Curriculum Vitae

Frank Otis Bryan

Oceanography Section
Climate and Global Dynamics Division / Earth and Sun Systems Laboratory
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Education

January 1986	Ph.D. in Geophysical Fluid Dynamics, Princeton University.
January 1984	M.A. in Geophysical Fluid Dynamics, Princeton University.
June 1981	B.S. (cum laude) in Atmospheric Sciences, University of Washington.

Employment

October 2009-present	Section Head
September 2005 – September 2009	Deputy Section Head
July 1996 - present	Scientist III
July 1991 - June 1996	Scientist II
October 1987 - June 1991	Scientist I Oceanography Section Climate and Global Dynamics Division National Center for Atmospheric Research Boulder, CO
December 1985 - October 1987	Postdoctoral Fellow Advanced Study Program National Center for Atmospheric Research Boulder, CO

Other Appointments

Visiting Associate Professor. Oceanography Department, Naval Postgraduate School. July 2002-June 2003.

Visiting Fellow. Program in Atmospheric and Oceanic Sciences, Princeton University. June - December, 1993.

Guest Lecturer. Friday Harbor Marine Station, University of Washington. August, 1990.

Visiting Lecturer. Cooperative Institute for Marine and Atmospheric Studies, University of Miami. February, 1988.

Refereed Publications

Bryan, F.O., S. Peacock, M.E. Maltrud, K. Lindsay and J. Dennis, 2011: Eddy induced variability in CFCs. (*in preparation*).

Trossman, D.S., L. Thompson, S. Mecking, M.J. Warner, F.O. Bryan, and S. Peacock, 2011: Observationally informed TTDs along repeat hydrographic sections in the North Atlantic and Southern Oceans. *J. Atmos. Ocean. Tech. (submitted)*.

Kirtman, B.P., C. Bitz, F. Bryan, W. Collins, J. Dennis, N. Hearn, J.L. Kinter, R. Loft, C. Rousset, L. Siqueira, C. Stan, R. Tomas and M. Vertenstein, 2011: Impact of ocean model resolution on CCSM climate simulations. *Clim. Dyn* (submitted).

Douglass, E.M., S.R. Jayne, S. Peacock, F.O. Bryan, and M.E. Maltrud, 2010: Subtropical mode water variability in a climatologically-forced model in the Northwestern Pacific Ocean. *J. Phys. Oceanogr*. (in press). doi: 10.1175/2011JPO4513.1.

McClean, J.L., D.C. Bader, F.O. Bryan, M.E. Maltrud, J.M. Dennis, A.A. Mirin, P.W. Jones, Y.Y. Kim, D.P. Ivanova, M, Vertenstein, J.S. Boyle, R.L. Jacobs, N. Norton, A. Craig, and P.H. Worley, 2011: A prototype two-decade fully-coupled fine resolution CCSM simulation. *Ocean Modelling*, doi:10.1016/jocemod.2011.02.011.

Misumi, K., D. Tsumune, Y. Yoshida, K. Uchimoto, T. Nakamura, J. Nishioka, H. Mitsudera, F. Bryan, K. Lindsay, J. Moore, and S.C. Doney, 2011: Mechanisms controlling dissolved iron distribution in the North Pacific: A model study. *J. Geophys. Res.,* **116**, G03005, doi:10.1029/2010JG001541.

Tsumune, D., M. Aoyama, K. Hirose, F. Bryan, K. Lindsay, and G. Danabasoglu, 2011: Transport of ^{137}Cs to the Southern Hemisphere in an ocean general circulation model. *Prog. Ocean.*, 89, 38-48. (doi:10.1016/j.pocean.2010.12.006)

Bryan, F.O., R. Tomas, J.M. Dennis, D.B. Chelton, N.G. Loeb, and J.L. McClean: 2010: Frontal-scale air-sea interaction in high-resolution coupled climate models. *J. Climate,* 23, 6277-6291.

Sun, D.-Z. and F. Bryan: 2010: Introduction. In: *Climate Dynamics: Why Does Climate Vary? Geophysical Monograph Series, Volume 189*, D.-Z. Sun and F. Bryan (Eds). AGU, Washington, D.C., 1-2.

Maltrud, M.E., F.O. Bryan and S. Peacock, 2010: Boundary impulse response functions in a century-long global eddying ocean simulation. *Environ. Fluid Mech.* 10, 275-295.

Griffies, S.M., C. Böning, A. Biastoch, F. Bryan, G. Danabasoglu, E. Chassignet, M.H. England, R. Gerdes, H. Haak, R.W. Hallberg, W. Hazeleger, J. Jungclauss, W.G Large, G. Madec, A. Pirani, B.L. Samuels, M. Scheinert, A.S. Gupta, C.A. Severijns, H.L. Simmons, A.-M. Treguier, M. Winton, S. Yeager, and J. Yin, 2009: Coordinated ocean-ice reference experiments (COREs). *Ocean Modelling*, **26**, 1-46.

Bryan, F.O., 2008: Introduction: Ocean modeling – Eddy or not. In: *Eddy-Resolving Ocean Modelling. Geophysical Monograph Series, Volume 177*, M.W. Hecht and H. Hasumi (Eds). AGU, Washington, D.C., 1-3.

Goes, M., I. Wainer, P.R. Gent, and F.O. Bryan, 2008: Changes in subduction in the South Atlantic Ocean during the 21st century in the CCSM3. *Geophys. Res. Lett.* **35**, L06701, doi:10.1029/2007GL032762.

Richards, K.J, H. Sasaki and F. Bryan, 2007: Jets and waves in the Pacific Ocean. In: *High Resolution Numerical Modelling of the Atmosphere and Ocean*. W. Ohfuchi and K. Hamilton (Eds) Springer, New York, 187-196.

Bryan, F.O., N. Nakashiki, Y. Yoshida, and K. Maruyama, 2007: Response of the thermohaline

circulation during different pathways toward greenhouse gas stabilization. In: *Ocean Circulation: Mechanisms and Impacts, Geophysical Monograph Series, Volume 173*, A. Schmittner, J. Chiang and S. Hemming (Eds). AGU, Washington, D.C. 351-363.

Bryan, F.O., M.W. Hecht and R.D. Smith, 2007: Resolution convergence and sensitivity studies with North Atlantic circulation models. Part I: The western boundary current system. *Ocean Modelling*, **16**(3-4), 141-159.

Weese, S.R. and F.O. Bryan, 2006: Climate impacts of systematic errors in the simulation of the path of the North Atlantic Current. *Geophys. Res. Lett.* **33**, L19708, doi:10.1029/2006GL027669.

Nakashiki, N., D.-H. Kim, F.O. Bryan, Y. Yoshida, D. Tsumune, K. Maruyama, H. Kitabata, 2006: Recovery of the thermohaline circulation and sea ice area under CO_2 stabilization and overshoot scenarios. *Ocean Modelling*, **15**, 200-217.

Bryan, F.O., G. Danabasoglu, P.R. Gent, K. Lindsay, 2006: Changes in ocean ventilation during the 21st century in CCSM3. *Ocean Modelling*, **15**, 141-156.

Gent, P.R., F.O. Bryan, D. Tsumune, K. Lindsay, G. Danabasoglu, M. Hecht and S.C. Doney, 2006: Ocean chlorofluorocarbon and heat uptake during the twentieth century in the CCSM3. *J. Climate*, **19**, 2366-2381.

Bryan, F.O., G. Danabasoglu, N. Nakshiki, Y. Yoshida, D.-H. Kim, J. Tsutsui, and S.C. Doney, 2006: Response of the North Atlantic thermohaline circulation and ventilation to increasing CO_2 in CCSM3. *J. Climate*, **19**, 2382-2397.

McClean, J.L., M. E. Maltrud and F.O. Bryan, 2006: Quantitative measures of the fidelity of eddy-resolving ocean models. *Oceanography*, **19**, 60-73.

Richards, K. J., N. A. Maximenko, F. O. Bryan, and H. Sasaki, 2006, Zonal jets in the Pacific Ocean, Geophys. Res. Lett., **33**, L03605, doi:10.1029/2005GL024645.

Kim, D.-H., N. Nakashiki, Y. Yoshida, K. Maruyama, and F.O. Bryan, 2005: Regional cooling due to global warming in the ensemble simulation of SRES A1B scenario. *Geophys. Res. Lett.*, **32**, doi 10.1029/2005GL023708.

Kim, D.-H., N. Nakashiki, D. Tsumune, Y. Yoshida, K. Maruyama and F.O. Bryan, 2005: Ocean climate change in the western North Pacific under multi-century three member ensemble predictions. *J. Korean Meteor. Soc.,* **41**, 239-247.

Yoshida, Y., K. Maruyama, J. Tsutsui, N. Nakashiki, F.O. Bryan, M. Blackmon, B.A. Boville, and R.D. Smith, 2005: Multi-century ensemble global warming predictions using the Community Climate System Model (CCSM3). *J. Earth Simulator*, **3**, 1-9.

Jayne, S.R., J. M. Wahr and F. O. Bryan, 2003: Observing ocean heat content using satellite gravity and altimetry. *J. Geophys. Res.*, **108**, doi:10.1029/2002JC001619.

Wahr, J.M., S.R. Jayne, and F.O. Bryan, 2002: A method of inferring deep ocean currents from satellite measurements of time variable gravity. *J. Geophys. Res.*, **107**, doi:10.1029/2001JC001274.

Davey, M.K., (and 35 co-authors), 2002: STOIC: a study of coupled model climatology and variability in tropical ocean regions. *Clim. Dyn.*, **18**, 403-420.

Blackmon, M. et al, 2001: The Community Climate System Model. *Bull. Amer. Met. Soc.*, **82**, 2357-2376.

Wood, R.A. and F.O. Bryan, 2001: Coupled ocean-atmosphere models. In: *Ocean Circulation and Climate*. J. Church and G. Siedler (Eds), 79-96.

Griffies, S.M., C. Böning, F.O. Bryan, E.P. Chassignet, R. Gerdes, H. Hasumi, A. Hirst, A.-M. Tregueir, and D. Webb, 2001: Developments in ocean climate modelling. *Ocean Modelling*, **2**, 123-192.

Large, W.G., G. Danabasoglu, J.C. McWilliams, P.R. Gent, and F.O. Bryan, 2001: Equatorial circulation of a global ocean climate model with anisotropic viscosity. *J. Phys. Oceanogr.*, **31**, 518-536

Gent, P.R., W.G. Large, and F.O. Bryan, 2001: What sets the mean transport through Drake Passage? *J. Geophys. Res.,* **106**, 2693-2712.

Boville, B.A., J.T. Kiehl, P.J. Rasch, and F.O. Bryan, 2001: Improvements to the NCAR CSM-1 for transient climate simulations. *J. Climate*, **14**, 164-179.

Church, J.A., (and 36 co-authors), 2001: Changes in Sea Level. In: *Climate Change 2001: The Scientific Basis*. J. T. Houghton, Y. Ding, D. J. Griggs, M. Noguer, P. J. van der Linden, x. Dai, K. Maskell, C. A. Johnson (Eds), Cambridge University Press. Cambridge. 639-695.

Smith, R.D., M.E. Maltrud, F.O. Bryan and M.W. Hecht, 2000: Numerical simulation of the North Atlantic Ocean at 1/10°. *J. Phys. Oceanogr.* **30,** 1532-1561.

Tierney, C., J. Wahr, F. Bryan, and V. Zlotnicki, 2000: Short-period oceanic circulation: Implications for satellite altimetry. *Geophys. Res. Lett.* **27**, 1255-1258.

Wainer, I., F.O. Bryan and J. Soares, 1999: Dynamics of the equatorial undercurrent in a high resolution ocean model. *J. Geophys. Res.*, **104**, 23,327-23,335.

Celaya, M., J. Wahr, and F.O. Bryan, 1999: Climate driven polar motion. *J. Geophys. Res.* **104**, 12,813-12,829

Wahr, J., M. Molenaar and F.O. Bryan, 1998: Time-variability of the Earth's gravity field: Hydrological and oceanic effects and their possible detection using GRACE. *J. Geophys. Res.* **103**, 30,205-30,229.

Doney, S.C., W.G. Large and F.O. Bryan, 1998: Surface ocean fluxes and water-mass transformation rates in the coupled NCAR Climate System Model. *J. Climate, **11***, 1420-1441.

Holland, W.R., J.C. Chow, and F.O. Bryan, 1998: Application of a third-order upwind scheme in the NCAR Ocean Model. *J. Climate*, **11**, 1487-1493.

Gent, P.R., F.O. Bryan, G. Danabasoglu, S.C. Doney, W.R. Holland, W.G. Large and J.C. McWilliams, 1998: The NCAR Climate System Model Global Ocean Component. *J. Climate*, **11**, 1287-1306.

Bryan, F.O., 1998: Climate drift in a multi-century integration of the NCAR Climate System Model. *J. Climate*. **11**, 1457-1473.

Hecht, M.W., F.O. Bryan and W.R. Holland, 1998: A consideration of four tracer advection schemes in a primitive equation model. *J. Geophys. Res.* **103**, 3301-3321.

Bryan, F.O., 1997: The axial angular momentum balance of a global ocean general circulation model. *Dynam. Atmos. Ocean.*, **25**, 191-216.

Chao, Y., A. Gangopadhyay, F.O. Bryan and W.R. Holland, 1996: Modeling the Gulf Stream system: How far from reality? *Geophys. Res. Lett.* **23**, 3155-3158.

Chassignet, E.P., L.T. Smith, R. Bleck and F.O. Bryan, 1996: A model intercomparison: Numerical simulations of the North and Equatorial Atlantic oceanic circulation in depth and isopycnal coordinates. *J. Phys. Oceangr.* **26**, 1849-1867.

Böning, C.W., F.O. Bryan, W.R Holland, and R. Döscher, 1996: Deep water formation and meridional overturning in a high-resolution model of the North Atlantic. *J. Phys. Oceanogr.* **26**, 1142-1164.

Böning, C.W. and F.O. Bryan, 1996: Large-scale transport processes in high-resolution circulation models. In: *The Warmwatersphere of the North Atlantic Ocean*. W. Krauss (Ed.) Gebrüder Borntrager. Berlin. 91-128.

Bryan, F.O., I. Wainer, and W.R. Holland, 1995: Sensitivity of the Tropical Atlantic circulation

to specification of wind stress climatology. *J. Geophys. Res.*, **100**, 24,729-24,744.
Bryan, F.O., C.W. Böning, and W.R. Holland, 1995: On the mid-latitude circulation in a high-resolution model of the North Atlantic. *J. Phys. Oceanogr.*, **25**, 289-305.
Böning, C.W., W.R. Holland, F.O. Bryan, G. Danabasoglu and J.C. McWilliams, 1995: An over-looked problem in model simulations of the thermohaline circulation and heat transport in the Atlantic Ocean. *J. Climate*, **8**, 515-523.
Holland, W.R., and F.O. Bryan, 1993: Sensitivity studies on the role of the ocean in climate change. In: *Ocean Processes in Climate Dynamics: Global and Mediterranean Examples*. P. Malanotte-Rizzoli and A.R. Robinson (Eds.), NATO ASI Series, Kluwer Academic Publishers. Dordrecht. 111-134.
Holland, W.R., and F.O. Bryan, 1993: Modeling the wind and thermohaline circulation in the North Atlantic Ocean. In: *Ocean Processes in Climate Dynamics: Global and Mediterranean Examples*. P. Malanotte-Rizzoli and A.R. Robinson (Eds.), NATO ASI Series, Kluwer Academic Publishers. Dordrecht. 135-156.
Haidvogel, D.B., and F.O. Bryan, 1992: Ocean general circulation modeling. In: *Climate System Modeling*, K. Trenberth (Ed.), Cambridge University Press. Cambridge. 371-412.
Bryan, F.O., and W.R. Holland, 1989: A high resolution simulation of the wind- and thermohaline-driven circulation in the North Atlantic Ocean. In: *Parameterization of Small Scale Processes: Proceedings of the Aha Huliko'a Hawaiian Winter Workshop*. P. Müller and D. Henderson (Eds.), Spec. Publ. 99-116 Hawaii Inst. of Geophys. Honolulu.
Bryan, F.O., 1987: Parameter sensitivity of primitive equation ocean general circulation models. *J. Phys. Oceanogr.*, **17**, 970-985.
Bryan, F.O., 1986: High latitude salinity effects and interhemispheric thermohaline circulations. *Nature*, **323**, 301-304.
Bryan, F.O, and A.H. Oort, 1984: Seasonal variation of the global water balance based on aerological data. *J. Geophys. Res.*, **89**, 11,717-11,730.

Other Publications

Kirtman, B.P., C. Bitz, F. Bryan, W. Collins, J. Dennis, N. Hearn, J.L. Kinter, R. Loft, C. Rousset, L. Siquiera, C. Stan, R. Tomas, and M. Vertenstein, 2011: Impact of ocean model resolution on CCSM climate simulations. U.S. CLIVAR Variations, 9, 14.
Schmitt, R., F. Bingham, F.O. Bryan, J. Carton, Y. Chao, A.L. Gordon, G. Lagerloef, and S. Riser, 2010: Salinity Processes in the Upper-Ocean Regional Study (SPURS). Whitepaper Prepared NASA Physical Oceanography Program. http://spurs.jpl.nasa.gov
Smith, R., P. Jones, B. Briegleb, F. Bryan, G. Danabasoglu, J. Dennis, J. Dukowicz, C. Eden, B. Fox-Kemper, P. Gent, M. Hecht, S. Jayne, M. Jochum, W. large, K. Lindsay, M. Maltrud, N. Norton, S. Peacock, M. Vertenstein, and S. Yeager, 2010: The Parallel Ocean Program (POP) Reference Manual. Los Alamos National Laboratory Technical Report LAUR-10-01853.
Maltrud, M.E., F.O. Bryan, M.W. Hecht, E.C. Hunke, D. Ivanova, J.L. McClean, and S. Peacock, 2008: Global ocean modeling in the eddying regime using POP. CLIVAR Exchanges **13**(1), 5-8.
Bryan, F.O. (2006) Petascale computing for geosciences research. *EOS,* **87**(36), 362.
Bryan, F.O. et al, 2005: Establishing a Petascale Collaboratory for the Geosciences: Scientific Frontiers. A Report to the Geosciences Community. UCAR/JOSS. 80 pp.
Loft, R. et al, 2005: Establishing a Petascale Collaboratory for the Geosciences: Technical and Budgetary Prospectus. A Report to the Geosciences Community. UCAR/JOSS. 56 pp.
Gent, P., F. Bryan, S. Doney, W. Large, 1999: A perspective on the ocean component of climate

models. *CLIVAR Exchanges,* **4**(4), 11-14. CLIVAR International Project Office, Southampton.
Bryan, F.O. and R.D. Smith, 1998: Modelling the North Atlantic circulation: From eddy-permitting to eddy-resolving. *International WOCE Newsletter*. **33**, 12-14. WOCE International Project Office, Southampton.
Bryan, F.O. and P.R. Gent, 1997: Progress in coupled climate system modeling. In: *1997 U.S. WOCE Report. U.S. WOCE Implementation Report Number 9,* U.S. WOCE Office, College Station, TX.
Gent, P.R and F.O. Bryan, 1997: The NCAR Climate System Model. *International WOCE Newsletter*. **26**, 15-17. WOCE International Project Office, Southampton.
Bryan, F.O., B.G. Kauffman, W.G. Large and P.R. Gent, 1996: The NCAR CSM Flux Coupler. *NCAR/TN-424+STR*. National Center for Atmospheric Research.
Chassignet, E.P., L.T. Smith, R. Bleck and F.O. Bryan, 1996: Numerical simulations of the North and Equatorial Atlantic oceanic circulation-A model intercomparison: In: *1996 U.S. WOCE Report. U.S. WOCE Implementation Report Number 8,* U.S. WOCE Office, College Station, TX.
Böning, C.W., F.O. Bryan, and W.R Holland, 1993: Modelling the subpolar North Atlantic. In: *The North Atlantic Current System: A Scientific Report*. P. Malanotte-Rizzoli and T.Rossby (Eds.).
Holland, W.R., F.O. Bryan and D.L. Williamson, 1992: Interaction of the Atlantic Ocean and the global atmosphere on subseasonal to decadal time scales. In: *The Atlantic Climate Change Program. NOAA Climate and Global Change Program Special Report Number 7*. National Oceanic and Atmospheric Administration.
Bryan, F., B. Kauffman, M. Kessel, and T. Scheitlin, 1990: OceanVU design document: A discussion of system design decisions. Unpublished manuscript.
Bryan, F.O and W.R. Holland, 1989: The first CME Experiment. In: T*he U.S. Contribution to WOCE Numerical Modeling. U.S. WOCE Planning Report Number 14*. U.S. WOCE Office.
Bryan, F. and W. Holland, 1988: Progress in the US-WOCE Ocean Community Modelling Effort. *WOCE Newsletter Number 6,* WOCE International Planning Office.
Bryan, F. and W. Holland, 1988: Current Status of the Ocean Community Modeling Effort. In: *Global Ocean Prediction Systems. INO Report 89-6*. Institute for Naval Oceanography.
Bryan, F. and W. Holland, 1988: The WOCE Community Modeling Effort. In: *Atmospheric Forcing of Ocean Circulation. INO Report 89-1*. Institute for Naval Oceanography.
Bryan, F., 1986: Multiple Equilibria and interhemispheric thermohaline circulations. In: *A Meeting on the Theory of the Ocean General Circulation*. Joint Institute for Study of Atmosphere and Ocean, University of Washington.
Bryan, F.O., 1986: Maintenance and Variability of the Thermohaline Circulation. *Ph.D. Thesis*, Princeton University, Princeton, NJ.

Recent Lectures and Presentations.

Ocean weather, ocean heat uptake, and transient climate change. Stephen H. Schneider Symposium, Boulder, 24 August 2011.
Salinity budgets of isohaline bounded volumes in models and observations. Aquarius/SAC-D Science Team Meeting. Seattle, 19 July 2010.
Quantifying the global distribution of mixing by ocean mesoscale eddies. Ocean Sciences Meeting, Portland, 23 February 2010.
A process study strategy. NASA Salinity Field Program Planning Meeting, Pasadena, 1

December 2009.

Multi-scale interactions in the salinity maximum region. NASA Salinity Field Program Planning Meeting, Pasadena, 1 December 2009.

How to exploit the temporal and spatial sampling of sea surface salinity from Aquarius. NASA/CONAE 5th Aquarius/SAC-D Science Meeting, Buenos Aires, Argentina, 22 October 2009.

Tracer transport in eddy resolving global ocean simulations. CLIVAR WGOMD Workshop on Ocean Mesoscale Eddies. Exeter, United Kingdom, 27 April 2009.

Frontal scale air-sea interaction in high-resolution versions of the Community Climate System Model. US CLIVAR Western Boundary Current Workshop. 15 January 2009.

The global ocean transit time distribution computed with an eddy rich general circulation model. AGU Fall Meeting, San Francisco, 16 December 2008.

An ensemble of CFC-11 tracer distributions from a global eddying ocean circulation model. AGU Fall Meeting, San Francisco, 16 December 2008.

Tracer based ages, transit time distributions, and water mass composition: Observational and computational examples. Univ. Colorado, 17 November 2008.

The global ocean transit time distribution computed with an eddy rich general circulation model. AGU/ASLO/TOS Ocean Sciences Meeting. Orlando, 6 March 2008.

International Committee Activities

World Climate Research Program Working Group on Ocean Model Development. 1999-2005.

International Association of Geodesy Special Study Group 5.173 "Interaction of the Atmosphere and Oceans with the Earth's Rotational Dynamics" 1995-1999.

National Committee Activities

NASA Salinity Science Team, 2010-present.

U.S. CLIVAR Process Study and Model Improvement Panel. 2008-2010.

Chair, Ad Hoc Committee for a Petascale Earth System Collaboratory. 2004-2005.

Community Climate System Model Scientific Steering Committee. 1998-2000.

Executive Committee, U.S. WOCE Working Group on Numerical Modeling. 1989-1996.

U.S. WOCE Advisory Group for Model Based Air-Sea Flux Estimates 1988-1996.

NCAR Committee Activities

NCAR Data Center Project Panel. 2005-2006.

NCAR Supercomputer Benchmarking Panel. 1999-2001.

NCAR High Performance Scientific Simulation Strategic Planning Committee. 1999-2000.

Other Community Service

Editor (2009-present), Editor in Chief (2009-2010), Journal of Geophysical Research-Oceans.

Tenure committee, Woods Hole Oceanographic Institution. 2009.

Convener, Town Meeting on Establishing a Petascale Collaboratory for the Geosciences. AMS Annual Meeting, San Diego, January 2005.

Convener, Town Meeting on Establishing a Petascale Collaboratory for the Geosciences. AGU Fall Meeting, San Francisco, December 2004.

Panelist, NSF Physical Oceanography Program, May 2004.

Coordinator, WCRP Pilot Ocean Model Intercomparison Project (POMIP), 2001-2004.

Co-Organizer, WOCE Community Modeling Effort Workshops, 1988 and 1989.

Contributing Author, IPCC Third Assessment Report, 2001.

Expert Reviewer, IPCC Fourth Assessment Report, 2005.

Proposal reviewer for: NSF, DOE, NOAA, NASA, NCAR/SCD, Maine Science and Technology Foundation, CFACS (Canada), US Civilian Research & Development Foundation, NERC (United Kingdom), NWO (Netherlands).

Manuscript reviewer for: *Academic Press, Atmosphere-Ocean, Climate Change, Climate Dynamics, Deep Sea Research, Dynamics of Atmospheres and Oceans, EOS, Geophysical Research Letters, J. Atmospheric Sciences, J. Climate, J. Geophysical Research, J. Marine Research, J. Marine Systems, J. Physical Oceanography, Meterologische Zeitschrift, Monthly Weather Review, National Research Council, Nature, Ocean Modelling, Oceanography Magazine, Oxford University Press, Paleoceanography, Progress in Oceanography, Science, Supercomputing'95, Tellus.*

Students Supervised

Mery Molenaar (Masters Thesis Committee), Department of Physics, University of Colorado.
Eric Leuliette (Ph.D. Thesis Committee), Department of Physics, University of Colorado.
Scott Bachman (Ph.D. Committee), Department of Atmospheric and Oceanic Sciences, University of Colorado
Stephen Yeager (Ph.D. Committee), Department of Atmospheric and Oceanic Sciences, University of Colorado

Postdocs Supervised

Ilana Wainer
Dailin Wang
Steve Jayne
Daisuke Tsumune
Kazuhiro Misumi

Professional Memberships

American Meteorological Society
American Geophysical Union
The Oceanography Society

Education and Outreach

Lunchtime science discussion group leader, Bear Creek Elementary School, 2007-2008

25 October 2011