

PUBLICATIONS

James C. McWilliams

Department of Atmospheric and Oceanic Sciences
Institute of Geophysics and Planetary Physics
University of California, Los Angeles
Los Angeles, CA 90095-1565

Office: (310)206-2829; Fax: (310)206-5219; Email: jcm@atmos.ucla.edu

McWilliams, J.C., 1972: Observations of kinetic energy correspondence in the internal wave field. *Deep-Sea Res.* **19**, 793-811. doi:10.1016/0011-7471(72)90099-X

McWilliams, J.C., 1974: Forced transient flow and small scale topography. *Geophys. Fluid Dyn.* **6**, 49-79. doi:10.1080/03091927409365787

McWilliams, J.C., & A.R. Robinson, 1974: A wave analysis of the Polygon array in the tropical Atlantic. *Deep-Sea Res.* **21**, 359-368. doi:10.1016/0011-7471(74)90040-0

Robinson, A.R., & J.C. McWilliams, 1974: The baroclinic instability of the open ocean. *J. Phys. Ocean.* **14**, 281-294. doi:10.1175/1520-0485(1974)004j0281:TBIOTO;2.0.CO;2

McWilliams, J.C., & G.R. Flierl, 1976: Optimal, quasi-geostrophic wave analyses of MODE array data. *Deep-Sea Res.* **23**, 285-300. doi:10.1016/0011-7471(76)90871-8

McWilliams, J.C., 1976: Large-scale inhomogeneities and mesoscale ocean waves: A single, stable wave field. *J. Mar. Res.* **34**, 423-456.

McWilliams, J.C. 1976: Maps from the MODE experiment. I. Geostrophic streamfunction. *J. Phys. Ocean.* **6**, 810-827. doi:10.1175/1520-0485(1976)006<0810:MFTMOD>2.0.CO;2

McWilliams, J.C., 1976: Maps from the MODE experiment. II. Potential vorticity and its conservation. *J. Phys. Ocean.* **6**, 828-846.
doi:10.1175/1520-0485(1976)006<0828:MFTMOD>2.0.CO;2

McWilliams, J.C., 1976: Mapping the weather in the sea. *Oceanus* **19**, 77-81.

McWilliams, J.C., 1977: On the large scale circulation of the ocean: A discussion for the unfamiliar. In: *Ocean Sound Scattering Prediction*, N.R. Anderson & B.J. Zahuranec, eds., Plenum Press, New York, 723-747.

Flierl, G.R., & J.C. McWilliams, 1977: On the sampling requirements for measuring moments of eddy variability. *J. Mar. Res.* **35**, 797-820.

McWilliams, J.C., 1977: A note on a consistent quasigeostrophic model in a multiply connected domain. *Dyn. Atmos. Oceans* **1**, 427-441. doi:10.1016/0377-0265(77)90002-1

McWilliams, J.C., 1977: On a class of stable, slightly geostrophic mean gyres. *Dyn. Atmos. Oceans* **2**, 19-28. doi:10.1016/0377-0265(77)90013-6

- McWilliams, J.C., 1978: Stable jet modes: A special case of eddy and mean flow interaction. *J. Phys. Ocean.* **8**, 344-362. doi:10.1175/1520-0485(1978)008<0344:SJMASC>2.0.CO;2
- McWilliams, J.C., & P.R. Gent, 1978: A coupled air and sea model for the Tropical Pacific. *J. Atmos. Sci.* **35**, 962-989. doi:10.1175/1520-0469(1978)035<0962:ACAASM>2.0.CO;2
- McWilliams, J.C., W.R. Holland, & J.H.S. Chow, 1978: A description of numerical Antarctic Circumpolar Currents. *Dyn. Atmos. Oceans* **2**, 213-291. doi:10.1016/0377-0265(78)90018-0
- The MODE Group, 1978: The Mid-Ocean Dynamics Experiment. *Deep-Sea Res.* **25**, 859-910. doi:10.1016/0146-6291(78)90632-X
- McWilliams, J.C., & P.R. Gent, 1979: Corrigendum, *J. Atmos. Sci.* **36**, 181.
- McWilliams, J.C., & G.R. Flierl, 1979: On the evolution of isolated non-linear vortices. *J. Phys. Ocean.* **9**, 1155-1182. doi:10.1175/1520-0485(1979)009<1155:OTEONIN>2.0.CO;2
- McWilliams, J.C., 1979: A review of research on mesoscale ocean currents. *Rev. Geophys. and Space Phys.* **17**, 1548-1558. doi:10.1029/RG017i007p01548
- Leith, C.E., & J.C. McWilliams, 1979: The role of the oceans in climate. *Astronautics & Aeronautics, July-August*, 46-52.
- Flierl, G.F., V.D. Larichev, J.C. McWilliams, & G.M. Reznik, 1980: The dynamics of baroclinic and barotropic solitary eddies. *Dyn. Atmos. Oceans* **5**, 1-41. doi:10.1016/0377-0265(80)90009-3
- McWilliams, J.C., 1980: An application of equivalent modons to atmospheric blocking. *Dyn. Atmos. Oceans* **5**, 43-66. doi:10.1016/0377-0265(80)90010-X
- McWilliams, J.C., & C.Y. Shen, 1980: Mesoscale modal coupling. *J. Phys. Ocean.* **10**, 741-752. doi:10.1185/1520-0485(1980)010<0741:MMC>2.0.CO;2
- McWilliams, J.C., & P.R. Gent, 1980: Intermediate models of planetary circulations in the atmosphere and ocean. *J. Atmos. Sci.* **37**, 1657-1678. doi:10.1175/1520-0469(1980)037<1657:IMOPCI>2.0.CO;2
- Bretherton, F.P., & J.C. McWilliams, 1980: Estimations from irregular arrays. *Rev. Geophys. and Space Phys.* **18**, 789-812. doi:10.1029/RG018i004p00789
- McWilliams, J.C., G.R. Flierl, V.D. Larichev, & G.M. Reznik, 1981: Numerical studies of barotropic modons. *Dyn. Atmos. Oceans* **5**, 219-238. doi:10.1016/0377-0265(81)90001-14
- McWilliams, J.C., & J.H.S. Chow, 1981: Equilibrium geostrophic turbulence: I. A reference solution in a β -plane channel. *J. Phys. Ocean.* **11**, 921-949. doi:10.1175/1520-0485(1981)011<0921:EGTIAR>2
- Gent, P.R., & J.C. McWilliams, 1982: Intermediate model solutions to the Lorenz equations: Strange attractors and other phenomena. *J. Atmos. Sci.* **39**, 3-13. Corrigenda, **39** (5), 1175 [listed in Table o f Contents but journal failed to print this final page in the hard copy of the journal]. doi:10.1175/1520-0469(1982)039<0003:IMSTTL>2.0.CO:2
- McWilliams, J.C., & N.J. Zabusky, 1982: Interactions of isolated vortices. I. Modons colliding with modons. *Geophys. & Astrophys. Fluid Dyn.* **19**, 207-227. doi:10.1080/03091928208208956

- Zabusky, N.J., & J.C. McWilliams, 1982: A modulated point-vortex model for geostrophic, β -plane dynamics. *Phys. Fluids* **25**, 2175-2182. doi:10.1063/1.863709
- McWilliams, J.C., 1982: Isolated vortices in planetary fluid motions. *Proceedings of Ninth U.S. National Congress of Applied Mechanics*, Amer. Soc. of Mech. Eng., New York, NY, 283-289.
- McWilliams, J.C., E.D. Brown, H.L. Bryden, C.C. Ebbesmeyer, B.A. Elliot, R.H. Heinmiller, B.L. Hua, K.D. Leaman, E.J. Lindstrom, J.R. Luyten, S.E. McDowell, W.B. Owens, H. Perkins, J.F. Price, L. Regier, S.C. Riser, H.T. Rossby, T.B. Sanford, C.Y. Shen, B.A. Taft, & J.C. Van Leer, 1983: The local dynamics of eddies in the western North Atlantic. In: *Eddies in Marine Science*, A.R. Robinson, ed., Springer-Verlag, Berlin Heidelberg, 92-113.
- Gent, P.R., & J.C. McWilliams, 1983: Consistent balanced models in bounded and periodic domains. *Dyn. Atmos. Oceans* **7**, 67-93.
- McWilliams, J.C., 1983: Interactions of isolated vortices. II. Modon generation by monopole collision. *Geophys. & Astrophys. Fluid Dyn.* **24**, 1-22. doi:10.1080/0309192830820955
- McWilliams, J.C., 1983: On the relevance of two-dimensional turbulence to geophysical fluid motions. *J. de Mechanique Numero Special*, 83-97.
- McWilliams, J.C., 1983: On the mean dynamical balances of the Gulf Stream Recirculation Zone. *J. Mar. Res.* **41**, 427-460. doi:10.1357/00222408378519704
- Gent, P.R., & J.C. McWilliams, 1983: Regimes of validity for balanced models. *Dyn. Atmos. Oceans* **7**, 167-183.
- Gent, P.R., & J.C. McWilliams, 1983: The equatorial waves of balanced models. *J. Phys. Ocean.* **13**, 1179-1192. doi:10.1175/1520-0485(1983)013<1179:TEWOBM>2.0.CO;2
- Gent, P.R., & J.C. McWilliams, 1984: Balanced models in isentropic coordinates and the shallow water equations. *Tellus* **36A**, 166-171. doi:10.1111/j.1600-0870.1984.tb00236.x
- McWilliams, J.C., 1984: The emergence of isolated, coherent vortices in turbulent flow. *J. Fluid Mech.* **146**, 21-43. doi:10.1017/S0022112084001750
- McWilliams, J.C., 1985: Submesoscale, coherent vortices in the ocean. *Rev. Geophys.* **23**, 165-182. doi:10.1029/RG023i002p00165
- Herring, J.R., & J.C. McWilliams, 1985: Comparison of direct numerical simulation of two-dimensional turbulence with two-point closure: The effects of intermittency. *J. Fluid Mech.* **153**, 229-242. doi:10.1017/S0022112085001239
- McWilliams, J.C., 1985: A note on a uniformly valid model spanning the regimes of geostrophic and isotropic, stratified turbulence: Balanced turbulence. *J. Atmos. Sci.* **42**, 1773-1774. doi:10.1175/1520-0469(1985)042<1773:AUVMST>2.0.CO:2
- Shen, C.Y., J.C. McWilliams, B.A. Taft, C.C. Ebbesmeyer, & E.J. Lindstrom, 1986: The mesoscale spatial structure and evolution of dynamical and scalar properties observed in the Northwestern Atlantic Ocean during the POLYMODE local dynamics experiment. *J. Phys. Ocean.* **16**, 454-482. doi:10.1175/1520-0485(1986)016<0454:TMSSAE>2.0.CO:2

- Taft, B.A., C.C. Ebbesmeyer, E.J. Lindstrom, J.C. McWilliams, & C.Y. Shen, 1986: Water mass structure during the POLYMODE local dynamics experiment. *J. Phys. Ocean.* **16**, 403-426. doi:10.1175/1520-0485(1986)016<0403:WMSDTP>2.0.CO:2
- Ebbesmeyer, C.C., B.A. Taft, J.C. McWilliams, C.Y. Shen, S.C. Riser, H.T. Rossby, P.E. Biscayne, & H.G. Ostlund, 1986: Detection, structure, and origin of extreme anomalies in a western Atlantic oceanographic section. *J. Phys. Ocean.* **16**, 591-612. doi:10.1175/1520-0485(1986)016<0591:DSAOOE>2.0.CO:2
- McWilliams, J.C., W.B. Owens, & B.L. Hua, 1986: An objective analysis of the POLYMODE Local Dynamics Experiment. I. General formalism and statistical model parameters. *J. Phys. Ocean.* **16**, 483-504. doi:10.1175/1520-0485(1986)016<0483:AOAOTP>2.0.CO:2
- Hua, B.L., J.C. McWilliams, & W.B. Owens, 1986: An objective analysis of the POLYMODE Local Dynamics Experiment. II. Streamfunction and potential vorticity fields during the Intensive Period. *J. Phys. Ocean.* **16**, 506-522. doi:10.1175/1520-0485(1986)016<0483:AOAOTP>2.0.CO:2
- Gent, P.R., & J.C. McWilliams, 1986: The instability of barotropic circular vortices. *Geophys. & Astrophys. Fluid Dyn.* **35**, 209-233. doi:10.1080/03091928608245893
- McWilliams, J.C., & P.R. Gent, 1986: The evolution of sub-mesoscale, coherent vortices on the β -plane. *Geophys. & Astrophys. Fluid Dyn.* **35**, 235-255. doi:10.1080/030919286082
- McWilliams, J.C., P.R. Gent, & N.J. Norton, 1986: The evolution of balanced, low-mode vortices on the β -plane. *J. Phys. Ocean.* **16**, 838-855. doi:10.1175/1520-0485(1986)016<0838:TEOBLM>2.0.CO:2
- Large, W.G., J.C. McWilliams, & P.P. Niiler, 1986: Upper ocean thermal response to Fall forcing in the Northeast Pacific. *J. Phys. Ocean.* **16**, 1524-1550. doi:10.1175/1520-0485(1986)016<1524:UOTRTS>2.0.CO:2
- Norton, N.J., J.C. McWilliams, & P.R. Gent, 1986: A numerical model of the Balance Equations in a periodic domain and an example of balanced turbulence. *J. Comp. Phys.* **67**, 439-471.
- Melander, M.V., N.J. Zabusky, and J.C. McWilliams, 1986: A model for symmetric vortex-merger. Proceedings of the Third Army Conference on Applied Mathematics and Computing, May 1985. U.S. Department of Defense, ARO-Report 86-1, 801-817.
- Melander, M.V., J.C. McWilliams, & N.J. Zabusky, 1987: Axisymmetrization and vorticity-gradient intensification of an isolated two-dimensional vortex through filamentation. *J. Fluid Mech.* **178**, 137-159. doi:10.1017/S0022112087001150
- Melander, M.V., N.J. Zabusky, & J.C. McWilliams, 1987: Asymmetric vortex merger in two-dimensions: Which vortex is “victorious”? *Phys. Fluids* **30**, 2610-2612. doi:10.1063/1.866103
- Holland, W.R., & J.C. McWilliams, 1987: Computer modeling in physical oceanography from the global circulation to turbulence. *Phys. Today* **40**, 51-57. doi:10.1063/1.881115
- Imawaki, S., P.P. Niiler, C.H. Gautier, D. Halpern, R.A. Knox, W.G. Large, D.S. Luther, J.C. McWilliams, J.N. Moum, & C.A. Paulsen, 1988: A new method for estimating the turbulent heat flux at the bottom of the daily mixed layer. *J. Geophys. Res.* **93**, 14,005-14,012. doi:10.1029/JC093iC11

- McWilliams, J.C., 1988: Vortex generation through balanced adjustment. *J. Phys. Ocean.* **18**, 1178-1192. doi:10.1175/1520-0485(1988)<1178:VGTBA>2.0.CO;2
- Melander, M.V., N. Zabusky, & J.C. McWilliams, 1988: Symmetric vortex merger in two dimensions: Causes and conditions. *J. Fluid Mech.* **195**, 303-340. doi:10.1017/S0022112088002435
- McWilliams, J.C., 1989: Statistical properties of decaying geostrophic turbulence. *J. Fluid Mech.* **198**, 199-230. doi:10.1017/S0022112089000108
- Carton, X.J., & J.C. McWilliams, 1989: Barotropic and baroclinic instabilities of axisymmetric vortices in a quasigeostrophic model. In: *Mesoscale/Synoptic Coherent Structures in Geophysical Turbulence: Proceedings of the 20th International Liege Colloquium on Ocean Hydrodynamics*, J.C.J. Nihoul & B.M Jamart, eds., Elsevier Press, Amsterdam, The Netherlands, 225-244.
- Herring, J.R., & J.C. McWilliams (eds.), 1989: *Lecture Notes on Turbulence: Lecture Notes from the NCAR-GTP Summer School, June 1987*. World Scientific, Singapore, 371pp.
- Gent, P.R., & J.C. McWilliams, 1990: Isopycnal mixing in ocean circulation models. *J. Phys. Ocean.* **20**, 150-155. doi:10.1175/1520-0485(1990)020<0150:IMIOCM>2.0.CO;2
- McWilliams, J.C., 1990: The vortices of two-dimensional turbulence. *J. Fluid Mech.* **219**, 361-385. doi:10.1017/S0022112084001750
- McWilliams, J.C., 1990: The vortices of geostrophic turbulence. *J. Fluid Mech.* **219**, 387-404. doi:10.1017/S0022112090002993
- Treguier, A.M., & J.C. McWilliams, 1990: Topographic influences on wind-driven, stratified flow in a β -plane channel: An idealized model of the Antarctic Circumpolar Current. *J. Phys. Ocean.* **20**, 324-343. doi:10.1175/1520-0485(1990)020<0321:TIOWDS>2.0.CO;2
- McWilliams, J.C., N.J. Norton, P.R. Gent, & D.B. Haidvogel, 1990: A linear balance model of wind-driven, mid-latitude ocean circulation. *J. Phys. Ocean.* **20**, 1349-1378. doi:10.1175/1520-0485(1990)<1349:ALBMOW>2.0.CO;2
- McWilliams, J.C., 1990: A demonstration of the suppression of turbulent cascades by coherent vortices in two-dimensional turbulence. *Phys. Fluids A* **2**, 547-552. doi:10.1063/1.857755
- Verron, J., E. Hopfinger, & J.C. McWilliams, 1990: Sensitivity to initial conditions in the merging of two-layer baroclinic vortices. *Phys. Fluids A* **2**, 886-889. doi:10.1063/1.857647
- Verron, J., E. Hopfinger, & J.C. McWilliams, 1991: Merging of two-layer baroclinic vortices. In: *Turbulence and Coherent Structures*, M. Lesieur & O. Metais, eds., Kluwer Academic Publishers, Dordrecht, The Netherlands, 355-366.
- McWilliams, J., 1991: The coherent vortices of two-dimensional and geostrophic turbulence. In: *Turbulence and Coherent Structures*, M. Lesieur & O. Metais, eds., Kluwer Academic Publishers, Dordrecht, The Netherlands, 323-342.
- McWilliams, J.C., 1991: Geostrophic vortices. In: *Nonlinear Topics in Ocean Physics: Proceedings of the International School of Physics Enrico Fermi*, Course 109, Italian Physical Society. A.R. Osborne, ed., North-Holland, Elsevier Science Publishers B.V., Amsterdam, 5-50.

- Mied, R.P., J.C. McWilliams, & G.J. Lindemann, 1991: The generation and evolution of mushroom-like vortices. *J. Phys. Ocean.* **21**, 489-510. [Also, a cover photo and report in *EOS* **71**, No. 49, December 4, 1990.] doi:10.1175/1520-0485(1991)021<0489:TGAEOM>2.0.CO;2
- Weiss, J.B., & J.C. McWilliams, 1991: The nonergodicity of point vortices. *Phys. Fluids A* **3**, 835-844. doi:10.1063/1.858014
- Larichev, V.D., & J.C. McWilliams, 1991: Weakly decaying turbulence in an equivalent-barotropic fluid. *Phys. Fluids A* **3**, 938-950. doi:10.1063/1.857970
- Carnevale, G.F., J.C. McWilliams, Y. Pomeau, J.B. Weiss, & W.R. Young, 1991: Evolution of vortex statistics in two-dimensional turbulence. *Phys. Rev. Lett.* **66**, 2735-2737. doi:10.1103/PhysRevLett.66.2735
- Spall, M.A., & J.C. McWilliams, 1992: Rotational and gravitational influences on the degree of balance in the shallow-water equations. *Geophys. & Astrophys. Fluid Dyn.* **64**, 1-30. doi:10.1080/03091929.1992.9648228
- Thual, O., & J.C. McWilliams, 1992: The catastrophe structure of thermohaline convection in a two-dimensional fluid model and a comparison with low-order box models. *Geophys. & Astrophys. Fluid Dyn.* **64**, 67-95. doi:10.1080/03091929.1992.9648228
- McWilliams, J.C., & J.B. Weiss, 1992: The search for simplified models of two-dimensional, structured turbulence. In: *Nonlinear Phenomena in Atmospheric and Oceanic Sciences*, G.F. Carnevale & R.T. Pierrehumbert, eds., Institute for Mathematics and Its Applications **40**, Springer-Verlag, New York City, 207-220.
- Haidvogel, D.B., J.C. McWilliams, & P.R. Gent, 1992: Boundary current separation in a quasi-geostrophic, eddy-resolving ocean circulation model. *J. Phys. Ocean.* **22**, 882-902. doi:10.1175/1520-0485(1992)022<0882:BCSIAQ>2.0.CO;2
- Carnevale, G.F., J.C. McWilliams, Y. Pomeau, J.B. Weiss, & W.R. Young, 1992: Rates, pathways, and end-states of nonlinear evolution in decaying two-dimensional turbulence: Scaling theory vs. selective decay. *Phys. Fluids A* **4**, 1314-1316. doi:10.1063/1.858251
- McWilliams, J.C., P.C. Gallacher, C.-H. Moeng, & J.C. Wyngaard, 1993: Modeling the oceanic planetary boundary layer. In: *Large-Eddy Simulations of Complex Engineering and Geophysical Flows*, Eds. B. Galperin & S. Orszag, Cambridge University Press, Cambridge, 441-454.
- Weiss, J.B., & J.C. McWilliams, 1993: Temporal scaling behavior of decaying two-dimensional turbulence. *Phys. Fluids A* **5**, 608-621. doi:10.1063/1.858647
- Haupt, S.E., J.C. McWilliams, & J.J. Tribbia, 1993: Modons in shear flow. *J. Atmos. Sci.* **50**, 1181-1198. doi:10.1175/1520-0469(1993)050<1181:MISF>2.0.CO;2
- Kinney, R., T. Tajima, N. Petviashvili, & J.C. McWilliams, 1993: Discrete vortex representation of magnetohydrodynamics. *Phys. Rev. Lett.* **71**, 1712-1715. doi:10.1103/PhysRevLett.71.1712
- McWilliams, J.C., 1993: The delicacy of the oceanic thermohaline circulation. In: *Ice in the Climate System*, W.R. Peltier, ed., Springer Verlag, Berlin Heidelberg, 363-374.
- Milliff, R.A., & J.C. McWilliams, 1994: The evolution of boundary pressure in enclosed ocean basins.

- J. Phys. Ocean.* **24**, 1317-1338. doi:10.1175/1520-0485(1994)024<1317:TEOBPI>2.0.CO;2
- Kinney, R., T. Tajima, J.C. McWilliams, N. Petviashvili, 1994: Filamentary magnetohydrodynamic plasmas. *Phys. Plasmas* **1**, 260-280. doi:10.1063/1.870829
- McWilliams, J.C., J.B. Weiss, & I. Yavneh, 1994: Anisotropy and coherent structures in planetary turbulence. *Science* **264**, 410-413. doi:10.1126/science.264.5157.410
- Yavneh, I., & J.C. McWilliams, 1994: Breakdown of the slow manifold in the Shallow-Water Equations. *Geophys. & Astrophys. Fluid Dyn.* **75**, 131-161. doi:10.1080/03091929408203651.
- McWilliams, J.C., 1994: Statistical dynamics and coherent vortices in two-dimensional and planetary turbulence. In: *Modelling of Oceanic Vortices*, G.J.F. van Heijst, ed., Elsevier, Amsterdam, 15-24.
- Large, W.G., J.C. McWilliams, & S.C. Doney, 1994: Oceanic vertical mixing: a review and a model with a non-local K-profile boundary layer parameterization. *Rev. Geophys.* **32**, 363-403. doi:10.1029/94RG01872
- Polvani, L.M., J.C. McWilliams, M.A. Spall, & R. Ford, 1994: The coherent structures of Shallow-Water turbulence: Deformation-radius effects, cyclone/anticyclone asymmetry, and gravity-wave generation. *Chaos* **4**, 177-186. doi:10.1063/1.166002
- McWilliams, J.C., & J.B. Weiss, 1994: Anisotropic geophysical vortices. *Chaos* **4**, 305-312. doi:10.1063/1.166002
- Sullivan, P.P., J.C. McWilliams, & C.-H. Moeng, 1994: A subgrid-scale model for large-eddy simulation of planetary boundary layer flows. *Boundary-Layer Meteor.* **71**, 247-276. doi:10.1007/BF00713741
- McWilliams, J.C., & P.R. Gent, 1994: The wind-driven ocean circulation with an isopycnal-thickness mixing parameterization. *J. Phys. Ocean.* **24**, 46-65. doi:10.1175/1520-0485(1994)024<0046:TWDOCW>2.0.CO;2
- Gent, P.R., J.C. McWilliams, & C. Snyder, 1994: A note on a scaling analysis of curved fronts: The formal validity of the balance equations and semigeostrophy. *J. Atmos. Sci.* **51**, 160-163. doi:10.1175/1520-0469(1994)051<0160:SAOCFV>2.0.CO;2
- Danabasoglu, G., J.C. McWilliams, & P.R. Gent, 1994: The role of mesoscale tracer transports in the global ocean circulation. *Science* **264**, 1123-1126.
- McWilliams, J.C., 1995: Sub-grid-scale parameterizations in oceanic general circulation models. In: *Natural Climate Variability on Decade-to-Century Time Scales*, D.G. Martinson, K. Bryan, M. Ghil, M.M. Hall, T.R. Karl, E.S. Sarachik, S. Sorooshian, & L.D. Talley, eds., National Academy Press, Washington, D.C., 339-352.
- Yavneh, I., & J.C. McWilliams, 1995: Robust multigrid solution of the shallow-water balance equations. *J. Comp. Phys.* **119**, 1-25.
- Gent, P.R., J. Willebrand, T.J. McDougall, & J.C. McWilliams, 1995: Parameterizing eddy-induced tracer transports in ocean circulation models. *J. Phys. Ocean.* **25**, 463-474. doi:10.1175/1520-0485(1995)025<0463:PEITTI>2.0.CO;2
- Yano, J.-I., J.C. McWilliams, M.W. Moncrieff, & K.A. Emanuel, 1995: Hierarchical tropical cloud

- systems in an analog shallow water model. *J. Atmos. Sci.* **52**, 1723-1742. doi:10.1175/1520-0469(1995)052<1723:HTCSIA>2.0.CO;2
- Böning, C.W., W.R. Holland, F.O. Bryan, G. Danabasoglu, & J.C. McWilliams, 1995: An overlooked problem in model simulations of the thermohaline circulation and heat transport in the Atlantic Ocean. *J. Climate* **8**, 515-523. doi:10.1175/1520-0442(1995)008<008:AOPIMS>2.0.CO;2
- Saravanan, R., & J.C. McWilliams, 1995: Multiple equilibria, natural variability, and climate transitions in an idealized ocean-atmosphere model. *J. Climate* **8**, 2296-2323. doi:10.1175/1520-0442(1995)008<2296:MENVAC>2.0.CO;2
- Bush, A.B.G., J.C. McWilliams, & W.R. Peltier, 1995: The origins and evolution of imbalance in synoptic-scale baroclinic wave life cycles. *J. Atmos. Sci.* **52**, 1051-1069. doi:10.1175/1520-0469(1995)052<1051:OAEIOII>2.0.CO;2
- Danabasoglu, G., & J.C. McWilliams, 1995: Sensitivity of the global ocean circulation to parameterizations of mesoscale tracer transports. *J. Climate* **8**, 2967-2987. doi:10.11751520-0442(1995)008<2967:SOTGOC>2.0.CO;2
- Bush, A.B.G., J.C. McWilliams, & W.R. Peltier, 1995: The formation of oceanic eddies in symmetric and asymmetric jets. Part I: Early time evolution and bulk eddy transports. *J. Phys. Ocean.* **25**, 1959-1979. doi:10.1175/1520-0485(1995)025<1959:TFOOEI>2.0.CO;2
- Kinney, R., J.C. McWilliams, & T. Tajima, 1995: Coherent structures and turbulent cascades in two-dimensional magnetohydrodynamics turbulence. *Phys. Plasmas* **2**, 3623-3639. doi:10.1063/1.87106
- Baillie, C.F., J.C. McWilliams, J.B. Weiss, & I. Yavneh, 1995: Implementation and performance of a Grand Challenge 3D quasi-geostrophic multi-grid code on the Cray T3D and IBM SP2. In: *Supercomputing 95*, ACM Press, New York.
- Yano, J.-I., J.C. McWilliams, & M.W. Moncrieff, 1996: Fractality in idealized simulations of large-scale tropical cloud systems. *Mon. Weather Rev.* **124**, 838-848. doi:10.1175/1520-0493(1996)124<0838:FISIDS>2.0.CO;2
- Wang, D., W.G. Large, & J.C. McWilliams, 1996: Large-eddy simulation of the equatorial ocean boundary layer: Diurnal cycling, eddy viscosity, and horizontal rotation. *J. Geophys. Res.* **101**, 3649-3662. doi:10.1029/95JC03563
- McWilliams, J.C., G. Danabasoglu, & P.R. Gent, 1996: Tracer budgets in the Warm Water Sphere. *Tellus* **48A**, 179-192. doi:10.1034/j.1600-0870.1996.00010.x
- Julien K., S. Legg, J. McWilliams, & J. Werne, 1996: Penetrative convection in rapidly rotating flows: Preliminary results from numerical simulation. *Dyn. Atmos. Oceans* **24**, 237-249. doi:10.1016/0377-0265(95)00449-1
- Carton, X.J., & J.C. McWilliams, 1996: Nonlinear oscillatory evolution of a baroclinically unstable geostrophic vortex. *Dyn. Atmos. Oceans* **24**, 207-214.
- Bush, A.B.G., J.C. McWilliams, & W.R. Peltier, 1996: The formation of oceanic eddies in symmetric and asymmetric jets. Part II: Late time evolution and eddy dynamics. *J. Phys. Ocean.* **26**, 1092-1110. doi:10.1175/1520-0485(1996)026<1092:TFOOEI>2.0.CO;2
- Yavneh, I., & J.C. McWilliams, 1996: Multigrid solution of stably stratified flows: The quasi-

geostrophic equations. *J. Sci. Comp.* **11**, 47-69.

Ayotte, K.W., P.P. Sullivan, A. Andrén, S.C. Doney, A.A.M. Holtslag, W.G. Large, J.C. McWilliams, C.-H. Moeng, M.J. Otte, J.J. Tribbia, & J.C. Wyngaard, 1996: An evaluation of neutral and convective planetary boundary layer parameterizations relative to Large Eddy Simulations. *Boundary-Layer Meteor.* **79**, 131-175.

Milliff, R.F., W.G. Large, W.R. Holland, & J.C. McWilliams, 1996: The general circulation responses of high-resolution North Atlantic Ocean models to synthetic-scatterometer winds. *J. Phys. Ocean.* **26**, 1747-1768. doi:10.1175/1520-0485(1996)026<1747:TGCROH>2.0.CO;2

Sullivan, P.P., J.C. McWilliams, & C.-H. Moeng, 1996: A grid nesting method for large-eddy simulation of planetary boundary layer flows. *Boundary-Layer Meteor.* **80**, 167-202.

Danabasoglu, G., J.C. McWilliams, & W.G. Large, 1996: Approach to equilibrium in global ocean models. *J. Climate* **9**, 1092-1110. doi:10.1175/1520-0442(1996)009<1092:ATEIAG>2.0.CO;2

Gent, P.R., & J.C. McWilliams, 1996: Eliassen-Palm fluxes and the momentum equations in non-eddy-resolving ocean circulation models. *J. Phys. Ocean.* **26**, 2540-2546. doi:10.1175/1520-0485(1996)026<2539:EFATME>2.0.CO;2

Kubokawa, A., & J.C. McWilliams, 1996: Topographic ocean gyres: A western boundary slope. *J. Phys. Ocean.* **26**, 1468-1479. doi:10.1175/1520-0485(1996)026<1468:TOGAWB>2.0.CO;2

Julien K., S. Legg, J. McWilliams, & J. Werne, 1996: Hard turbulence in rotating Rayleigh-Benard convection. *Phys. Rev. E* **53**, R5557-R5560.

Julien K., S. Legg, J. McWilliams, & J. Werne, 1996: Rapidly rotating turbulent Rayleigh-Bénard convection. *J. Fluid Mech.* **322**, 243-273. doi:10.1017/S0022112096002789

McWilliams, J.C., 1996: Modeling the oceanic general circulation. *Annual Rev. of Fluid Mech.* **28**, 1-34.

Kinney, R., & J.C. McWilliams, 1996: Stability of magnetic vortices with flow in anisotropic magnetohydrodynamics. *Phys. Plasmas* **3**, 3583-3590. doi:10.1063/1.871949

Lin, C.-L., J.C. McWilliams, C.-H. Moeng, & P.P. Sullivan, 1996: Coherent structures and dynamics in neutrally stratified planetary boundary-layer flows. *Phys. Fluids* **8**, 2626-2639. doi:10.1063/1.869048

McWilliams, J.C., P.P. Sullivan, & C.-H. Moeng, 1997: Langmuir turbulence in the ocean. *J. Fluid Mech.* **334**, 1-30. doi:10.1017/S0022112096004375

Morel, Y., & J.C. McWilliams, 1997: Evolution of isolated interior vortices in the ocean. *J. Phys. Ocean.* **27**, 727-748. doi:10.1175/1520-0485(1997)027<0727:EOIIVI>2.0.CO;2

Yavneh, I., A.F. Shchepetkin, J.C. McWilliams, & L.P. Graves, 1997: Multigrid solution of rotating, stably stratified flows: The balance equations and their turbulent dynamics. *J. Comp. Phys.* **136**, 245-262.

Saravanan, R., & J.C. McWilliams, 1997: Stochasticity and spatial resonance in interdecadal climate fluctuations. *J. Climate* **10**, 2299-2320. doi:10.1175/1520-0442(1997)010<2299:SASRII>2.0.CO:2

Kinney, R., & J.C. McWilliams, 1997: Magnetohydrodynamics equations under anisotropic condi-

tions. *J. Plasma Phys.* **57**, 73-82.

Kinney, R.M. & J.C. McWilliams, 1997: Multiple time scales in anisotropic magnetohydrodynamics. In: *Two-Dimensional Turbulence in Plasmas and Fluids: Research Workshop, Canberra, Australia, June-July 1997*, R.L. Dewar & R.W. Griffiths, eds., AIP Conference Proceedings 414, American Institute of Physics, Woodbury, New York, 235-242.

Large, W.G., G. Danabasoglu, S.C. Doney, & J.C. McWilliams, 1997: Sensitivity to surface forcing and boundary layer mixing in a global ocean model: Annual-mean climatology. *J. Phys. Ocean.* **27**, 2418-2447. doi:10.1175/1520-0485(1997)027<2418:STSFAB>2.0.CO:2

Lin, C.-L., C.-H. Moeng, P.P. Sullivan, & J.C. McWilliams, 1997: The effect of surface roughness on flow structures in a neutrally stratified planetary boundary layer flow. *Phys. Fluids* **9**, 3225-3249. doi:10.1063/1.869439

Julien, K., J. Werne, S. Legg, & J.C. McWilliams, 1997: The effects of rotation on the global dynamics of turbulent convection. In: *Solar Convection and Oscillations and their Relationship*, F.P. Pijpers, J. Christensen-Dalsgaard & C.S. Rosenthal, eds., Kluwer Academic Publishers, Dordrecht, The Netherlands.

Julien, K., J. Werne, S. Legg, & J.C. McWilliams, 1997: The effect of rotation on convective overshoot. In: *Solar Convection and Oscillations and their Relationship*, F.P. Pijpers, J. Christensen-Dalsgaard & C.S. Rosenthal, eds., Kluwer Academic Publishers, Dordrecht, The Netherlands, 231-234.

Yano, J.-I, M.W. Moncrieff, & J.C. McWilliams, 1998: Linear stability and single-column analyses of several cumulus parameterization categories in a shallow-water model. *Q. J. Roy. Met. Soc.* **124**, 983-1005. doi:10.1002/gj.49712454715

Smyth, W.D. & J.C. McWilliams, 1998: Instability of an axisymmetric vortex in a stably stratified rotating environment. *Theor. and Comp. Fluid Dyn.* **11**, 305-322. doi:10.1007/s001620050095

Wang, D., J.C. McWilliams, & W.G. Large, 1998: Large Eddy Simulation of the diurnal cycle of deep equatorial turbulence. *J. Phys. Ocean.* **28**, 129-148. doi:10.1175/1520-0485(1998)028<0129:LESO>2.0.CO;2

Saravanan, R., & J.C. McWilliams, 1998: Advection ocean-atmosphere interaction: An analytical stochastic model with implications for decadal variability. *J. Climate* **11**, 165-188. doi:10.1175/1520-0442(1998)011<-165:AOAIAA>2.0.CO;2

Gent, P.R., F.O. Bryan, G. Danabasoglu, S.C. Doney, W.R. Holland, W.G. Large, & J.C. McWilliams, 1998: The NCAR Climate System Model global ocean component. *J. Climate* **11**, 1287-1306. doi:10.1175/1520-0442(1998)011<1287:TNCMSG>2.0.CO;2

Legg, S., J.C. McWilliams, & J. Gao, 1998: Localization of deep ocean convection by a geostrophic eddy. *J. Phys. Ocean.* **28**, 944-970. doi:10.1175/1520-0485(1998)028<0944:LODOC>2.0.CO;2

Sutyrin, G.G., J.C. McWilliams, & R. Saravanan, 1998: Co-rotating stationary states and vertical alignment of geostrophic vortices with thin cores. *J. Fluid Mech.* **357**, 321-349. doi:10.1017/S0022112098000001

Shchepetkin, A., & J.C. McWilliams, 1998: Quasi-monotone advection schemes based on explicit locally adaptive dissipation. *Mon. Weather Rev.* **126**, 1541-1580. doi:10.1175/1520-0493(1998)126<1541:QMSBAT>2.0.CO;2

- McWilliams, J.C., 1998: Oceanic general circulation models. In: *Ocean Modeling and Parameterization*, E. Chassignet & J. Verron, eds., Kluwer Academic Publishers, Dordrecht, The Netherlands, 1-44.
- McWilliams, J.C., & I. Yavneh, 1998: Fluctuation growth and instability associated with a singularity of the Balance Equations. *Phys. Fluids* **10**, 2587-2596. doi:10.1063/1.869772
- Hua, B.L., J.C. McWilliams, & P. Klein, 1998: Lagrangian acceleration in geostrophic turbulence. *J. Fluid Mech.* **366**, 87-108. doi:10.1017/S0022112098001001
- Marshall, J., F. Dobson, K. Moore, P. Rhines, M. Visbeck, E. D'Asaro, K. Bumke, S. Chang, R. Davis, K. Fischer, R. Garwood, P. Guest, R. Harcourt, C. Herbaut, T. Holt, J. Lazier, S. Legg, J. McWilliams, R. Pickart, M. Prater, I. Renfrew, F. Schott, U. Send, & W. Smethie, 1998: The Labrador Sea Deep Convection Experiment, *Bulletin Am. Meteor. Soc.* **79**, 2033-2058. doi:10.1175/1520-0477(1998)079<2033:TLSDCE>2.0.CO;2
- Weiss, J.B., A. Provenzale, & J.C. McWilliams, 1998: Lagrangian dynamics in high-dimensional point-vortex systems. *Phys. Fluids* **10**, 1929-1941. doi:10.1063/1.869709
- Kinney, R., & J.C. McWilliams, 1998: Turbulent cascades in anisotropic magnetohydrodynamics. *Phys. Rev. E* **57**, 7111-7121.
- McWilliams, J.C., I. Yavneh, M.J.P. Cullen, & P.R. Gent, 1998: The breakdown of large-scale flows in rotating, stratified fluids. *Phy. Fluids* **10**, 3178-3184. doi:10.1063/1.869844
- Berloff, P.S., & J.C. McWilliams, 1999: Large-scale, low-frequency variability in wind-driven ocean gyres. *J. Phys. Ocean.* **29**, 1925-1949. doi:10.1175/1520-0485(1999)029<2607:QDOTWB>2.0.CO;2
- McWilliams, J.C., C.-H. Moeng, & P.P. Sullivan, 1999: Turbulent fluxes and coherent structures in marine boundary layers: Investigations by Large-Eddy Simulation. In: *Air-Sea Exchange: Physics, Chemistry, Dynamics, and Statistics*, G. Geernaert, ed., 507-538.
- Julien, K., S. Legg, J.C. McWilliams, & J. Werne, 1999: Plumes in rotating convection. Part 1. Ensemble statistics and dynamical balances. *J. Fluid Mech.* **391**, 151-187. doi:10.1017/S0022112099005236
- Kinney, R.M., & J.C. McWilliams, 1999: Reduced dynamical equations for the high-latitude thermosphere: Ion drag balance. *J. Geophys. Res.* **104**, 6805-6812. doi:10.1029/1999JA900007
- McWilliams, J.C., & J.M. Restrepo, 1999: The wave-driven ocean circulation. *J. Phys. Ocean.* **29**, 2523-2540. doi:10.1175/1520-0485(1999)029<2523:TWDOC>2.0.CO;2
- Berloff, P.S., & J.C. McWilliams, 1999: Quasigeostrophic dynamics of the western boundary current. *J. Phys. Ocean.* **29**, 2607-2634. doi:10.1175/1520-0485(1999)029<2607:QDOTWB>2.0.CO;2
- Kinney, R.M., F. Coroniti, J.C. McWilliams, & P. Pritchett, 1999: Mechanisms for discrete auroral arc breakup by nonlinear Alfvén wave interaction, *J. Geophys. Res. (Space Physics)* **104**, 19931-19940. doi:10.1029/1999JA9002333
- McWilliams, J.C., J.B. Weiss, & I. Yavneh, 1999: The vortices of homogeneous geostrophic turbulence. *J. Fluid Mech.* **401**, 1-26.

- Legg, S., & J.C. McWilliams, 2000: Temperature and salinity variability in heterogeneous oceanic convection. *J. Phys. Ocean.* **30**, 1188-1206. doi:10.1175/1520-0485(2000)030<1188:TASVIH>2.0.CO;2
- Sullivan, P.P., J.C. McWilliams, & C.-H. Moeng, 2000: Simulations of turbulent flow over idealized water waves. *J. Fluid Mech.* **404**, 47-85. doi:10.1017/S0022112099006965
- Saravanan, R., G. Danabasoglu, S.C. Doney, & J.C. McWilliams, 2000: Decadal variability and predictability in the midlatitude ocean-atmosphere system. *J. Climate* **13**, 1073-1097. doi:10.1175/1520-0442(2000)013<2177:IBTAVA>2.0.CO;2
- Von Hardenberg, J., J.C. McWilliams, A. Provenzale, A. Shchepetkin, & J.B. Weiss, 2000: Vortex merging in quasigeostrophic flows. *J. Fluid Mech.* **412**, 331-353. doi:10.1017/S0022112000008442
- Tailleux, R., & J.C. McWilliams, 2000: Acceleration, creation, and depletion of wind-driven, baroclinic Rossby waves over an ocean ridge. *J. Phys. Ocean.* **30**, 2186-2213. doi:10.1175/1520-0485(2000)030<2186:ACADOW>2.0.CO;2
- McWilliams, J.C., 2000: Formulation of oceanic general circulation models. In: *General Circulation Model Development: Past, Present, and Future: Proceedings of a Symposium in honor of Professor Akio Arakawa*, D. Randall, ed., Academic Press, New York, 421-456.
- Chao, Y., M. Ghil, & J.C. McWilliams, 2000: Pacific interdecadal variability in this century's sea surface temperatures. *Geophys. Res. Lett.* **27**, 2261-2264. doi:10.1029/1999GL011324
- Bracco, A., J.C. McWilliams, G. Murante, A. Provenzale, & J.B. Weiss, 2000: Revisiting two-dimensional turbulence at millennial resolution. *Phys. Fluids* **12**, 2931-2941. doi:10.1063/1.1290391
- Kinney, R.M., B. Chandran, S. Cowley, & J.C. McWilliams, 2000: Magnetic field growth and saturation in plasmas with high Prandtl number. Part I: The two-dimensional case. *Astrophys. J.* **545**, 907-921. doi:10.1086/317824
- Danabasoglu, G., & J.C. McWilliams, 2000: An upper-ocean model for short-term climate variability. *J. Climate* **13**, 3380-3411. doi:10.1175/1520-0442(2000)013<1073:DVAPIT>2.0.CO;2
- McWilliams, J.C., & P.P. Sullivan, 2000: Vertical mixing by Langmuir circulations. *Spill Science and Technology* **6**, 225-237.
- Legg, S., & J.C. McWilliams, 2001: Convective modifications of a geostrophic eddy field. *J. Phys. Ocean.* **31**, 874-891. doi:10.1175/1520-0485(2001)031<0874:CMOAGE>2.0.CO;2
- Li, X., Y. Chao, J.C. McWilliams, & L.-L. Fu, 2001: A comparison of two vertical mixing schemes in a Pacific Ocean General Circulation Model. *J. Climate* **14**, 1377-1398. doi:10.1175/1520-0442(2001)014<1377:ACOTVM>2.0.CO;2
- Marchesiello, P., J.C. McWilliams, & A. Shchepetkin, 2001: Open boundary conditions for long-term integration of regional ocean models. *Ocean Modelling* **3**, 1-20.
- Siegel, A., J.B. Weiss, J. Toomre, J.C. McWilliams, P. Berloff, & I. Yavneh, 2001: Eddies and vortices in ocean basin dynamics. *Geophys. Res. Lett.* **28**, 3183-3186. doi:10.1029/1999GL011246
- Molemaker, M.J., J.C. McWilliams, & I. Yavneh, 2001: Instability and equilibration of centrifugally-stable stratified Taylor-Couette flow. *Phys. Rev. Lett.* **86**, 5270-5273. doi:10.1103/PhysRevLett.86.5270

- Huber, M., M. Ghil, & J.C. McWilliams, 2001: A climatology of turbulent dispersion in the troposphere. *J. Atmos. Sci.* **58**, 2377-2394. doi:10.1175/1520-0469(2001)058<2377:ACOTDI>2.0.CO;2
- Tailleux, R., & J.C. McWilliams, 2001: The effect of bottom-pressure decoupling on the speed of extratropical, baroclinic Rossby waves. *J. Phys. Ocean.* **31**, 1461-1476. doi:10.1175/1520-0485(2001)031<1461:TEOBPD>2.0.CO;2
- Legg, S., K. Julien, J. McWilliams, & J. Werne, 2001: Vertical transport by convective plumes: modification by rotation. *Phys. & Chem. of Earth* **26**, 259-262. doi:10.1016/S1464-1909(01)00003-X
- Large, W.G., G. Danabasoglu, J.C. McWilliams, P.R. Gent, & F.O. Bryan, 2001: Equatorial circulation of a global ocean climate model with anisotropic viscosity. *J. Phys. Ocean.* **31**, 518-536. doi:10.1175/1520-0485(2001)031<0518:ECOAGO>2.0.CO;2
- Yavneh, I., J.C. McWilliams, & M.J. Molemaker, 2001: Non-axisymmetric instability of centrifugally stable, stratified Taylor-Couette flow. *J. Fluid. Mech.* **448**, 1-21. doi:10.1017/S0022112001005109
- Morel, Y., & J.C. McWilliams, 2001: Effects of isopycnal and diapycnal mixing on the stability of oceanic currents. *J. Phys. Ocean.* **31**, 2280-2296. doi:10.1175/1520-0485(2001)031<2280:TNAEOA>2.0.CO;2
- McWilliams, J.C., M.J. Molemaker, & I. Yavneh, 2001: From stirring to mixing of momentum: Cascades from balanced flows to dissipation in the oceanic interior. In: *'Aha Huliko'a Proceedings: 2001*, P. Muller, ed., U. Hawaii, Honolulu, 59-66.
- McWilliams, J.C., & P.P. Sullivan, 2001: Surface-wave effects on winds and currents in marine boundary layers. In: *Fluid Mechanics and the Environment: Dynamical Approaches: A Collection of Research Papers Written in Commemoration of the 60th Birthday of Sidney Leibovich*, J. Lumley, ed., Springer-Verlag, 201-224.
- Howes, G.G., S.C. Cowley, & J.C. McWilliams, 2001: Local buoyant instability of magnetized shear flow. *Astrophys. J.* **560**, 617-629.
- Stevens, B., J. Duan, J.C. McWilliams, M. Munnich, & J.D. Neelin, 2002: Entrainment, Rayleigh friction, and boundary-layer winds over the Tropical Pacific. *J. Climate* **15**, 30-44. doi:10.1175/1520-0442(2002)015<0030:ERFAL>2.0.CO;2
- Legg, S., & J.C. McWilliams, 2002: Sampling characteristics from isobaric floats in a convective eddy field. *J. Phys. Ocean.* **32**, 527-544. doi:10.1175/1520-0485(2002)032<0527:SCFIFI>2.0.CO;2
- Berloff, P., J.C. McWilliams, & A. Bracco, 2002: Material transport in oceanic gyres. Part I: Phenomenology. *J. Phys. Ocean.* **32**, 764-796. doi:10.1175/1520-0485(2002)032<0764:MTIOGP>2.0.CO;2
- Berloff, P., & J.C. McWilliams, 2002: Material transport in oceanic gyres. Part II: Hierarchy of stochastic models. *J. Phys. Ocean.* **32**, 797-830. doi:10.1175/1520-0485(2002)032<0797:MTIOGP>2.0.CO;2
- Sullivan, P.P., & J.C. McWilliams, 2002: Turbulent flow over water waves in the presence of stratification, *Phys. Fluids* **14**, 1182-1195. doi:10.1063/1.1447915
- McWilliams, J.C., & G. Danabasoglu, 2002: Eulerian and eddy-induced meridional overturning circulations in the Tropics. *J. Phys. Ocean.* **32**, 2054-2071. doi:10.1175/1520-0485(2002)032<2054:EAEIM>2.0.CO;2

- Schekochihin, A., J. Maron, S. Cowley, & J.C. McWilliams, 2002: The small-scale structure of MHD turbulence with large magnetic Prandtl numbers. *Astrophys. J.* **576**, 806-813. doi:10.1086/341814
- Tailleux, R., & J.C. McWilliams, 2002: Energy propagation of long extratropical Rossby waves over slowly varying zonal topography. *J. Fluid Mech.* **473**, 295-319. doi:10.1017/S0022112002002422
- Yu, J.-Y., C.R. Mechoso, J.C. McWilliams, & A. Arakawa, 2002: Impacts of the Indian Ocean on the ENSO cycle. *Geophys. Res. Lett.* **29**, 46(1)-46(4). doi:10.1029/2001GL014098
- Schekochihin, A.A., S.C. Cowley, G.W. Hammett, J.L. Maron, & J.C. McWilliams, 2002: A model of nonlinear evolution and saturation of the turbulent MHD dynamo. *New J. Phys.* **4**, 84.1-84.22. doi:10.1088/1367-2630/4/1/384
- Blanke, R., C. Roy, P. Penven, S. Speich, J.C. McWilliams, & G. Nelson, 2002: Linking wind and interannual upwelling variability in a regional model of the southern Benguela. *Geophys. Res. Lett.* **29**, 41(1)-41(4). doi:10.1029/2002GL015718
- Nezlin, N.P., & J.C. McWilliams, 2003: Satellite data empirical orthogonal functions statistics, and the 1997-1998 El Niño off California. *Remote Sensing Envir.* **84**, 234-254. doi:10.1016/S0034-4257
- Smith, R.D., & J.C. McWilliams, 2003: Anisotropic horizontal viscosity for ocean models. *Ocean Modelling* **5**, 129-156. doi:10.1016/S1463-5003(02)00016-1
- Shchepetkin, A.F., & J.C. McWilliams, 2003: A method for computing horizontal pressure-gradient force in an ocean model with a non-aligned vertical coordinate. *J. Geophys. Res.* **108**, 3090 (35.1-35.34). doi:10.1029/2001JC001047
- Marchesiello, P., J.C. McWilliams, & A. Shchepetkin, 2003: Equilibrium structure and dynamics of the California Current System. *J. Phys. Ocean.* **33**, 753-783. doi:10.1175/1520-0485(2003)<753:ESADOC>2.0.CO;2
- McWilliams, J.C., 2003: Diagnostic force balance and its limits. In: *Nonlinear Processes in Geophysical Fluid Dynamics*, O.U. Velasco Fuentes, J. Sheinbaum, J. Ochoa, eds., Kluwer Academic Publishers, Dordrecht, The Netherlands, 287-304.
- Berloff, P.S., & J.C. McWilliams, 2003: Material transport in oceanic gyres. Part III: Randomized stochastic models. *J. Phys. Ocean.*, **33**, 1416-1445. doi:10.1175/1520-0485(2003)033<1416:MTIOGP>2.0.CO;2
- McWilliams, J.C., L.P. Graves, & M.T. Montgomery, 2003: A formal theory for vortex Rossby waves and vortex evolution. *Geophys. & Astrophys. Fluid Dyn.* **97**, 275-309. doi:10.1080/030919203100010869
- Laval, J.-P., B. Dubrulle, & J.C. McWilliams, 2003: Langevin models of turbulence: Renormalization group, distant interaction algorithm, or rapid distortion? *Phys. Fluids* **15**, 1327-1339. doi:10.1063/1.1564826
- Laval, J.-P., J.C. McWilliams, & B. Dubrulle, 2003: Forced stratified turbulence: Successive transitions with Reynolds number. *Phys. Rev. E* **68**, 036308/1-8. doi:10.1103/PhysRevE.68.036308
- Niiler, P.P., N.A. Maximenko, & J.C. McWilliams, 2003: Dynamically balanced absolute sea level of the global ocean derived from near-surface velocity observations. *Geophys. Res. Lett.* **30**, 7/1-7/4. doi:10.1029/2003GL018628
- Schekochihin, S.A., S.C. Cowley, S.F. Taylor, J.L. Maron, & J.C. McWilliams, 2004: From Small-

- Scale Dynamo to Isotropic MHD Turbulence. *Astrophysics and Space Science* **292**, 141-146.
- Gallego, B., P. Cessi, & J.C. McWilliams, 2004: The Antarctic Circumpolar Current in equilibrium. *J. Phys. Ocean.* **34**, 1571-1587. doi:10.1175/1520-0485(2004)034<1571:TACCIE>2.0.CO;2
- Moeng, C.-H., J.C. McWilliams, R. Rotunno, P.P. Sullivan, & J. Weil, 2004: Investigating 2D modeling of atmospheric convection in the PBL. *J. Atmos. Sci.* **61**, 889-903. doi:10.1175/1520-0469(2004)061<0889:IDMOAC>2.0.CO;2
- Sullivan, P.P., J.C. McWilliams, & W.K. Melville, 2004: The oceanic boundary layer driven by wave breaking with stochastic variability. I: Direct numerical simulation of neutrally-stratified shear flow. *J. Fluid Mech.* **507**, 143-174. doi:10.1017/S002211200400888s
- Schekochihin, A.A., S.C. Cowley, S.F. Taylor, J.L. Maron, & J.C. McWilliams, 2004: Simulations of the small-scale turbulent dynamo. *Astrophys. J.* **612**, 276-307. doi:10.1086/422547
- McWilliams, J.C., 2004: Phenomenological hunts in two-dimensional and stably stratified turbulence. In: *Atmospheric Turbulence and Mesoscale Meteorology: Scientific Research Inspired by Doug Lilly*. E. Fedorovich, B. Stevens, & R. Rotunno, eds., Cambridge University Press, Cambridge, 35-49.
- McWilliams, J.C., J.M. Restrepo, & E.M. Lane, 2004: An asymptotic theory for the interaction of waves and currents in coastal waters. *J. Fluid Mech.* **511**, 135-178. doi:10.1017/S0022112004009358
- McWilliams, J.C., J.M. Molemaker, & I. Yavneh, 2004: Ageostrophic, anticyclonic instability of a barotropic boundary current. *Phys. Fluids* **16**, 3720-3725. doi:10.1063/1.1785132
- Capet, X.J., P. Marchesiello, & J.C. McWilliams, 2004: Upwelling response to coastal wind profiles. *Geophys. Res. Lett.* **31** (13), L13311/1-L13311/4. doi:10.1029/2004GL020123
- Schekochihin, A.A., S.C. Cowley, J.L. Maron, & J.C. McWilliams, 2004: Self-similar turbulent dynamo. *Phys. Res. Lett.* **92**, 064501/1-4. doi:10.1103/PhysRevLett.92.064501
- Schekochihin, A.A., S.C. Cowley, S.F. Taylor, G.W. Hammett, J.L. Maron, & J.C. McWilliams, 2004: Saturated state of the nonlinear small-scale dynamo. *Phys. Res. Lett.* **92**, 084504/1-4. doi:10.1103/PhysRevLett.92.084504
- Maron, J.L., S.C. Cowley, & J.C. McWilliams, 2004: The non-linear magnetic cascade. *Astrophys. J.* **603**, 569-583. doi:10.1086/380504
- Schekochihin, A.A., S.C. Cowley, J.L. Maron, & J.C. McWilliams, 2004: Critical magnetic Prandtl number for small-scale dynamo. *Phys. Res. Lett.* **92**, 054502/1-4. doi:10.1103/PhysRevLett.92.054502
- Bracco, A., J. von Hardenberg, A. Provenzale, J.B. Weiss, & J.C. McWilliams, 2004: Dispersion and mixing in quasigeostrophic turbulence. *Phys. Rev. Lett.* **92**, 084501/1-4. doi:10.1103/PhysRevLett.92.084501
- Shchepetkin, A.F., & J.C. McWilliams, 2005: The Regional Oceanic Modeling System (ROMS): A split-explicit, free-surface, topography-following-coordinate oceanic model. *Ocean Modelling* **9**, 347-404. doi:10.1016/j.ocemod.2004.08.002
- Plattner, G.-K., N. Gruber, H. Frenzel, & J. C. McWilliams, 2005: Decoupling marine export production from new production. *Geophys. Res. Lett.* **32**, L11612/1-4. doi:10.1029/2005GL022660

- Molemaker, J.M., J.C. McWilliams, & I. Yavneh, 2005: Baroclinic instability and loss of balance. *J. Phys. Ocean.* **35**, 1505-1517. doi:10.1175/JPO2770.1
- Schekochihin, A., N.E.L. Haugen, A. Brandenburg, S.C. Cowley, J.L. Maron, & J.C. McWilliams, 2005: Onset of small-scale turbulent dynamo at low magnetic Prandtl numbers. *Astrophys. J. Lett.* **625**, L115-L118. doi:10.1086/431214
- Muller, P., J. McWilliams, & J. Molemaker, 2005: Routes to dissipation in the ocean: the 2D/3D turbulence conundrum. In: *Marine Turbulence: Theories, Observations and Models*, H. Baumert, J. Simpson, & J. Sundermann, eds., Cambridge University Press, Cambridge, 397-405.
- Di Lorenzo, E., A.J. Miller, N. Schneider, & J.C. McWilliams, 2005: The warming of the California Current: Dynamics, thermodynamics and ecosystem implications. *J. Phys. Ocean.* **35**, 336-362. doi:10.1175/JPO-2690.1
- Caldeira, R.M.A., P. Marchesiello, N. Nezlin, P. DiGiacomo, & J.C. McWilliams, 2005: Island wakes in the Southern California Bight. *J. Geophys. Res.* **110**, C11012 - 1-20 (text) plus 6 pages of color figures. doi:10.1029/2004JC002675.
- Sullivan, P.P., J.C. McWilliams, & W.K. Melville, 2005: Surface waves and oceanic mixing: Insights from numerical simulations with stochastic surface forcing. In: *'Aha Huliko'a Proceedings: 2005*, P. Muller, ed., U. Hawaii, Honolulu, 147-154.
- Fringer, O., J.C. McWilliams, & R.L. Street, 2006: A new hybrid model for coastal simulations. *Oceanography* **19**, 46-59.
- McWilliams, J.C., 2006: *Fundamentals of Geophysical Fluid Dynamics*. Cambridge University Press, Cambridge.
- McWilliams, J.C., 2006: Intrinsic climatic variability: An essay on modes and mechanisms of oceanic and atmospheric fluid dynamics. In: *Frontiers in the Science of Climate Modeling*, J.T. Kiehl & V. Ramanathan, eds., Cambridge University Press, Cambridge, 73-118.
- McWilliams, J.C., & E. Huckle, 2006: Ekman layer rectification, *J. Phys. Ocean.* **36**, 1646-1659. doi:10.1175/JPO2912.1
- Gruber, N., H. Frenzel, S.C. Doney, P. Marchesiello, J.C. McWilliams, J.R. Moisan, J. Oram, G.K. Plattner, & K.D. Stolzenbach, 2006: Eddy-resolving simulations of plankton ecosystem dynamics in the California Current System: Part I: Model description, evaluation, and ecosystem structure. *Deep Sea Res. I* **53**, 1483-1516. doi:10.1016/j.desr.2006.06.005
- Penven P., L. Debreu, P. Marchesiello, & J.C. McWilliams, 2006: Evaluation and application of the ROMS 1-way embedding procedure to the California Current Upwelling System. *Ocean Modelling* **12**, 157-187. doi:10.1016/j.ocemod.2005.05.002
- Li, Z., Y. Chao, & J.C. McWilliams, 2006: Computation of the streamfunction and velocity potential for limited and irregular domains. *Mon. Weather Rev.* **134**, 3384-3394. doi:10.1175/MWR3249.1
- Danabasoglu, G., W.G. Large, J.J. Tribbia, P.R. Gent, B.P. Briegleb, & J.C. McWilliams, 2006: Diurnal coupling in the tropical oceans of CCSM3. *J. Climate* **19**, 2347-2365. doi:10.1175/JCLI3739.1

- Graves, L.P., J.C. McWilliams, & M.T. Montgomery, 2006: Vortex evolution due to straining: A mechanism for dominance of strong, interior anticyclones. *Geophys. & Astrophys. Fluid Dyn.* **100**, 151-183. doi:10.1080/03091920600792041
- Kravtsov, S., W.K. Dewar, P. Berloff, J.C. McWilliams, & M. Ghil, 2006: Dynamical origin of low-frequency variability in a highly nonlinear midlatitude coupled model. *J. Climate* **19**, 6391-6408. doi:10.1175/JCLI3976.1
- Berloff, P., W. Dewar, S. Kravtsov, J. McWilliams, & M. Ghil, 2007: Ocean eddy dynamics in a coupled ocean-atmosphere model. *J. Phys. Ocean.* **37**, 1103-1121. doi:10.1175/JPO3041.1
- Blaas, M., C. Dong, P. Marchesiello, J.C. McWilliams, & K.D. Stolzenbach, 2007: Sediment transport modeling on Southern Californian shelves: A ROMS case study. *Contin. Shelf Res.* **27**, 832-853. doi:10.1016/j.csr.2006.12.003
- Doney, S.C., S. Yeager, G. Danabasoglu, W.G. Large, & J.C. McWilliams, 2007: Mechanisms governing interannual variability of upper ocean temperature in a global ocean hindcast simulation. *J. Phys. Ocean.* **37**, 1918-1938. doi:10.1175/JPO3089.1
- Dong, C., J.C. McWilliams, & A.F. Shchepetkin, 2007: Island wakes in deep water. *J. Phys. Ocean.* **37**, 962-981. doi:10.1175/JPO3047.1
- Dong, C., & J.C. McWilliams, 2007: A numerical study of island wakes in the Southern California Bight. *Cont. Shelf Res.* **27**, 1233-1248. doi:10.1016/j.csr.2007.01.016
- Iskakov, A.B., Schekochihin, A.A., S.C. Cowley, J.C. McWilliams, & M.R. Proctor, 2007: Numerical demonstration of fluctuation dynamo at low magnetic Prandtl numbers. *Phys. Rev. Lett.* **98**, 208501/1-4. doi:10.1103/PhysRevLett.98.208501
- Kanarska, Y., A. Shchepetkin, & J.C. McWilliams, 2007: Algorithm for non-hydrostatic dynamics in the Regional Oceanic Modeling System, *Ocean Modelling* **18**, 143-174. doi:10.1016/j.ocemod.2007.04.001
- Khvoles, R., J.C. McWilliams, & Z. Kizner, 2007: Non-coincidence of separatrices in two-layer modons. *Phys. Fluids* **19**, 056602 – 1-14. doi:10.1063/1.2731741
- Kizner, Z., R. Khvoles, & J.C. McWilliams, 2007: Rotating multipoles on the f - and γ -planes. *Phys. Fluids* **19**, 016603/1-13. doi:10.1063.1.2432915
- Kravtsov, S., P. Berloff, W.K. Dewar, M. Ghil, & J.C. McWilliams, 2007: A highly nonlinear mode of decadal-to-interdecadal variability in a mid-latitude ocean-atmosphere model. *Dyn. Atmos. Oceans* **43**, 123-150. doi:10.1016/j.dynatmoce.2006.08.001
- Lane, E.M., J.M. Restrepo, & J.C. McWilliams, 2007: Wave-current interaction: A comparison of radiation-stress and vortex-force representations. *J. Phys. Ocean.* **37**, 1122-1141. doi:10.1175/JPO3043.1
- McWilliams, J.C., 2007: Irreducible imprecision in atmospheric and oceanic simulations. *Proc. Nat. Acad. Sci.* **104**, 8709-8713. doi:10.1073/pnas.0702971104
- McWilliams, J.C. [with unpublished contributions from A. Bracco, X. Capet, J.-P. Laval, M.J. Molemaker, & P.P. Sullivan], 2007: Extreme events in geophysical turbulence and waves: What populates the tails of the distribution functions? In: *'Aha Huliko'a Proceedings: 2007*, P. Muller,

ed., U. Hawaii, Honolulu, 73-80.

Schekochihin, A.A., A.B. Iskakov, S.C. Cowley, J.C. McWilliams, and M.R.E. Proctor, 2007: Fluctuation dynamo and turbulent induction at low magnetic Prandtl numbers. *New J. Phys.* **9**, 300, 1-25. doi:10.1088/1367-2630/9/8/300

Sullivan, P.P., J.C. McWilliams, & W.K. Melville, 2007: Surface gravity wave effects in the oceanic boundary layer: Large Eddy Simulation with vortex force and stochastic breakers. *J. Fluid Mech.* **593**, 405-452. doi:10.1017/S002211200700897X

Capet, X., P. Klein, B.L. Hua, G. Lapeyre, & J.C. McWilliams, 2008: Surface kinetic energy transfer in SQG flows. *J. Fluid Mech.* **604**, 165-175. doi:10.1017/S0022112008001110

Capet, X., J.C. McWilliams, M.J. Molemaker, & A. Shchepetkin, 2008: Mesoscale to submesoscale transition in the California Current System. I: Flow structure, eddy flux, and observational tests. *J. Phys. Ocean.* **38**, 29-43. doi:10.1175/2007JPO3671.1

Capet, X., J.C. McWilliams, M.J. Molemaker, & A. Shchepetkin, 2008: Mesoscale to submesoscale transition in the California Current System. II: Frontal processes. *J. Phys. Ocean.* **38**, 44-64. doi:10.1175/2007JPO36721

Capet, X., F. Colas, P. Penven, P. Marchesiello, & J.C. McWilliams, 2008: Eddies in eastern-boundary subtropical upwelling systems. In: *Eddy-Resolving Ocean Modeling*, M. Hecht & H. Hasumi, eds., AGU Monograph **177**, 131-147. doi:10.1029/177GM10

Capet, X., J.C. McWilliams, M.J. Molemaker, & A. Shchepetkin, 2008: Mesoscale to submesoscale transition in the California Current System. III: Energy balance and flux. *J. Phys. Ocean.* **38**, 2256-2269. doi:10.1175/2008JPO3810.1

Carr, S.D., X.J. Capet, J.C. McWilliams, J.T. Pennington, & F.P. Chavez, 2008: The influence of diel vertical migration on zooplankton transport and recruitment in an upwelling region: Estimates from a coupled behavioral-physical model. *Fisheries Ocean.* **17**, 1-15. doi:10.1111/j.1365-2419.2007.00447.x

Colas, F., X. Capet, J.C. McWilliams, & A. Shchepetkin, 2008: 1997-98 El Niño off Peru: A numerical study. *Progress in Ocean.* **79**, 138-155. doi 10.1016/j.pocean.2008.10.015

Danabasoglu, G., R. Ferrari, & J.C. McWilliams, 2008: Sensitivity of an ocean general circulation model to a parameterization of near-surface eddy fluxes. *J. Climate* **21**, 1192-1208. doi:10.1175/2007JCLI1510.1

Di Lorenzo, E.D., N. Schneider, K.M. Cobb, P.J.S. Franks, K. Chhak, A.J. Miller, J.C. McWilliams, S.J. Bograd, H. Arango, E. Curchitser, T.M. Powell, & P. Pieière, 2008: North Pacific Gyre Oscillation links ocean climate and ecosystem change. *Geophys. Res. Lett.* **35** L08607. doi:10.1029/2007GL032208

Ferrari, R., J.C. McWilliams, V.M. Canuto, & M. Dubovikov, 2008: Parameterization of eddy fluxes near oceanic boundaries. *J. Climate* **21**, 2770-2789. doi:10.1175/2007JCLI1510.1

Haidvogel, D.B., H. Arango, W.P. Budgell, B.D. Cornuelle, E. Curchitser, E. Di Lorenzo, K. Fennel, W.R. Geyer, A.J. Hermann, L. Lanerolle, J. Levin, J.C. McWilliams, A.J. Miller, A.M. Moore, T.M. Powell, A.F. Shchepetkin, C.R. Sherwood, R.P. Signell, J.C. Warner, & J. Wilkin, 2008: Ocean forecasting in terrain-following coordinates: Formulation and skill assessment of the Regional Ocean

- Modeling System. *J. Comp. Phys.* **227**, 3595-3624. doi:10.1016/j.jcp2007.06.016
- Kizner, Z., G. Reznik, B. Bridman, R. Khovles, & J.C. McWilliams, 2008: Shallow-water modons on the f-plane. *J. Fluid Mech.* **603**, 305-329. doi:10.1017/S0022112008000931
- Kravtsov, S., W.K. Dewar, M. Ghil, P. Berloff, & J.C. McWilliams, 2008: North Atlantic climate variability in coupled models and data. *Nonlinear Proc. Geophys.* **15**, 1-12.
- Kravtsov, S., W.K. Dewar, M. Ghil, J.C. McWilliams, & P. Berloff, 2008: A mechanistic model of mid-latitude decadal climate variability. *Physica D* **237**, i584-599. doi:10.1016/j.physd2007.09.025
- Li, Z., Y. Chao, J.C. McWilliams, & K. Ide, 2008: A three-dimensional variational data assimilation system for the Regional Ocean Modeling System: Implementation and basic experiments. *J. Geophys. Res.* **113**, C05002. doi:10.1029/2006JC004042. doi:10.1029/2006JC004042
- Li, Z., Y. Chao, J.C. McWilliams, & K. Ide, 2008: A three-dimensional variational data assimilation system for the Regional Ocean Modeling System. *J. Atmos. Ocean. Tech.* **25**, 2074-2090. doi:10.1175/2008JTECHO594.1
- McWilliams, J.C., 2008: The nature and consequences of oceanic eddies. In: *Eddy-Resolving Ocean Modeling*, M. Hecht & H. Hasumi, eds., AGU Monograph **177**, 5-15. doi:10.1029/177GM013
- McWilliams, J.C., 2008: Fluid dynamics on the margin of rotational control. *Conf. Proceedings Dec. 2007, Fifth International Symposium on Environmental Hydraulics*, D. Boyer, ed., Arizona State University, and *Environ. Fluid Mech.* **8**, 441-449. doi:10.1007/s10652-008-9081-1
- Sullivan, P.P., J.C. McWilliams, & W.K. Melville, 2008: Catalyzing Craik-Leibovich instabilities by breaking waves. *Conf. Proceedings Dec. 2007, Fifth International Symposium on Environmental Hydraulics*, D. Boyer, ed., Arizona State University.
- Nagai, T., A. Tandon, N. Gruber, & J.C. McWilliams, 2008: Biological and physical impacts of ageostrophic frontal circulations driven by confluent flow and vertical mixing. *Dyn. Atmos. and Oceans* **45**, 229-251. doi:10.1016/j.dynatmoce.2007.12.001
- Oram, J.J., J.C. McWilliams, & K.D. Stolzenbach, 2008: Gradient-based edge detection and feature classification of sea-surface images of the Southern California Bight. *Remote Sensing of Environment* **112**, 2397-2415. doi:10.1016/j.rse.2007.11.010
- Sullivan, P.P., J.B. Edson, T. Hristov, & J.C. McWilliams, 2008: Large eddy simulations and observations of atmospheric marine boundary layers above non-equilibrium surface waves. *J. Atmos. Sci.* **65**, 1225-1245. doi:10.1175/2007JAS2427.1
- Uchiyama, Y., & J.C. McWilliams, 2008: Infragravity waves in the deep ocean: Generation, propagation, and seismic hum excitation. *J. Geophys. Res.* **113** C07029. doi:10.1029/2007JC004562
- Jin, X., N. Gruber, H. Frenzel, S.C. Doney, & J.C. McWilliams, 2008: The impact on atmospheric CO₂ of iron fertilization induced by the ocean's biological pump. *Biogeosciences*, **5**, 385-406. doi:10.5194/bg-5-385-2008
- Yousef, T.A., T. Heinemann, A.A. Schekochihin, N. Kleeorin, I. Rogachevskii, A.B. Iskakov, S.C. Cowley, & J.C. McWilliams, 2008: Generation of magnetic field by combined action of turbulence

- and shear. *Phys. Rev. Lett.* **100**, 184501/1 - 4. arXiv:0710.3359
- Yousef, T.A., T. Heinemann, A.A. Schekochihin, N. Kleeorin, I. Rogachevskii, S.C. Cowley, & J.C. McWilliams, 2008: Numerical experiments on dynamo action in sheared and rotating turbulence. *Astron. Nachr.* **329**, 737-749. doi:10.1002/asna.200811018
- Shchepetkin, A.F., & J.C. McWilliams, 2009: Computational kernel algorithms for fine-scale, multiprocess, longtime oceanic simulations. In: *Handbook of Numerical Analysis: Computational Methods for the Atmosphere and Oceans*, R. Temam & J. Tribbia, eds., Elsevier Science, 119-181. doi:10.1016/S1570-8659(08)01202-0
- Chao, Y., Z. Li, J. Farrara, J.C. McWilliams, J. Bellingham, X. Capet, F. Chavez, J.-K. Choi, R. Davis, J. Doyle, D.M. Frantaoni, P. Li, P. Marchesiello, M.A. Moline, J. Paduan, & S. Ramp, 2009: Development, implementation, and evaluation of a data-assimilative ocean forecasting system off the central California coast. *Deep-Sea Res. II* **56**, 100-126. doi:10.1016/j.dsr2.2008.08.011.
- Dong, C., E.Y. Idica, & J.C. McWilliams, 2009: Circulation and multiple-scale variability in the Southern California Bight. *Prog. Oceanography* **82**, 168-190. doi:10.1016/j.pocean.2009.07.005
- Dong, C., T. Mavor, F. Nencioli, S. Jiang, Y. Uchiyama, J.C. McWilliams, T. Dickey, M. Ondrusek, H. Zhang, & D.K. Clark, 2009: An oceanic cyclonic eddy on the lee side of Lanai Island, Hawai'i. *J. Geophys. Res.* **114**, C10008. doi:10.1029/2009JC005346
- Jin, X., C. Dong, J. Kurian, J.C. McWilliams, D.B. Chelton, & Z. Li, 2009: SST-Wind interaction in coastal upwelling: Oceanic simulation with empirical coupling. *J. Phys. Ocean*, **39**, 2957-2970. doi:10.1175/2009JPO4205.1
- Koszalka, I., A. Bracco, J.C. McWilliams, & A. Provenzale, 2009: Dynamics of wind-forced coherent anticyclones in open ocean. *J. Geophys. Res. Oceans* **114**, C08011, doi:10.1029/2009JC005388.
- Liang, J.H., J.C. McWilliams, & N. Gruber, 2009: The high-frequency response of the ocean to mountain gap winds in the northeastern tropical Pacific. *J. Geophys. Res. Ocean*. **114**, C12005. doi:10.1029/2009JC005370.
- McWilliams, J.C., 2009: Targeted coastal circulation phenomena in diagnostic analyses and forecasts. *Dyn. Atmos. Oceans*, **48**, 3-15. doi:10.1016/j.dynatmoce.2008.12.004
- McWilliams, J.C., E. Huckle, & A.F. Shchepetkin, 2009: Buoyancy effects in a stratified Ekman layer. *J. Phys. Ocean*. **39**, 2581-2599. doi:10.1175/2009JPO4130.1
- McWilliams, J.C., M.J. Molemaker, & E.I. Olafsdottir, 2009: Linear fluctuation growth during frontogenesis. *J. Phys. Ocean*. **39**, 3111-3129. doi:10.1175/2009JPO4186.1
- McWilliams, J.C., F. Colas, & M.J. Molemaker, 2009: Cold filamentary intensification and oceanic surface convergence lines. *Geophys. Res. Lett.* **36**, L18602. doi:10.1029/2009GL039402
- Mitarai, S., D.A. Siegel, J.R. Watson, C. Dong, & J.C. McWilliams, 2009: Quantifying connectivity in the coastal ocean with application to the Southern California Bight. *J. Geophys. Res.* **114**, C10026. doi:10.1029/2008JC005166
- Sangrà, P., A. Pascual, A. Rodriguez-Santana, F. Machín, E. Mason, J.C. McWilliams, J.-L.

Pelegrí, C. Dong, A. Rubio, J. Arístegui, A. Marrero-Díaz, A. Hernández-Guerrez, A. Hernández-Guerra, A. Mertínez-Marrero, & M. Auladell, 2009: The Canary Eddies Corridor: A major pathway for long-lived eddies in the subtropical North Atlantic. *Deep Sea Res. I*, **56**, 2100-2114. doi:10.1016/j.dsr2009.08.008

Shchepetkin, A.F., & J.C. McWilliams, 2009: Correction and Commentary for “Ocean Forecasting in Terrain-Following Coordinates: Formulation and Skill Assessment of the Regional Ocean Modeling System” by Haidvogel et al., *J. Comp. Phys.* **227**, pp. 3595-3624. *J. Comp. Phys.*, **228**, 8985-9000. doi:10.1016/j.jcp.2009.09.002

Uchiyama, Y., J.C. McWilliams, & J.M. Restrepo, 2009: Wave-current interaction in nearshore shear instability analyzed with a vortex-force formalism. *J. Geophys. Res.* **114**, C06021. doi:10.1029/2008JC005135

Wang, X., Y. Chao, C. Dong, J. Farrara, Z. Li, J.C. McWilliams, J.D. Paduan, & L.K. Rosenfeld,, 2009: Modeling tides in Monterey Bay, California. *Deep-Sea Res. II* **56**, 219-231. doi:10.1016/j.dsr2.2009.07.002

Sullivan, P.P., & J.C. McWilliams, 2010: Dynamics of winds and currents coupled to surface waves. *Ann. Rev. Fluid Mech.* **42**, 19-42. doi:10.1146/annurev-fluid-121108-145541

Bracco, A., & J.C. McWilliams, 2010: Reynolds-number dependency in homogeneous, stationary two-dimensional turbulence. *J. Fluid Mech.* **646**, 517-526. doi:10.1017/S0022112009993661

Buijsman, M.C., Y. Kanarska, & J.C. McWilliams, 2010: On the generation and evolution of nonlinear internal waves in the South China Sea. *J. Geophys. Res.* **115**, C02012. doi:10.1029/2009JC005275.

Nencioli, F., C. Dong, T. Dickey, L. Washburn, & J.C. McWilliams, 2010: A vector geometry based eddy detection algorithm and its application to a high-resolution numerical model product and high-frequency radar surface velocities in the Southern California Bight, *J. Tech. Ocean.* **27**, 564-579. doi:10.1175/2009JTECHO725.1

Molemaker, M.J., & J.C. McWilliams, 2010: Local balance and cross-scale flux of available potential energy. *J. Fluid Mech.*, **645**, 295-314. doi:10.1017/S0022112009992643

Watson, J.R., S. Mitarai, D.A. Siegel, J. Caselle, C. Dong, and J.C. McWilliams, 2010: Realized and potential larval connectivity in the Southern California Bight. *Marine Ecology Prog. Series* **401**, 31-48. doi:10.3354/meps08376w

Mason, E., M.J. Molemaker, A. F. Shchepetkin, F. Colas, J.C. McWilliams, & P. Sangrà, 2010: Procedures for offline grid nesting in regional ocean models. *Ocean Modelling* **35**, 1-15. doi:10.1016/j.ocemod.2010.07.002

McWilliams, J.C., 2010: A perspective on submesoscale geophysical turbulence. In: *IUTAM Symposium on Turbulence in the Atmosphere and Oceans: Proceedings of the IUTAM Symposium on Turbulence in the Atmosphere and Oceans, Cambridge, UK, December 8-12, 2008*, D. Dritschel, ed., Dordrecht, New York, Springer Science+Business Media B.V., 131-141.

Buijsman, M.C., J.C. McWilliams, & C.R. Jackson, 2010: East-west asymmetry in nonlinear internal waves from Luzon Strait. *J. Geophys. Res.* **115**, C10057. doi:10.1029/2009JC006004

Molemaker, M.J., J.C. McWilliams, & X. Capet, 2010: Balanced and unbalanced routes to dissipation in an equilibrated Eady flow. *J. Fluid Mech.* **654**, 35-63. doi:10.1017/S0022112009993272

- Neelin, J.D., A. Bracco, H. Luo, J.C. McWilliams, & J.E. Meyerson, 2010: Considerations for parameter optimization and sensitivity in climate models. *Proc. Nat. Acad. Sci.* **107**, 21349-21354. doi:10.1073/pnas.1015473107/-/DCSupplemental
- Uchiyama, Y., J.C. McWilliams, & A.F. Shchepetkin, 2010: Wave-current interaction in an oceanic circulation model with a vortex-force formalism: Application to the surf zone. *Ocean Modelling* **34**, 16-35. doi:10.1016/j.ocemod.2010.04.002
- Emery, W.J., T. Strub, R. Leben, M. Foreman, J.C. McWilliams, G. Han, C. Ladd, & H. Ueno, 2011: Satellite altimetry applications off the coasts of North America. In: *Coastal Altimetry*, S. Vignudelli, A. Kostianoy, P. Cipollini, & J. Benveniste (eds.), Springer, 417-451. doi: 0.1007/978-3-642-12796-0_16
- Shchepetkin, A.F., & J.C. McWilliams, 2011: An accurate Boussinesq modeling with a practical, "stiffened" equation of state. *Ocean Modelling* **38**, 41-70. doi:10.1016/j.ocemod.2011.01.010
- McWilliams, J.C., & M.J. Molemaker, 2011: Baroclinic frontal arrest: A sequel to unstable frontogenesis. *J. Phys. Ocean.* **41**, 601-619. doi:10.1175/2010JPO4493.1
- Restrepo, J.M., J.M. Ramírez, J.C. McWilliams, & M. Banner, 2011: Multiscale momentum flux and diffusion due to whitecapping in wave-current interactions. *J. Phys. Ocean* **41**, 837-856. doi:10.1175/2010JPO4298.1
- Dong, C., J.C. McWilliams, A. Hall, & M. Hughes, 2011: Numerical simulation of a synoptic event in the Southern California Bight. *J. Geophys. Res.* **116**, C05018. doi:10.1029/2010JC006578
- Weir, B., Y. Uchiyama, E.M. Lane, J.M. Restrepo, & J.C. McWilliams, 2011: A vortex force analysis of the interaction of rip currents and gravity waves. *J. Geophys. Res.* **116**, C05001. doi:10.1029.2010JC006232
- Kurian, J., F. Colas, X. Capet, J.C. McWilliams, & D.B. Chelton, 2011: Eddy properties in the California Current System,. *J. Geophys. Res.* **116**, C08027, doi:10.1029/2010JC006895. doi:10.1029/2010JC006895
- Liang, J.H., J.C. McWilliams, P.P. Sullivan, & B. Baschek, 2011: Modeling bubbles and dissolved gases in the ocean. *J. Geophys. Res.* **116**, C03015. doi:10.1029/2010JC006579
- Watson, J.R., C.G. Hays, P.T. Raimondi, S. Mitarai, D.A. Siegel, C. Dong, J.C. McWilliams, & C.A. Blanchette, 2011: Currents connecting communities: the decay of nearshore community similarity with ocean circulation. *Ecology* **92**, 1193-1200.
- Boe, J., A. Hall, F. Colas, J. McWilliams, X. Qu, & J. Kurian, 2011: What shapes mesoscale wind anomalies in coastal upwelling zones? *Climate Dynamics* **36**, 2037-2049. doi:10.1007/s00382-011-1058-5
- Waliser, D.E., J. Kim, Y. Xue, Chao, Y., A. Eldering, R. Fovell, A. Hall, Q. Li, K. Liou, J. McWilliams, S. Kapnick, R. Vasic, F. De Sale, & Y. Yu, 2011, Simulating cold season snowpack: Impacts of snow albedo and multi-layer snow physics, *Climatic Change* **109**, Supp. 1, 95-117. doi:10.1007/s10584-011-0312-5
- Gruber, N., Z. Lachkar, H. Frenzel, P. Marchesiello, M. Munnich, J.C. McWilliams, T. Nagai, & G.-

- K. Plattner, 2011: Eddy-induced reduction of biological production in eastern boundary upwelling systems. *Nature Geosci.* **4**, 787-792. doi:10.1038/NGE01273
- Heinemann, T., J.C. McWilliams, & A.A. Schekochichin, 2011: Large-scale magnetic-field generation by randomly forced shearing waves. *Phys. Rev. Lett.* **107**, 255004. arXiv:0810.2225
- Dong, C., F. Nencioli, Y. Liu, & J.C. McWilliams, 2011: An automated approach to detect oceanic eddies from satellite remote sensed Seas Surface Temperature data. *IEEE Geoscience and Remote Sensing Letters* **8**, 1055-1059. doi:10.1109/LGRS.2011.2155029
- Dong, C., Y. Liu, R. Lumpkin, M. Lankhorst, D. Chen, J.C. McWilliams, & Y. Guan, 2011: A scheme to identify loops from trajectories of oceanic surface drifters: An application in the Kuroshio Extension region. *J. Atmos. Ocean Tech.* **28**, 1167-1176. doi:10.1175/JTECH-D-10-05028.1
- Mason, E., F. Colas, M.J. Molemaker, A.F. Shchepetkin, C. Troupin, J.C. McWilliams, & P. Sangrà, 2011: Seasonal variability in the Canary Basin: A numerical study. *J. Geophys. Res.* **116**, C06001. doi:10.1029/2010JC006665.
- Buijsman, M.C., Y. Uchiyama, J.C. McWilliams, & C.R. Hill-Lindsay, 2012: Modeling semidiurnal internal tide variability in the Southern California Bight. *J. Phys. Ocean.* **42**, 62-77. doi:10.1175/2011JPO4597.1
- Molemaker, M.J., & J.C. McWilliams, 2012: The bifurcation structure of decadal thermohaline oscillations. *Geophys. & Astrophys. Fluid Dyn.* **106**, 1-21. doi:10.1080/03091929.2010.530264
- Dong, C., X. Lin, Y. Liu, F. Nencioli, Y. Chao, Y. Guan, T. Dickey, & J.C. McWilliams, 2012: Three-dimensional oceanic eddy analysis in the Southern California Bight from a numerical product. *J. Geophys. Res.* **117**, C00H14. doi:10.1029/2011JC007354
- Roullet, G., J.C. McWilliams, X. Capet, & M.J. Molemaker, 2012: Properties of equilibrium geostrophic turbulence with isopycnal outcropping. *J. Phys. Ocean.* **42**, 18-38. doi:10.1175/JPO-D-11-09.1
- Liang, J.H., J.C. McWilliams, P.P. Sullivan, & B. Baschek, 2012: Large Eddy Simulation of the bubbly ocean: Impacts of wave forcing and bubble buoyancy. *J. Geophys. Res.* **117**, C04002. doi:10.1029/2011JC007766
- Lemarie, F., J. Kurian, A.F. Shchepetkin, M.J. Molemaker, F. Colas, & J.C. McWilliams, 2012: Are there inescapable issues prohibiting the use of terrain-following coordinates in climate models? *Ocean Modelling* **42**, 57-79. doi:10.1016/j.ocemod.2011.11.007
- Liang J.-H., J. C. McWilliams, J. Kurian, P. Wang & F. Colas, 2012: Mesoscale variability in the Northeastern Tropical Pacific: Forcing mechanisms and eddy properties. *J. Geophys. Res.* **117**, C07003. doi:10.1029/2012JC008008
- Colas, F., J.C. McWilliams, X. Capet, & J. Kurian, 2012: Heat balance and eddies in the Peru-Chile Current System. *Climate Dynamics* **39**, 509-529. doi:10.1007/s00382-011-1170-6
- McWilliams, J.C., 2012: The elemental shear dynamo. *J. Fluid Mech.* **699**, 414-452. doi:10.1017/jfm.2012.430
- Liu, Y., C. Dong, Y. Guan, D. Chen, & J.C. McWilliams, 2012: Eddy analysis for the subtropical

- zonal band of the North Pacific Ocean. *Deep-Sea Res. I* **68**, 54-67. doi:10.1016/j.dsr.2012.06.001
- Lemarie, F., L. Debreu, L., A.F. Shchepetkin, & J.C. McWilliams, 2012: On the stability and accuracy of the harmonic and biharmonic adiabatic mixing operators in ocean models. *Ocean Modelling* **52-53**, 9-35. doi:10.1016/j.ocemod.2012.04.007
- McWilliams, J.C., E. Huckle, J. Liang, & P. Sullivan, 2012: The wavy Ekman layer: Langmuir circulations, breakers, and Reynolds stress. *J. Phys. Ocean.* **42**, 1793-1816. doi:10.1175/JPO-D-12-07.1
- Sullivan, P.P., L. Romero, J.C. McWilliams, & W.K. Melville, 2012: Transient evolution of Langmuir Turbulence in ocean boundary layers driven by hurricane winds and waves. *J. Phys. Ocean.* **42**, 1959-1980. doi:10.1175/JPO-D-12-025.1
- Menesguen, C., J.C. McWilliams, & M.J. Molemaker, 2012: An example of ageostrophic instability in a rotating stratified flow. *J. Fluid Mech.* **711**, 599-619. doi:10.1017/jfm.2012.412
- Wang, P., J.C. McWilliams, & Z. Kizner, 2012: Ageostrophic instability in rotating shallow water. *J. Fluid Mech.*, **712**, 327-353. doi:10.1017/jfm.2012.422
- McWilliams, J.C., & B. Fox-Kemper, 2013: Oceanic wave-balanced surface fronts and filaments. *J. Fluid Mech.*, **730**, 464-490. doi:10.1017/jfm2013.348
- Colas, F., X. Wang, X. Capet, Y. Chao, & J.C. McWilliams, 2013: Untangling the roles of wind, runoff and tides in Prince William Sound. *Continental Shelf Res.*, **63**, S79-S89. doi:10.1016/j.csr.2012.05.002 (online publication)
- Wang, X., Y. Chao, H. Zhang, J. Farrara, Z. Li, X. Jin, K. Park, F. Colas, J.C. McWilliams, C. Paternostro. C.K. Shum, Y. Yi, C. Schoch, & P. Olsson, 2013: Modeling tides and their influence on the circulation in Prince William Sound, Alaska. *Continental Shelf Research*, **63**, S126-S137. doi:10.1016/j.csr2012.08.016
- Li, Z., Y. Chao, J. Farrara, & J.C. McWilliams, 2013: Impacts of distinct observations during the 2009 Prince William Sound field experiment: A data assimilation study. *Continental Shelf Research*, **63**, S209-S222. doi:10.1016/j.csr2012.06.018
- Farrara, J., Y. Chao, Z. Li, X. Wang, X. Jin, H. Zhang, P. Li, Q. Vu, P. Olsson, C. Schoch, M. Halversson, M. Moline, C. Ohlmann, M. Johnson, J. McWilliams, & F. Colas, 2013: A data-assimilative ocean forecasting system for the Prince William Sound and an evaluation of its performance during Sound Predictions 2009. *Continental Shelf Research*, **63**, S193-S208. doi:10.1016/j.csr.2012.11.008
- Romero, L.E., Y. Uchiyama, D. Siegel, J. McWilliams, & C. Ohlmann, 2013: Simulations of particle-pair dispersion in Southern California. *J. Phys. Ocean.* **43**, 1862-1879. doi:10.1175/JPO-D-13-011.1
- Bracco, A., J.D Neelin, H. Luo, J.C. McWilliams, & J.E. Meyerson, 2013: High dimensional decision dilemmas in climate models. *Geosci. Model Dev.*, **6**, 1673-1687. doi:10.5194/gmd-6-1673-2013
- Liang, J.H., C. Deutsch, J. McWilliams, B. Baschek, P.P. Sullivan, & David Chiba, 2013: Parameterizing bubble-mediated air-sea gas exchange and its effect on ocean ventilation. *Glob. Biogeo. Cycles*, **27**, 894-905. doi:10.1002/gbc.20080,2013

- Colas, F., X. Capet, J.C. McWilliams, & Z. Li, 2013: Mesoscale eddy buoyancy flux and eddy-induced circulation in eastern-boundary currents. *J. Phys. Ocean.* **43**, 1073-1095. doi:10.1175/JPO-D-11-0241.1
- Mei, W., F. Primeau, J.C. McWilliams, & C. Pasquero, 2013: Sea surface height evidence for long-term effects of tropical cyclones on the ocean. *PNAS* **110**, 15207-15210. doi:10.1073/pnas.1306753110
- Persing, J., M.T. Montgomery, J.C. McWilliams, & R.K. Smith, 2013: Asymmetric and axisymmetric dynamics of tropical cyclones. *Atm. Chem. Phys.* **13**, 1229912341. doi:10.5194/acp-13-12299-2013
- Shcherbina, A., E. D'Asaro, C. Lee, J. Klymak, M.J. Molemaker, & J.C. McWilliams, 2013: Statistics of vertical vorticity, divergence, and strain in a developed submesoscale turbulence field. *Geophys. Res. Lett.* **40**, 4706-4711. doi:10.1002/grl.50919
- McWilliams, J.C., E. Huckle, J. Liang, & P. Sullivan, 2014: Langmuir Turbulence in swell. *J. Phys. Ocean.* **44**, 870-890. doi:10.1175/JPO-D-13-0122.1
- Chekroun, M.D., J.D. Neelin, D. Kondrashov, J.C. McWilliams, & M. Ghil, 2014: Rough parameter dependence in climate models: The role of Ruelle-Pollicott resonances. *Proc. Nat. Acad. Sci.* **111**, 1684-1690. doi:10.1073/pnas.1321816111
- Uchiyama, Y., E. Idica, J.C. McWilliams, & K. Stolzenbach, 2014: Wastewater effluent dispersal in two Southern California Bays. *Cont. Shelf Res.* **76**, 36-52. doi:10.1016/j.csr.2014.01.002
- Dong, C., J.C. McWilliams, Y. Liu, & D. Chen, 2014: Global heat and salt transports by eddy movement. *Nature Geosci.* **5**, 3294/1-6. doi:10.1038/ncomms4294
- Mason, E., A. Pascual, & J.C. McWilliams, 2014: A new sea surface height based code for oceanic mesoscale eddy tracking. *J. Ocean. Atmos. Tech.* **31**, 1181-1188. Mason, E. a. Pascual, & J.C. McWilliams, 2015: Corrigendum **32**, 1425-1426. doi:10.1175/JTECH-D-14-00019.1 doi:10.1175/JTECH-D-15-0084.1
- Wang, P., J.C. McWilliams, & C. Menesguen, 2014: Ageostrophic instability in rotating, stratified interior vertical shear flows. *J. Fluid Mech.* **755**, 397-428. doi:10.1017/jfm.2014.426
- Gula, J., M.J. Molemaker, & J.C. McWilliams, 2014: Submesoscale cold filaments in the Gulf Stream. *J. Phys. Ocean.* **44**, 26172643. doi:10.1175/JPO-D-14-0029.1
- Sullivan, P.P., J.C. McWilliams, & E.G. Patton, 2014: Large eddy simulation model of marine atmospheric boundary layers above a spectrum of moving waves. *J. Atmos. Sci.* **71**, 4001-4027. doi:10.1175/JAS-D-14-0095.1
- Mechoso, C.R., & 14 co-authors, 2014: Ocean-Cloud-Atmosphere-Land Interactions in the South-eastern Pacific: The VOCALS program. *Bull. Amer. Met. Soc.* (March), 357-375. doi:10.1175/BAMS-D-11-00246.1
- Hristova, H., W.S. Kessler, J.C. McWilliams, & M.J. Molemaker, 2014: Mesoscale variability and its seasonality in the Solomon and Coral Seas. *J. Geophys. Res.* **119**, 4669-4687. doi:10.1002/2013JC00974
- Molemaker, M.J., J.C. McWilliams, & W.K. Dewar, 2015: Submesoscale instability and generation

of mesoscale anticyclones near a separation of the California Undercurrent. *J. Phys. Ocean.* **45**, 613-629. doi:10.1175/JPO-D-13-0225.1.

Gula, J., M.J. Molemaker, & J.C. McWilliams, 2015: Topographic vorticity generation, submesoscale instability and vortex street formation in the Gulf Stream. *Geophys. Res. Lett.* **42**, 4054-4062. doi:10.1002/2015GL063731

Kumar, N., F. Feddersen, Y. Uchiyama, J. McWilliams, & W. O'Reilly, 2015: Midshelf to surf zone coupled ROMS-SWAN model-data comparison of waves, currents, and temperature: Diagnosis of subtidal forcings and response. *J. Phys. Ocean.* **45**, 1464-1490. doi:10.1175/JPO-D-14-0151.1

Dewar, W.K., J.C. McWilliams, & M.J. Molemaker, 2015: Centrifugal instability and mixing in the California Undercurrent. *J. Phys. Ocean.* **45**, 1224-1241. doi:10.1175/JPO-D-13-0269.1

McWilliams, J.C., J. Gula, M.J. Molemaker, L. Renault, & A.F. Shchepetkin, 2015: Filament frontogenesis by boundary layer turbulence. *J. Phys. Ocean.* **45**, 1988-2005. doi:10.1175/JPO-D-14-0211.1

Teles-Machado, A., A. Peliz, J.C. McWilliams, R. Cardoso, P.M. M. Soares, & P.M.A. Miranda, 2015: On the year-to-year changes of the Iberian Poleward Current. *J. Geophys. Res. Oceans*, **120**, 4980-4999. doi:10.1002/2015JC010758

Abarca, S.F., M.T. Montgomery, & J.C. McWilliams, 2015: The azimuthally averaged boundary layer structure of a numerically simulated major hurricane. *J. Adv. Model. Earth Syst.* **07**, 1-13. doi:10.1002/2015MS000457

Nagai, T., N. Gruber, H. Frenzel, Z. Lachkar, J.C. McWilliams, & G.-K. Plattner, 2015: Dominant role of eddies and filaments in the offshore transport of carbon and nutrients in the California Current System. *J. Geophys. Res. Oceans* **120**, 5318-5341. doi:10.1002/2015JC010889.

Shcherbina, A.Y., M.A. Sundermeyer, E. Kunze, E. DAsaro, Gualtiero Badin, Daniel Birch, A.-M.E.G. Brunner-Suzuki, J. Callies, B.T. Cervantes, M. Claret, B. Concannon, J. Early, R. Ferrari, L. Goodman, R.R. Harcourt, J.M. Klymak, C.M. Lee, M.-P. Lelong, M.D. Levine, R.-C. Lien, A. Mahadevan, J.C. McWilliams, M. J. Molemaker, S. Mukherjee, J.D. Nash, T. zgkmen, S.D. Pierce, S. Ramachandran, R.M. Samelson, T. B. Sanford, R.K. Shearman, E.D. Skillingstad, K. Shafer Smith, A. Tandon, J.R. Taylor, E.A. Terray, L.N. Thomas, & J.R. Ledwell, 2015: The LatMix Summer Campaign: Submesoscale stirring in the Upper Ocean. *Bull. Amer. Meteor. Soc.* **96**, 1257-1279. doi:10.1175/BAMS-D-14-00015.1

Mei, W., S.P. Xie, F. Primeau, J.C. McWilliams, & C. Pasquero, 2015: Northwestern Pacific typhoon intensity controlled by changes in ocean temperatures. *Science Advances* **1**, e1500014. doi:10.1126/sciadv.1500014.

Gula, J., M.J. Molemaker, and J.C. McWilliams, 2015: Gulf Stream dynamics along the southeastern U.S. Seaboard. *J. Phys. Ocean.* **45**, 690-715. doi:10.1175/JPO-D-14-0154.

Marchesiello, P., R. Benshila, R. Almar, Y. Uchiyama, J. McWilliams, & A. Shchepetkin, 2015: On tridimensional rip current modeling. *Ocean Modelling* **96**, 36-48. Marchesiello, P., R. Benshila, R. Almar, Y.Uchiyams, J. McWilliams, & A. Shchepetkin, 2014: On tridimensional rip current modeling. *Proceedings of the 19th IAHR-APD Congress 2014, Hanoi, Vietnam*, 1-7. doi:10.1016/j.ocemod.201

- Li, Z., J.C. McWilliams, K. Ide, & J. Farrara, 2015: A multi-scale data assimilation scheme: Formulation and illustration. *Monthly Weather Rev.* **143**, 3804-3821. doi:10.1175/MWR-D-14-00384.1
- Li, Z., J. C. McWilliams, K. Ide, & J.D. Farrara, 2015: Coastal ocean data assimilation using a multi-scale three-dimensional variational scheme. *Ocean Dynamics* **65**, 1001-1015. doi:10.1007/s10236-015-0850-x
- Luo, H., A. Bracco, Y. Cardona, & J.C. McWilliams, 2016: The submesoscale circulation in the Northern Gulf of Mexico. Surface processes and the impact of the freshwater river input. *Ocean Modelling* **101**, 68-82. doi:10.1016/j.ocemod.2016.03.003
- Kumar, N., F. Feddersen, Y. Uchiyama, J.C. McWilliams, & W. O'Reilly, 2016: Mid- to inner-shelf coupled ROMS-SWAN model data comparison of waves, currents, and temperature: Diurnal and semi-diurnal variability. *J. Phys. Ocean.*, **46**, 841-862. doi:10.1175/JPO-D-15-0103.1
- Renault, L., A. Hall, & J.C. McWilliams, 2016: Orographic shaping of U.S. West Coast wind profiles during the upwelling season. *Climate Dyn.* **46**, 273-289. doi:10.1007/s00382-015-2583-4
- Teles-Machado, A., A. Peliz, J. C. McWilliams, J. Dubert, & B. Le Cann, 2016: Circulation on the Northwestern Iberian Margin: Swoddies. *Prog. Oceanography* **140**, 116-133. doi:10.1016/j.pocean20150
- Teles-Machado, A., A. Peliz, J.C. McWilliams, X. Couvelard, & I. Ambar, 2016: Circulation on the Northwestern Iberian Margin: Vertical structure and seasonality of the alongshore flows. *Prog. Oceanography* **140**, 134-153. doi:10.1016/j.pocean.2015.05.021
- Gula, J., M.J. Molemaker, & J.C. McWilliams, 2016: Submesoscale dynamics of a Gulf Stream frontal eddy in the South Atlantic Bight. *J. Phys. Ocean.*, **46**, 305-325. doi:10.1175/JPO-D-14-0258.1
- Schoonover, J., W. Dewar, N. Wieders, J. Gula, J.C. McWilliams, M.J. Molemaker, S. Bates, G. Danabasoglu, & S. Yeager, 2016: North Atlantic barotropic vorticity balances in numerical models. *J. Phys. Ocean.*, **46**, 289-303. doi:10.1175/JPO-D-15-0133.1
- Bracco, A., K. Joshi, H. Luo, & J.C. McWilliams, 2016: Submesoscale circulation in the northern Gulf of Mexico: Deep phenomena and dispersion over the continental slope. *Ocean Modelling* **101**, 43-58. doi:10.1016/j.ocemod.2016.03.002
- McWilliams, J.C., 2016: Submesoscale currents in the ocean. *Proc. Roy. Soc. A* **472** 20160117, 1-32. doi:10.1098/rspa.2016.0117
- Renault, L., C. Deutsch, J.C. McWilliams, F. Colas, H. Frenzel, & J.-H. Liang, 2016: Partial decoupling of primary productivity from upwelling in the California Current System. *Nature Geoscience* **9**, 505-508 plus SI. doi:10.1038/NGEO272
- Mitarai, S., H. Watanabe, A. Shchepetkin, & J.C. McWilliams, 2016: Quantifying connectivity of hydrothermal vent fields in the Western Pacific. *Proc. Nat. Acad. Sci.* **113**, 2976-2981. doi:10.1073/pnas.1518395113
- Marchesiello, P., R. Almar, R. Benshila, S. Larnier, B. Castelle, & J.C. McWilliams, 2016: Eddy mixing of longshore currents: Video observation and 3D modeling off Grand Popo Beach, Benin.

J. Coastal Res. **75**, 408-412. doi:10.2112/S175-082.1

Renault, L., M.J. Molemaker, J.C. McWilliams, A.F. Shchepetkin, F. Lemarie, D. Chelton, S. Illig, & A. Hall, 2016: Modulation of wind-work by oceanic current interaction with the atmosphere. *J. Phys. Ocean.* **46**, 1685-1704. doi:10.1175/JPO-D-15-0232.1

Romero, L., D.A. Siegel, J.C. McWilliams, Y. Uchiyama, & C. Jones, 2016: Characterizing stormwater dispersion and dilution from small coastal streams. *J. Geophys. Res. Oceans* **121**, 3926-3943. doi:10.1002/2015JC011323

Klymak, J.M., R.K. Shearman, J. Gula, C.M. Lee, E.A. DAsaro, L.N. Thomas, R. Harcourt, A. Shcherbina, M.A. Sundermeyer, M.J. Molemaker, & J.C. McWilliams, 2016: Submesoscale streamers exchange water on the North Wall of the Gulf Stream. *Geophys. Res. Lett.*, **43**, 1226-1233. doi:10.1002/2015GL067152

Lucas, C., A. Rousseau, & J.C. McWilliams, 2016: Large scale ocean models beyond the traditional approximation. *Annales de Toulouse Science Faculty Mathématiques, Séries 6*, 1-19.

Gula, J., M.J. Molemaker, & J.C. McWilliams, 2016: Topographic generation of submesoscale centrifugal instability and energy dissipation. *Nature Comm.* **7**, 12811. doi:10.1038/NCOMMS12811

Solodoch, A., A.L. Stewart, & J.C. McWilliams, 2016: Baroclinic instability of axially-symmetric flow over sloping bathymetry. *J. Fluid Mech.*, **799**, 265-296. doi:10.1017/jfm2016.376

Mitarai, S., & J.C. McWilliams, 2016: Wave glider observations of surface winds and currents in the core of Typhoon Danas. *Geophys. Res. Lett.*, **43**, doi:10.1002/2016GL071115, 1-8. doi:10.1002/2016GL071115

Renault, L., M.J. Molemaker, J. Gula, S. Masson, & J.C. McWilliams, 2016: Control and stabilization of the Gulf Stream by oceanic current interaction with the atmosphere. *J. Phys. Ocean.* **46**, 3439-3453. doi:10.1175/JPO-D016-0115.1

Lucas, C., J.C. McWilliams, & A. Rousseau, 2017: On nontraditional quasi-geostrophic equations. *Mathematical Modeling and Numerical Analysis* **51**, 427-442. dx.doi.org/10.1051/m2an/2016041

Barkan, R., K.B. Winters, & J.C. McWilliams, 2017: Enhancement of eddy kinetic energy dissipation by internal waves. *J. Phys. Ocean.* **47**, 181-198. doi:10.1175/JPO-D-16-0117.1

Chekroun, M.D., H. Liu, & J.C. McWilliams, 2017: The emergence of fast oscillations in a reduced Primitive Equation model and its implications for closure theories. *Computers and Fluids* **151**, 3-22. 10.1016/j.compfluid.2016.07.005

Srinivasan, K., J.C. McWilliams, L. Renault, M.J. Molemaker, H. Hristova, & W.S. Kessler, 2017: Topographic and mixed-layer submesoscales in the near-surface southwest Tropical Pacific. *J. Phys. Ocean.* **47**, 1221-1242. doi:10.1175/JPO-D-16-0216.1

Uchiyama, Y., J.C. McWilliams, & C. Akan, 2017: Three-dimensional transient wave-driven currents: Low-frequency variability in alongshore and rip currents. *J. Geophys. Res. Oceans* **122**, JGRC22370. doi:10.1002/2017JC013005

McWilliams, J.C., 2017: Submesoscale surface fronts and filaments: Secondary circulation, buoyancy flux, and frontogenesis. *J. Fluid Mech.* **823**, 391-432. doi:10.1017/jfm.2017.294

- Durski, S.M., J.A. Barth, J.C. McWilliams, H. Frenzel, & C. Deutsch, 2017: The influence of variable slope-water characteristics on dissolved oxygen levels in the northern California Current System. *J. Geophys. Res.* **122**, 7674-7697. doi:10.1002/2017JC013089
- Barkan, R., J.C. McWilliams, A.F. Shchepetkin, M.J. Molemaker, L. Renault, A. Bracco, & J. Choi, 2017: Submesoscale dynamics in the northern Gulf of Mexico. Part I: Regional and seasonal characterization and the role of rivers. *J. Phys. Ocean.* **47**, 2325-2346. doi.org/10.1175/JPO-D-17-0035.s1.
- Barkan, R., J.C. McWilliams, M.J. Molemaker, A.F. Shechepetkin, K. Srinivasan, J. Choi, & A. Bracco, 2017: Submesoscale dynamics in the northern Gulf of Mexico. Part II: Temperature-Salinity relations and cross-shelf transport processes. *J. Phys. Ocean.* **47**, 23472360. doi.org/10.1175/JPO-D-17-0040.1.
- Choi, J., A. Bracco, R. Barkan, A.F. Shchepetkin, & J.C. McWilliams, 2017: Submesoscale dynamics in the northern Gulf of Mexico. Part III: Lagrangian implications. *J. Phys. Ocean.* **47**, 23612376. doi.org/10.1175/JPO-D-17-0036.1
- Ardhuin, F., N. Suzuki, J.C. McWilliams, & H. Aiki, 2017: Comments on “A Combined Derivation of the Integrated and Vertically Resolved, Coupled Wave-Current Equations”. *J. Phys. Ocean.* **47**, 2377-2381. doi:10.1175/JPO-D-17-0065.1
- Dauhajre, D., J.C. McWilliams & Y. Uchiyama, 2017: Submesoscale fronts in the inner continental shelf. *J. Phys. Ocean.* **47**, 2949-2976. doi:10.1175/JPO-D-16-0270.1
- Akan, C., J.C. McWilliams, S. Moghimi, and H.T. Ozkan-Haller, 2017: Frontal dynamics at the edge of the Columbia River plume. *Ocean Modelling* **122**, 1-12. doi:10.1016/j.ocemod.2017.12.001
- Renault, L., J.C. McWilliams, & S. Masson, 2017: Satellite observations of imprint of oceanic current on wind stress by air-sea coupling. *Scientific Reports* **7**, 17747. doi:10.1038/s41598-017-17939-1
- Renault, L., J.C. McWilliams, & P. Penven, 2017: Modulation of the Agulhas Current retroflection and leakage by oceanic current interaction with the atmosphere in coupled simulations. *J. Phys. Ocean.* **47**, 2077-2100. doi:10.1175/JPO-D-16-0168.1 [April, 2018: *Corrigidem*, p. 1009] doi:10.1175/JPO-D-18-0011.1 (*Corrigidem*)
- Sullivan, P.P., & J.C. McWilliams, 2018. Frontogenesis and frontal arrest for a dense filament in the oceanic surface boundary layer. *J. Fluid Mech.* **837**, 341-380. doi:10.1017/jfm.2017.833
- D’Asaro, E., A. Shcherbina, J.M. Klymak, J. Molemaker, G. Novelli, C. Gigand, A. Haza, B. Haus, E. Ryan, G.A. Jacobs, H.S. Huntley, N.J.M. Laxague, S. Chen, F. Judt, J.C. McWilliams, R. Barkan, A.D. Kirwan, A.C. Poje, & T.M. Ozgokmen, 2018: Ocean convergence and dispersion of flotsam. *Proc. Nat. Acad. Sci.* **115**, 1162-1167.
- McWilliams, J.C., 2018: Surface wave effects on submesoscale fronts and filaments. *J. Fluid Mech.* **843**, 479-517. doi:10.1017/jfm.2018.158
- Dong, C., Y. Cao, & J.C. McWilliams, 2018: Island wakes in shallow water. *Atmosphere-Ocean* **56**, 96-103. doi:10.1080/07055900.2018.14487501-8.

- Dauhajre, D., & J.C. McWilliams, 2018: Diurnal evolution of submesoscale front and filament circulations. *J. Phys. Ocean.* **48**, 2343-2361. doi:10.1175/JPO-D-18-0143.1
- Renault, L., J.C. McWilliams, & J. Gula, 2018: Dampening of submesoscale currents by air-sea stress coupling in the Californian Upwelling System. *Nature Sci. Rpts.* **8**, 13388: 1-7.
- McWilliams, J.C., C. Akan, & Y. Uchiyama, 2018: Robustness of nearshore vortices. *J.F.M. (Rapids)* **850**, R2-1-12. doi:10.1017/jfm.2018.510
- Liu, J., J.-H. Liang, J.C. McWilliams, P.P. Sullivan, Y. Fan, & Q. Chen, 2018: Effect of planetary rotation on oceanic surface boundary layer turbulence. *J. Phys. Ocean.*, in press.
- Liang, J.H., X. Wan, K.A. Rose, P.P. Sullivan, & J.C. McWilliams, 2018: Horizontal dispersion of buoyant materials in the ocean surface boundary layer. *J. Phys. Ocean.*, in press.
- Wenegrat, J.O., L.N. Thomas, J. Gula, & J.C. McWilliams, 2018: Effects of the submesoscale on the potential vorticity budget of ocean mode waters. *J. Phys. Ocean.*, in press.
- Persing, J., M.T. Montgomery, R.K. Smith, & J.C. McWilliams, 2018: Quasi steady-state hurricanes revisited. *Tropical Cyclone Res. and Rev.*, in press.
- Estrada-Allis, S.N., B. Barcelo-Llull, E. Pallas-Sanz, A. Rodrguez-Santana, P. Sangra, E. Mason, J.C. McWilliams, and P. Sangra, 2018: Vertical velocity dynamics and mixing in an anticyclone near the Canary Islands. *J. Phys. Ocean.*, in press.
- Dai, H., J.C. McWilliams, & J. Liang, 2018: Wave-driven currents in the marginal ice zone. *Ocean Modelling*, in press.
- Chelton, D.B., M.G. Schlax, R.M. Samelson, J.T. Farrar, M.J. Molemaker, J.C. McWilliams, & J. Gula, 2018: Prospects for future satellite estimation of small-scale variability of ocean surface velocity and vorticity. *Prog. Ocean.*, in press.
- McWilliams, J.C., 2018: A Survey of Submesoscale Currents. *Geosci. Lett.*, submitted.
- Akan, C., J.C. McWilliams, & Y. Uchiyama, 2018: Topographic and coastline influences on surf eddies. *Ocean Modelling*, submitted.
- Siegel, D.A., J.R. Watson, R.D. Simons, S. Mitarai, & J.C. McWilliams, 2018: Characterizing particle transit time metrics in a coastal ocean network. *J. Geophys. Res.*, submitted.
- Pearson, J., B. Fox-Kemper, R. Barkan, A. Bracco, J. Choi, & J.C. McWilliams, 2018: Impacts of convergence on Lagrangian statistics in the Gulf of Mexico. *Geophys. Res. Lett.*, submitted.
- Dewar, W.K., & J.C. McWilliams, 2018: On energy and turbulent mixing in the thermocline, *Journal of Advances in Modeling Earth Systems*, submitted.
- Zhao, K., A. Stewart, & J.C. McWilliams, 2018: Sill-controlled circulation in ice-shelf cavities. *J. Phys. Ocean.*, submitted.
- Srinivasan, K., J.C. McWilliams, M.J. Molemaker, & R. Barkan, 2018: Submesoscale vortical wakes in the lee of a topography. *J. Phys. Ocean.*, submitted.
- Renault, L., P. Marchesiello, S. Masson, J.C. McWilliams, 2019: Remarkable Control of Western

Boundary Currents by Eddy Killing, an Air-Sea Stress Coupling Process. *Geophys. Res. Lett.*, submitted.

McWilliams, J.C., 2018: A Perspective on the Legacy of Edward Lorenz. *Earth and Space Science*, submitted.

Gao, X., C. Dong, J. Liang, J. Yang, G. Li, D. Wang, & J.C. McWilliams, 2018: Convective Instability-induced Bottom Mixing Using Large Eddy Simulation. *Ocean Modelling*, submitted.

McWilliams, J.C., J. Gula, & M.J. Molemaker, 2019: The Gulf Stream North Wall: Ageostrophic Circulation and Frontogenesis. *J. Phys. Ocean.*, submitted.

Barkan, R., M.J. Molemaker, K. Srinivasan, J.C. McWilliams, & E. A. D'Asaro, 2018: The role of horizontal divergence in submesoscale frontogenesis. *J. Phys. Ocean.*, submitted.

Bracco, A., D. Sun, R. Barkan, J. Choi, G. Liu, D. Dauhajre, M. Berta, M.J. Molemaker, J.C. McWilliams, & A. Griffa, 2018: Diurnal Cycling of Submesoscale Dynamics: Lagrangian Implications in Model Simulations of the Northern Gulf of Mexico. *J. Phys. Ocean.*, submitted.

Dauhajre, D., and J.C. McWilliams, 2019: Nearshore Lagrangian connectivity. *Cont. Shelf Res.*, submitted.

Bodner, A.S., B. Fox-Kemper, L.P. Van Roekel, J.C. McWilliams, & P.P. Sullivan, 2019: A perturbation approach to understanding the effects of turbulence on frontogenesis. *J. Fluid Mech.*, submitted.