WHOI/OUUC proposal review panel, 2015

Outside WHOI (Other than attendance at Society/National Meetings):

Member, Organizing Committee for NATO workshop on oceanography in the eastern North Atlantic, 1991
WOCE Working Group on Numerical Modeling, 1992-1996
Organizing Committee for OPW93 Workshop, 1993
Visiting Scientist, Cooperative Institute for Marine and Atmospheric Studies, University of Miami, 1995
Co-Chair of the Ocean Modeling Working Group of the NCAR Community Climate System Model, 1996-2000
Panel member, National Science Foundation Physical Oceanography Panel, Spring 1997, Fall 2003, Fall 2012.
Organizing Committee for Ocean Sciences Meeting 2000
Principal lecturer at CKO Climate Summer School, Les Diablerets, Switzerland, October-November 2003
Panel member, National Science Foundation Office of Polar Programs Panel, Spring 2004
Ocean Research Priorities Plan Implementation Team for the AMOC, 2007
Member-at-Large, Scientific Steering Committee, CLIVAR, 2009 -2011
Ad hoc promotion committee for Young-Oh Kwon, 2010
DOE Earth System Modeling Panel, May 2011, May 2020
External Examiner, PhD defense, Renske Gelderloos, Utrecht University, 2012
Atlantic Meridional Overturning Circulation Program (AMOC) Science Team 2012-2020
NPR radio interview on North Atlantic Jet work 2012
Session Co-Chair, "Boundary currents, eddies, and water mass transformation at high latitudes," Ocean Sciences Meeting, Honolulu, HI, 2014
Organizing Committee, WPOC-ITF International Symposium on Western Boundary Currents, ENSO, and Climate Dynamics, Qingdao, China, 2017
External Selection Committee for faculty position, Gothenburg University, 2017
External Examiner, Christopher Wolfe, 2018
External Opponent, PhD defense, Sarah Broome, Stockholm University, 2020

PARTICIPATION IN EDUCATION PROGRAM:

Courses Taught:

Steady Circulation of the Ocean and Atmosphere (12.801) (with L. Pratt), Spring 1994, 1995, 1996
Classic Papers in Physical Oceanography (12.758), Spring 2008, 2009, 2012, 2013

Thesis Committee:

Huai-Min Zhang

Date and Degree:

1995, PhD

Keith Alverson	1995, PhD
William Williams	1996, PhD
Paul Robbins	1997, PhD
Christopher Edwards	1997, PhD
Victoria Coles (at U. Miami)	1998, PhD
Mikhail Solovev	1999, PhD
Richard Wardle	1999, PhD
Brian Arbic	2000, PhD
Albert Fischer	2000, PhD.
Juan Botella	2001, PhD
Markus Jochum	2002, PhD
Juli Atherton	2002 PhD
Alison Walker	2002, PhD
Baylor Fox-Kemper	2003, PhD
Asher Siebert	-
Beatriz Pena Molino	2010, PhD
Kjetil Vage	2010, PhD
Jinbo Wang	2011, PhD
Ru Chen	2013, PhD
Alex Kalmikov	2013, PhD
Isabella Le Bras	2017, PhD
Erwin Lambert (University of Bergen)	2017, PhD
Lequan Chi (SUNY Stonybrook)	2019, PhD
Madeleine Youngs	2020, PhD
Yu Gao (University of Miami)	2022, PhD
Roger Wu	2023, PhD

Advising:

Julie Deshayes (co-advisor)	2006, postdoc
Ted Durland (co-advisor)	2006, postdoc
Hristina Hristova	2009, PhD
Jinbo Wang (co-advisor)	2011, PhD
Mahdi Ben-Jelloul (co-advisor)	2010, postdoc
Georgy Manucharyan	2014, postdoc
David Nieves	2018, postdoc
Shan Xuan	2022-present, postdoc
Marta Faulkner	2023-present, PhD student

Thesis Defense Chair:

Natalia Beliakova	1999, PhD
Jubao Zhang	1999, PhD
Ying Zhang	2011, PhD
Astrid Pacini	2022, PhD

External Examiner PhD Defense

Olaf Dahl	2008, PhD
Renske Gelderloos	2012, PhD
Christopher Wolfe	2018, PhD
Sarah Broome	2020, PhD

Visiting Student Sponsor:	Date:
Masachika Masujima (U. Tokyo)	2005
Hannah Longworth (Southampton)	2005
Erwin Lambert (U. Bergen)	2016
Carina Bringedal (U. Bergen)	2016
Hengling Leng	2019-2021
Haihong Guo	2019-2021

Summer Student Fellows:

Anne-Francoise Weyns	1994
Amanda O'Rourke	2010
Yuki Yasuda (University of Tokyo)	2013
Marta Faulkner	2019

SUPERVISION AT WHOI:

Raffaele Ferrari 2002; Caroline Katsman 2002; Jason Goodman 2003- 2008; Fiamma Straneo 2003-2014, 2012-2013; Leif Thomas 2007- 2009; Pavel Berloff 2008; Hyodae Seo 2011- 2013, Clark Richards 2013-2014, Georgy Manucharyan 2014-2015. David Nieves 2017-2019. Marta Faulkner, 2019. Haihong Guo, 2019-2021. Henling Leng, 2019-2021. Marta Faulkner, 2023-present. Shan Xuan, 2023-present.

PAPERS IN REFEREED JOURNALS AND BOOKS:

Author or co-author of over 115 refereed scientific publications.

Robinson, A. R., M. A. Spall, and N. Pinardi, 1988. Gulf Stream simulation and the dynamics of ring and meander processes. *Journal of Physical Oceanography*, **18**(12), 1811–1853, doi: [http://dx.doi.org/10.1175/1520-0485\(1988\)018<1855:TWMOTC>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1988)018<1855:TWMOTC>2.0.CO;2).

Robinson, A. R., M. A. Spall, L. J. Walstad, and W. G. Leslie, 1989. Data assimilation and dynamical interpolation in GULFCASTING experiments. *Dynamics of Atmospheres and Oceans*, **13**, 301–316, doi:10.1016/0377-0265(89)90043-2.

Spall, M.A., 1989. Regional primitive equation modeling and analysis of the POLYMODE data set. *Dynamics of Atmospheres and Oceans*, **14**(1–2), 125–174, doi:10.1016/0377-0265(89)90060-2.

Spall, M. A., and A. R. Robinson, 1989. A new open ocean hybrid coordinate primitive equation model. *Mathematics and Computers in Simulation*, **31**, 241–269, doi:10.1016/0378-4754(89)90162-6.

Spall, M. A., 1990. Circulation in the Canary Basin: a model/data analysis. *Journal of Geophysical Research*, **95**(C6), 9611–9628, doi: 10.1029/JC095iC06p09611.

Spall, M. A., and A. R. Robinson, 1990. Regional primitive equation studies of the Gulf Stream meander and ring formation region. *Journal of Physical Oceanography*, **20**(7), 985–1016, doi: [http://dx.doi.org/10.1175/1520-0485\(1990\)020<0985:RPESOT>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1990)020<0985:RPESOT>2.0.CO;2).

Spall, M. A., 1991. A diagnostic study of the wind and buoyancy driven North Atlantic Circulation. *Journal of Geophysical Research*, **96**(C10), 18,509–18,518, doi: 10.1029/91JC01957.

Spall, M. A., and W. R. Holland, 1991. A nested primitive equation model for oceanic applications. *Journal of Physical Oceanography*, **21**(2), 205–220, doi: [http://dx.doi.org/10.1175/1520-0485\(1991\)021<0205:ANPEMF>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1991)021<0205:ANPEMF>2.0.CO;2).

- Spall, M.A., 1992. Cooling spirals and recirculation in the subtropical gyre. *Journal of Physical Oceanography*, **22**(5), 564–571, doi: [http://dx.doi.org/10.1175/1520-0485\(1992\)022<0564:CSARIT>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1992)022<0564:CSARIT>2.0.CO;2).
- Spall, M. A., 1992. Rossby wave radiation in the Cape Verde Frontal Zone. *Journal of Physical Oceanography*, **22**(7), 796–807, doi: [http://dx.doi.org/10.1175/1520-0485\(1992\)022<0796:RWRITC>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1992)022<0796:RWRITC>2.0.CO;2).
- Spall, M.A., and J. C. McWilliams, 1992. Rotational and gravitational influences on the degree of balance in the shallow water equations. *Geophysical and Astrophysical Fluid Dynamics*, **64**, 1–29, doi: [10.1080/03091929208228083](http://dx.doi.org/10.1080/03091929208228083).
- Spall, M. A., 1993. Variability of sea surface salinity in stochastically forced systems. *Climate Dynamics*, **8**, 151–160, doi: [10.1007/BF00208094](http://dx.doi.org/10.1007/BF00208094).
- Spall, M. A., P. L. Richardson, and J. Price, 1993. Advection and eddy mixing in the Mediterranean salt tongue. *Journal of Marine Research*, **51**(4), 797–818, doi: <http://dx.doi.org/10.1357/0022240933223882>.
- Polvani, L. M., J. C. McWilliams, M. A. Spall, and R. Ford, 1994. The coherent structures of shallow-water turbulence: Deformation-radius effects, symmetry breaking and gravity-wave generation. *Chaos*, **4**(2), 177–186, <http://dx.doi.org/10.1063/1.166002>.
- Spall, M. A., 1994. Mechanism for low frequency variability and salt flux in the Mediterranean salt tongue. *Journal of Geophysical Research*, **99**(C5), 10,121–10,129, doi: [10.1029/93JC03587](http://dx.doi.org/10.1029/93JC03587).
- Spall, M. A., 1994. Wave-induced abyssal recirculations. *Journal of Marine Research*, **52**, 1051–1080, DOI: <http://dx.doi.org/10.1357/0022240943076830>.
- Spall, M.A., 1995. Frontogenesis, subduction, and cross-front exchange at upper ocean fronts. *Journal of Geophysical Research*, **100**(C2), 2543–2557, doi: [10.1029/94JC02860](http://dx.doi.org/10.1029/94JC02860).
- Williams, R. G., M. A. Spall, and J. C. Marshall, 1995. Does Stommel's mixed-layer 'demon' work? *Journal of Physical Oceanography*, **25**(12), 3089–3102, doi: [http://dx.doi.org/10.1175/1520-0485\(1995\)025<3089:DSMLW>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1995)025<3089:DSMLW>2.0.CO;2).
- Spall, M. A., 1996. Dynamics of the Gulf Stream/Deep Western Boundary Current Crossover. Part I: Entrainment and recirculation. *Journal of Physical Oceanography*, **26**(10), 2152–2168, doi: [http://dx.doi.org/10.1175/1520-0485\(1996\)026<2152:DOTGSW>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1996)026<2152:DOTGSW>2.0.CO;2).
- Spall, M. A., 1996. Dynamics of the Gulf Stream/Deep Western Boundary Current Crossover. Part II: Low-frequency internal oscillations. *Journal of Physical Oceanography*, **26**, 2169–2182, doi: [http://dx.doi.org/10.1175/1520-0485\(1996\)026<2169:DOTGSW>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1996)026<2169:DOTGSW>2.0.CO;2).
- Pedlosky, J., L. J. Pratt, M. A. Spall, and K. R. Helfrich, 1997. Circulation around islands and ridges. *Journal of Marine Research*, **55**(6), 1199–1251, doi: <http://dx.doi.org/10.1357/0022240973224085>.
- Pickart, R. S., and M. A. Spall, and J. R. N. Lazier, 1997. Mid-depth ventilation in the western boundary current system of the subpolar gyre. *Deep-Sea Research I*, **44**(6), 1025–1054, doi: [10.1016/S0967-0637\(96\)00122-7](http://dx.doi.org/10.1016/S0967-0637(96)00122-7).
- Spall, M. A., 1997. Baroclinic jets in confluent flow. *Journal of Physical Oceanography*, **27**(6), 1054–1071, doi: [http://dx.doi.org/10.1175/1520-0485\(1997\)027<1054:BJICF>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1997)027<1054:BJICF>2.0.CO;2).
- Visbeck, M., J. Marshall, T. Haine, and M. Spall, 1997. Specification of eddy transfer coefficients in coarse-resolution ocean circulation models. *Journal of Physical Oceanography*, **27**(3), 381–402, doi: [http://dx.doi.org/10.1175/1520-0485\(1997\)027<0381:SOETCI>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1997)027<0381:SOETCI>2.0.CO;2).

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- Spall, M. A., and J. F. Price, 1998. Mesoscale variability in Denmark Strait: The PV outflow hypothesis. *Journal of Physical Oceanography*, **28**(8), 1598-1623, doi: [http://dx.doi.org/10.1175/1520-0485\(1998\)028<1598:MVIDST>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1998)028<1598:MVIDST>2.0.CO;2).
- Pedlosky, J., and M. Spall, 1999. Rossby normal modes in basins with barriers. *Journal of Physical Oceanography*, **29**(9), 2332-2349, doi: [http://dx.doi.org/10.1175/1520-0485\(1999\)029<2332:RNMIBW>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(1999)029<2332:RNMIBW>2.0.CO;2).
- Spall, M. A., 1999. A simple model of the large scale circulation of Mediterranean water and Labrador Sea water. *Deep-Sea Research II*, **46**, 181-204, doi:10.1016/S0967-0645(98)00105-2.
- Joyce, T. M., C. Deser, and M. A. Spall, 2000. The relation between decadal variability of Subtropical Mode Water and the North Atlantic Oscillation. *Journal of Climate*, **13**, 2550-2569, doi: [http://dx.doi.org/10.1175/1520-0442\(2000\)013<2550:TRBDVO>2.0.CO;2](http://dx.doi.org/10.1175/1520-0442(2000)013<2550:TRBDVO>2.0.CO;2).
- Spall, M. A., 2000. Buoyancy-forced circulations around islands and ridges. *Journal of Marine Research*, **58**(6), 957-982, doi: <http://dx.doi.org/10.1357/002224000763485764>.
- Spall, M. A., 2000. Generation of strong mesoscale eddies by weak ocean gyres. *Journal of Marine Research*, **58**(1), 97-116, doi: <http://dx.doi.org/10.1357/002224000321511214>.
- Spall, M. A., R. A. Weller, and P.W. Furey, 2000. Modeling the three-dimensional upper ocean heat budget and subduction rate during the Subduction Experiment. *Journal of Geophysical Research*, **105**(C11), 26,151-26,166, doi: 10.1029/2000JC000228.
- Blackmon, M., B. Boville, F. Bryan, R. Dickinson, P. Gent, J. Kiehl, R. Moritz, D. Randall, J. Shukla, S. Solomon, G. Bonan, S. Doney, I. Fung, J. Hack, E. Hunke, J. Hurrell, J. Kutzbach, J. Meehl, B. Otto-Bliesner, R. Saravanan, E. K. Schneider, L. Sloan, M. Spall, K. Taylor, J. Tribbia, and W. Washington, 2001. The community climate system model. *Bulletin of the American Meteorological Society*, **82**, 2357-2376, doi: [http://dx.doi.org/10.1175/1520-0477\(2001\)082<2357:TCCSM>2.3.CO;2](http://dx.doi.org/10.1175/1520-0477(2001)082<2357:TCCSM>2.3.CO;2).
- Spall, M. A., 2001. Large-scale circulations forced by localized mixing over a sloping bottom. *Journal of Physical Oceanography*, **31**(8, Part 2), 2369-2384, doi: [http://dx.doi.org/10.1175/1520-0485\(2001\)031<2369:LSCFBL>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(2001)031<2369:LSCFBL>2.0.CO;2).
- Spall, M. A., and R. S. Pickart, 2001. Where does dense water sink? A subpolar gyre example. *Journal of Physical Oceanography*, **31**(3), 810-826, doi: [http://dx.doi.org/10.1175/1520-0485\(2001\)031<0810:WDDWSA>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(2001)031<0810:WDDWSA>2.0.CO;2).
- Spall, M. A., 2002. Wind- and buoyancy-forced upper ocean circulation in two-strait marginal seas with application to the Japan/East Sea. *Journal of Geophysical Research*, **107**(C1), 6-1-6-12, doi: 10.1029/2001JC000966.
- Pickart, R. S., M. A. Spall, M. H. Ribergaard, G. W. K. Moore, and R. F. Milliff, 2003. Deep convection in the Irminger Sea forced by the Greenland tip jet. *Nature*, **424**, 152-156, doi:10.1038/nature01729.
- Pratt, L. J., and M. A. Spall, 2003. A porous-medium theory for barotropic flow through ridges and archipelagos. *Journal of Physical Oceanography*, **33**, 2702-2718, doi: [http://dx.doi.org/10.1175/1520-0485\(2003\)033<2702:APTFBF>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(2003)033<2702:APTFBF>2.0.CO;2).
- Spall, M. A., 2003. Islands in zonal flow. *Journal of Physical Oceanography*, **33**, 2689-2701, doi: [http://dx.doi.org/10.1175/1520-0485\(2003\)033<2689:IIZF>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(2003)033<2689:IIZF>2.0.CO;2).

- Spall, M. A., 2003. On the thermohaline circulation in flat bottom marginal seas. *Journal of Marine Research*, **61**, 1-25, doi: 10.1357/002224003321586390.
- Spall, M. A., and R. S. Pickart, 2003. Wind-driven recirculations and exchange in the Labrador and Irminger Seas. *Journal of Physical Oceanography*, **33**, 1829-1845, doi: <http://dx.doi.org/10.1175/2384.1>.
- Katsman, C., M. A. Spall, and R. S. Pickart, 2004. Boundary current eddies and their role in the restratification of the Labrador Sea. *Journal of Physical Oceanography*, **34**, 1967-1983, doi: [http://dx.doi.org/10.1175/1520-0485\(2004\)034<1967:BCEATR>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(2004)034<1967:BCEATR>2.0.CO;2).
- Spall, M. A., 2004. Boundary currents and watermass transformation in marginal seas. *Journal of Physical Oceanography*, **34**, 1197-1213, doi: [http://dx.doi.org/10.1175/1520-0485\(2004\)034<1197:BCAWTI>2.0.CO;2](http://dx.doi.org/10.1175/1520-0485(2004)034<1197:BCAWTI>2.0.CO;2).
- Weller, R. A., P. W. Furey, M. A. Spall, and R. E. Davis, 2004. The large-scale context for oceanic subduction in the northeast Atlantic. *Deep Sea Research*, **51**, 665-699, doi: 10.1016/j.dsr.2004.01.003.
- Pedlosky, J., and M. A. Spall, 2005. Boundary intensification of vertical velocity in a β -plane basin. *Journal of Physical Oceanography*, **35**, 2487-2500, doi: <http://dx.doi.org/10.1175/JPO2832.1>.
- Spall, M. A., 2005. Buoyancy-forced circulations in shallow marginal seas. *Journal of Marine Research*, **63**, 729-752, doi: <http://dx.doi.org/10.1357/0022240054663204>.
- Spall, M. A., and J. Pedlosky, 2005. Reflection and transmission of equatorial Rossby waves. *Journal of Physical Oceanography*, **35**, 363-373, doi: <http://dx.doi.org/10.1175/JPO-2691.1>.
- Pickart, R. S., and M. A. Spall, 2007. Impact of Labrador Sea Convection on the North Atlantic Meridional Overturning Circulation. *Journal of Physical Oceanography*, **37**(9), 2207-2227, doi: <http://dx.doi.org/10.1175/JPO3178.1>.
- Spall, M. A., 2007. Circulation and water mass transformation in a model of the Chukchi Sea. *Journal of Geophysical Research*, **112**, C0525, doi:10.1029/2005JC002264.
- Spall, M. A., 2007. Effect of sea surface temperature-wind stress coupling on baroclinic instability in the ocean. *Journal of Physical Oceanography*, **37**(4), 1092-1097, doi: <http://dx.doi.org/10.1175/JPO3045.1>.
- Spall, M. A., 2007. Midlatitude wind stress-sea surface temperature coupling in the vicinity of oceanic fronts. *Journal of Climate*, **20**, 3785-3801, doi: <http://dx.doi.org/10.1175/JCLI4234.1>
- Spall, M. A., R. S. Pickart, P. S. Fratantoni, and A. J. Plueddemann, 2008. Western Arctic shelfbreak eddies: Formation and transport. *Journal of Physical Oceanography*, **38**, 1644-1668.
- Small, R. J., S. deSzoeko, S. P. Xie, L. O'Neill, H. Seo, Q. Song, P. Cornillon, M. Spall, and S. Minobe, 2008. Air-sea interaction over ocean fronts and eddies. *Dynamics of Atmospheres and Oceans*, **45**(3), 274-319, doi:10.1016/j.dynatmoce.2008.01.001.
- Hristova, H., J. Pedlosky, and M. A. Spall, 2008. Radiating instability of a meridional boundary current. *Journal of Physical Oceanography*, **38**(10), 2294-2307, doi: <http://dx.doi.org/10.1175/2008JPO3853.1>.
- Spall, M. A., and J. Pedlosky, 2008. Lateral coupling in baroclinically unstable flows. *Journal of Physical Oceanography*, **(38)**, 1267-1277, doi: <http://dx.doi.org/10.1175/2007JPO3906.1>.
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- Iovino, D., F. Straneo, and M. A. Spall, 2008. On the effect of a sill on dense water formation in a marginal sea. *Journal of Marine Research*, **66**(3), 325-345, doi: <http://dx.doi.org/10.1357/002224008786176016>.

- Pratt, L. J., and M. A. Spall, 2008. Circulation and exchange in choked marginal seas. *Journal of Physical Oceanography*, **38**(12), 2639–2661, doi: <http://dx.doi.org/10.1175/2008JPO3946.1>.
- Spall, M. A., 2008. Buoyancy-forced downwelling in boundary currents. *Journal of Physical Oceanography*, **38**(12), 2704–2721, doi: <http://dx.doi.org/10.1175/2008JPO3993.1>.
- Spall, M. A., 2008. Low frequency interaction between horizontal and overturning gyres in the ocean. *Geophysical Research Letters*, **35**, L18614, doi: [10.1029/2008GL035206](http://dx.doi.org/10.1029/2008GL035206).
- Durland, T. S., J. Pedlosky, and M. A. Spall, 2009. Response to a steady poleward outflow, Part I: The linear, quasigeostrophic problem. *Journal of Physical Oceanography*, **39**(7), 1541–1550, doi: <http://dx.doi.org/10.1175/2008JPO3999.1>.
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Thesis and Technical Reports

- Spall, Michael A., 1988. Regional ocean modeling: primitive equation and quasi-geostrophic studies. Ph.D. Thesis, Harvard University, Cambridge, Massachusetts. *Reports in Meteorology and Oceanography*, No. 24, Harvard University, 282 pp.
- Spall, Michael A., 1988. Users' Guide to the Primitive Equation Energy and Vorticity Analysis Routine. *Reports in Meteorology and Oceanography*, No. 31, Harvard University, 37 pp.
- Spall, Michael A., 1988. Users' Guide to the Regional Primitive Equation Model. *Reports in Meteorology and Oceanography*, No. 30, Harvard University, 71 pp.

PAPERS PRESENTED AT MEETINGS AND INVITED LECTURES (through 2017):

Cooling spirals and recirculation in the subtropical gyre

October 1990 – WHOI

December 1990 – URI

May 1991 – MIT

October 1991 – AMS Waves and Stability Meeting, Denver, Colorado

A nested primitive equation model for oceanic studies

October 1990 – GFDL

March 1991 - MIT

Circulation in the Canary Basin: A combined model/data analysis

December 1990 – AGU

Rotational and gravitational influences on the degree of balance in the shallow water equations

March 1991 – Harvard University

October 1991 - WHOI

Basin scale ocean modeling and regional oceanography: An eastern North Atlantic Ocean example

April 1991 – University of New Hampshire

Rossby wave radiation in the Cape Verde frontal zone

June 1991 – WHOI

July 1991 – NCAR

November 1992 – Harvard University

A diagnostic study of the wind- and buoyancy driven North Atlantic circulation

November 1991 – URI

Variability of sea surface salinity in stochastically forced systems

March 1992 – NOAA ACCP Meeting, University of Miami

Low frequency variability and salt flux in the Mediterranean salt tongue

August 1992 - NCAR

August 1992 – NRL, St. Louis, Missouri

September 1992 – WHOI

A mechanism for low frequency variability and salt flux in the Mediterranean salt tongue

October 1992 – URI
 Advection, mixing, and salt transport in the Mediterranean salt tongue
 May 1993 – IfM, Kiel, Germany
 May 1993 – Modelling of Oceanic Vortices, Amsterdam, Netherlands
 June 1993 – Alfred Wegener Polar Research Institut, Bremerhaven, Germany
 Wave induced abyssal recirculations
 August 1993 – IfM, Kiel, Germany
 October 1993 – WHOI
 Wave induced abyssal recirculations in the Brazil Basin
 January 1994 – Ocean Sciences Meeting, San Diego, California
 Frontogenesis and subduction at upper ocean fronts
 January 1994 – University of Miami
 September 1994 - WHOI
 Influence of the Gulf Stream on the DWBC, throughput versus recirculation
 September 1994 – WOCE WGNM Meeting
 Dynamics of the Gulf Stream/DWBC crossover
 October 1994 – MIT
 An internal oscillation in the GS/DWBC system
 November 1994 – NEPO at URI
 June 1995 – AMS Waves and Stability Meeting, Big Sky, Montana
 Frontal subduction and cross front exchange
 November 1994 – WHOI
 Frontal process studies
 February 1995 – NRL NOMP PI Meeting
 A low frequency oscillation in the GS/DWBC System
 February 1995 – NRL DAMEE Meeting, Big Sky, Montana
 Mid-latitude interactions between the wind and thermohaline driven circulations
 June 1995 – NCAR
 July 1995 – WHOI
 March 1996 - RSMAS
 Baroclinic jets in confluent flow
 January 1996 – URI
 January 1996 – Scripps
 January 1996 -UW
 March 1996 – RSMAS
 March 1996 – FSU
 November 1996 – WHOI
 November 1996 – GFDL
 November 1996 – LDGO
 March 1997 – Tokyo University
 Dynamics of mid-latitude interactions between LSW and the Gulf Stream system: idealized modelling studies
 May 1996 - WHOI/ACCP

Subduction and ventilation of LWS
June 1996 – O-CLIVAR, San Antonio, Texas

Dynamics of the GS/DWBC crossover
September 1996 - WHOI

Interactions between Labrador Sea water and the Gulf Stream in the North Atlantic
February 1997 – Tohoku National Marine Fisheries Institute, Shioyama, Japan

Mesoscale variability in Denmark Strait: The PV outflow hypothesis
April 1997 – EGS, Vienna, Austria

On the spread of Labrador Sea water
November 1997 – MIT

Large- and frontal-scale subduction in the Northeast Atlantic
January 1998 – CANIGO Meeting, Lisbon, Portugal (invited)

A simple model of the large-scale circulation of Mediterranean water and Labrador Sea water
February 1998 – Ocean Sciences Meeting, San Diego, CA

Upper ocean heat budget during the subduction experiment
June 1998 - CSM Workshop, Breckenridge, Colorado

Ocean age tracers and ventilation
December 1998 – MIT

Modelling the upper ocean heat budget and subduction in the Northeast Atlantic
January 1999 – NCAR

Boundary convection, meridional overturning, and the structure of the Subpolar gyre
May 1999 – WHOI

How does dense water sink?
May 1999 – Marginal Seas Meeting, Stennis, Mississippi
June 1999 – CSM Workshop, Breckenridge, Colorado

Generation of strong mesoscale eddies by weak ocean gyres
September 1999 – MIT
October 1999 – NCAR

Boundary convection and meridional overturning
June 1999 – AGU

An overview of ACCE modelling and data assimilation
June 1999 – AGU

Large-scale circulations forced by mixing near topography
November 1999 – DBE Workshop
January 2000 – WHOI

Boundary currents and the thermohaline circulation
January 2000 – Ocean Sciences Meeting, San Antonio, Texas (invited)

Generation of strong mesoscale eddies by weak ocean gyres
January 2000 – Ocean Sciences Meeting, San Antonio, Texas

Large-scale circulations forced by mixing near boundaries
February 2000 – CSIRO

Large-scale circulations forced by mixing over topography
April 2000 - CSIRO

On the baroclinic structure of the Indonesian throughflow
October 2002 – IAPSO Argentina

Wind- and buoyancy-driven exchange in two strait marginal seas
October 2002 – IAPSO Argentina

Wind-driven recirculations and exchange in the Labrador and Irminger Seas
January 2002 – WHOI
January 2002 – URI

On the thermohaline circulation in semi-enclosed marginal seas
June 2002 – WHOI

On the thermohaline circulation in marginal seas
October 2002 – ONR-sponsored workshop on the Aegean Sea, Rhodes, Greece
October 2002 – Northeast Region ONR Progress Review
October 2003 – CKO Climate Summer School, Les Diableret, Switzerland
April 2004 – EGS, Nice, France (invited)

Deep convection east of Greenland: Atmospheric forcing and oceanic response
March 2003 – University of Maryland (invited)
April 2003 – EGS, Nice, France

Mixing near boundaries and the thermohaline circulation
April 2003 – EGS, Nice, France

Boundary currents and the thermohaline circulation in marginal seas
May 2003 – WHOI
May 2003 – MIT

The thermohaline circulation in marginal seas
May 2003 – Summer Student Fellow Lecture, WHOI

Small-scale atmospheric forcing of the ocean
November 2003 – Office of Naval Research, Washington

Reflection and transmission of equatorial Rossby waves
January 2004 – Ocean Sciences, Portland, Oregon

Heat transport in the Labrador Sea
April 2004 – EGS, Nice, France

Thermohaline circulation and water mass transformation in marginal seas.
March 2004 – Harvard University (invited)

Buoyancy-forced circulations in shallow marginal seas
September 2004 – MIT (invited)
September 2004 – WHOI PO seminar
September 2004 – Courant Institute, NYU (invited)
December 2004 – URI seminar

Circulation and water mass transformation in a model of the Chukchi Sea
October 2005 – University of Washington
October 2005 – University of Alaska
October 2005 – WHOI
February 2006 – Ocean Sciences Meeting, Honolulu, Hawaii
October 2006 – AOMIP Meeting, Woods Hole, Massachusetts

Relative influences of mean and eddy heat transport
October 2005 – MIT

Impact of convection in the Labrador Sea on the North Atlantic meridional overturning circulation
May 2006 – Gothenburg University, Sweden
June 2006 – Stockholm University, Sweden

Aspects of wind stress/sea surface temperature coupling on the oceanic mesoscale
August 2006 – Office of Naval Research, Washington

Aspects of air-sea coupling on the oceanic mesoscale
October 2006 – WHOI PO seminar

Regional modeling of the Chukchi Sea and shelfbreak jet
April 2007- MIT

Western Arctic shelfbreak eddies: Formation and transport
April 2007 – WHOI PO seminar
September 2007- The Netherlands Center for Climate Research Summer School on Physical Oceanography
November 2007 – University of Rhode Island

Lateral coupling in baroclinically unstable flows
August 2007 – WHOI Geophysical Fluid Dynamics

Low-frequency interaction between horizontal and overturning gyres in the ocean
September 2008 – WHOI
November 2008 – Geophysical Fluid Dynamics Laboratory
December 2008 – AGU, San Francisco, CA (invited)

Wind-driven circulation and exchange in the western Arctic
January 2009 – AOMIP PI Meeting, WHOI (invited)

Eddies and deep ocean convection
April 2009 – CLIVAR Working Group on Ocean Modeling meeting on mesoscale eddies, Exeter, England (invited)

Principal lecturer, The Netherlands Center for Climate Research Summer School on Physical Oceanography, September 2007

Lecturer, Summer School on Buoyancy-Driven Flows, Aosta, Italy, June 2010 (invited)

Non-local topographic influences on deep convection
March 2010 – University of Bergen, Bergen, Norway (invited)

On the heat transport and overturning circulation in marginal seas
May 2010 – CLIVAR working group meeting on Western Boundary Currents, Qingdao, China

Shelf/basin exchange
October 2010 – NSF visit to WHOI
October 2010- AOMIP Meeting

Mesoscale eddy influences on meridional heat transport and meridional overturning circulation
December 2010 – WHOI PO seminar

On the role of eddies in meridional heat transport and the meridional overturning circulation
March 2011 – URI (invited)
April 2011 – EGU (invited)

Influences of precipitation on water mass transformation and deep convection

October 2011 – MIT
 November 2011 – University of Bergen, Bergen, Norway (invited)
 November 2011 – THOR meeting, Bergen, Norway (invited)
 November 2011 – University of Oslo, Oslo, Norway
 January 2012 – WHOI
 February 2012 – Ocean Sciences Meeting, Salt Lake City, Utah (invited)
 May 2012 – Utrecht University, The Netherlands (invited)

Dynamics of downwelling

November 2011 – University of Bergen, Bergen, Norway (invited)

Western Arctic shelfbreak eddies

September 2012 – ONR briefing at WHOI

On the circulation of Atlantic water in the Arctic Ocean

March 2013 – WHOI

April 2013 – MIT

February 2014 – Ocean Sciences Meeting, Honolulu, HI

A turbulent model of the Arctic Ocean

July 2013 – WHOI Geophysical Fluid Dynamics (GFD) Summer School

Boundary current instabilities in the Arctic

October 2013 – IASC Meeting (invited)

A simple model for the halocline and circulation of Atlantic water in the Arctic Ocean

February 2014 – Ocean Sciences Meeting, Honolulu, HI

Response of the MOC to time-dependent forcing

October 2014 - WHOI

Forced transients in the MOC

February 2015 – University of Hawaii

September 2015 – AMOC PI Meeting, Seattle, WA

On the construction of conceptual models

September 2015 – NORTH PI Meeting, University of Bergen, Norway (invited)

Fate of Atlantic water in the Arctic Ocean

October 2015 – IASC Meeting on an Ice Free Arctic, WHOI, (invited)

On the circulation of Atlantic water and maintenance of the halocline in the Arctic

April 2015 – Arctic Science Summit Week, Toyama, Japan (invited)

Downfront winds in a coastal environment

July 2015 – SYNBIOS Meeting, Paris France

Coupled ocean/atmosphere decay scale of cold SST along upwelling eastern boundaries

March 2016 – University of Bergen (invited)

April 2016 – WHOI PO Department seminar

Ocean modeling of the Iceland and Greenland Seas

May 2016 – Iceland/Greenland Sea PI Meeting, Reykjavik, Iceland (invited)

Air-sea coupling and offshore decay scale in wind-driven eastern boundary regions

February 2017 – SUNY Stony Brook (invited)

Katabatic wind-driven exchange in fjords

January 2017 – US AMOC TT3 (invited webinar)