**Michael A. Spall**

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Woods Hole Oceanographic Institution Home page: whoi.edu/science/PO/people/mspall/index.html

Woods Hole, MA 02543-1535

**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

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2007

Associate Editor, *Journal of Geophysical Research: Oceans*, 19992004

Guest editor, Special Issue on Ocean Fronts, *Dynamics of Atmospheres and Oceans,* 2002

Editor, *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-present

Member, AMOC Executive Committee, 2017-present

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

**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)

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/OUC 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

External Examiner, PhD defense, Renske Gelderloos, Utrecht University, 2012

Atlantic Meridional Overturning Circulation Program (AMOC) Science Team 2012-2013

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

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

Member, External Selections Committee University of Gothenburg, 2018

**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: Date and Degree:**

Huai-Min Zhang 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

Madeleine Youngs 2017-present

**Advising:**

Julie Deshayes (co-advisor) 2006, PhD

Ted Durland (co-advisor) 2006, PhD

Hristina Hristova 2009, PhD

Jinbo Wang (co-advisor) 2011, PhD

Mahdi Ben-Jelloul (co-advisor) -

Jason Goodman 2001, PhD

Georgy Manucharyan 2014, PhD

David Nieves 2016, PhD

Peigen Lin (co-advisor) 2017-present

**Thesis Defense Chair:**

Natalia Beliakova 1999, PhD

Jubao Zhang 1999, PhD

Ying Zhang 2011, PhD

**External Examiner PhD Defense**

Olaf Dahl 2008, PhD

Renske Gelderloos 2012, PhD

**Visiting Student Sponsor: Date:**

Masachika Masujima (U. Tokyo) 2005

Hannah Longworth (Southampton) 2005

Erwin Lambert (U. Bergen) 2016

Carina Bringedal (U. Bergen) 2016

**Summer Student Fellows:**

Anne-Francoise Weyns 1994

Amanda O’Rourke 2010

Yuki Yasuda (University of Tokyo) 2013

**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 2016-2018.

**PAPERS IN REFEREED JOURNALS AND BOOKS:**

Author or co-author of over 100 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.

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 hybrid coordinate open ocean 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.

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.

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.

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.

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.

Spall, M. A., 1993. Variability of sea surface salinity in stochastically forced systems. *Climate Dynamics*, **8**, 151–160, doi: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.

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.

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.

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.

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.

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.

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.

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.

Spall, M. A., and D. C. Chapman, 1998. On the efficiency of baroclinic eddy heat transport across narrow fronts. *Journal of Physical Oceanography*, **28**(11), 22752287, doi: http://dx.doi.org/10.1175/1520-0485(1998)028<2275:OTEOBE>2.0.CO;2.

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.

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.

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.

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.

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.

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.

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.

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.

Spall, M. A., 2003. 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.

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.

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/JCLI4234.1Spall, 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. deSzoeke, 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.

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, doi: http://dx.doi.org/10.1175/2007JPO3829.1.

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 Lett*ers, **35**, L18614, doi: 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.

Durland, T. S., M. A. Spall, and J. Pedlosky, 2009. Response to a steady poleward outflow, Part II: Oscillations and eddies. *Journal of Physical Oceanography*, **39**(7), 1551-1573 doi: http://dx.doi.org/10.1175/2008JPO4152.1.

Deshayes, J., F. Straneo, and M. Spall, 2009. Mechanisms of variability in a convective basin. *Journal of Marine Research*, **67**(3) 273-303, doi: http://dx.doi.org/10.1357/002224009789954757.

Spall, M. A., 2010. Non-local topographic influences on deep convection: An idealized model for the Nordic Seas. *Ocean Modeling*, **32**, 72-85, doi:10.1016/j.ocemod.2009.10.009.

Spall, M. A., 2010. Dynamics of downwelling in an eddy-resolving convective basin. *Journal of Physical Oceanography*, **40**(10), 2341-2347. doi:10.1175/2010JPO4465.1.

Hristova, H., H. Dijkstra, and M. A. Spall, 2010. Onset of time-dependence in a double-gyre circulation: Barotropic basin modes versus classical baroclinic modes. *Journal of Marine Research*, **68**, 215-236, doi: http://dx.doi.org/10.1357/002224010793721424.

Pickart, R. S., M. A. Spall, G. W. K. Moore, T. J. Weingartner, R. A. Woodgate, K. Aagaard, and K. Shimada, 2011. Upwelling in the Alaskan Beaufort Sea: Atmospheric forcing and local versus non-local response. *Progress in Oceanography*, **88**, 78-100, doi.10.1016/j.ocean.2010.11.005.

Våge, K., R. S. Pickart, M. A. Spall, H. Valdimarsson, S. Jónsson, D. J. Torres, S. Osterhus, and T. Eldevik, 2011.  Significant role of the North Icelandic Jet in the formation of Denmark Strait overflow water.  *Nature Geosciences,* **4**, 723-727, doi:10.1038/NGEO1234.

Spall, M. A., 2011. On the role of eddies and surface forcing in the heat transport and overturning circulation in marginal seas. *Journal of Climate*, **24**, 4844-4858, doi: http://dx.doi.org/10.1175/2011JCLI4130.1.

Pedlosky, J., R. Iacono, E. Napolitano, and M. Spall, 2011.  The two-layer skirted island.  *Journal of Marine Research,* **69**, 347-382, doi:http://dx.doi.org/10.1357/002224011798765222.

Wang, J., M. A. Spall, G. R. Flierl, and P. Malanotte-Rizzoli, 2012. A new mechanism for the generation of quasi-zonal jets in the ocean. *Geophysical Research Letters*, doi:10.1029/2012GL051861.

Spall, M. A., 2012. Influences of precipitation on water mass transformation and deep convection. *Journal of Physical Oceanography*, **42**, 1684-1700, doi: http://dx.doi.org/10.1175/JPO-D-11-0230.1.

Pickart, R. S., M. A. Spall, and J. T. Mathis, 2013. Dynamics of upwelling in the Alaskan Beaufort Sea and associated shelf-basin fluxes. *Deep Sea Research* I, **76**, 35–51, http://dx.doi.org/10.1016/j.dsr.2013.01.007.

Spall, M.A., and J. Pedlosky, 2013. Interaction of Ekman layers and islands. *Journal of Physical Oceanography,* **43**, 1028-1041. doi:10.1175/JPO-D-12-0159.1.

Wang, J., M.A. Spall, G.R. Flierl, and P. Malanotte-Rizzoli, 2013. Nonlinear radiating instability of barotropic eastern boundary current. *Journal of Physical Oceanography*, **43**, 1439-1452. <http://dx.doi.org/10.1175/JPO-D-12-0174.1>

Våge, K., R.S. Pickart, M.A. Spall, G.W.K. Moore, H. Valdimarsson, D.J. Torres, S. Y. Erofeeva, J.E. Nilsen. 2013. Revised circulation scheme north of the Denmark Strait. *Deep Sea Research I.* **79**, 20-39, [doi:10.1016/j.dsr.2013.05.007](http://dx.doi.org/10.1016/j.dsr.2013.05.007).

Spall, M.A., 2013. Dense water formation around islands. *Journal of Geophysical Research: Oceans.* **118**, 2507-2519. doi: 10.1002/jgrc.20185.

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