

CURRICULUM VITAE

ALAN J. WALLCRAFT

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Position: Research Scientist at the Center for Ocean-Atmospheric Prediction Studies

Oct2017-present: Research Scientist at COAPS

1997 – Sep2017: Computer Scientist in the Ocean Dynamics and Prediction Branch of the Naval Research Laboratory

1991 - 1997: Principal Scientist with Planning Systems Inc, supporting contracts with the above NRL Branch

1980 - 1991: Senior Scientist with JAYCOR Inc, supporting contracts with the Ocean Dynamics and Prediction Branch

Education: Ph.D., Imperial College, University of London, England,
Numerical Analysis, 1981

B.Sc., University of Essex, England,
Mathematics and Computer Science, 1977

Member DoD HPCMP User Advocacy Group (2002 - 2017) and
Shared Resource Centers Advisory Panel (1999 – 2001)

Member Earth System Modeling Framework (ESMF)
Change Review Board (2009 - 2017)

Member NSF National Resource Allocation Committee
(2001 - 2005)

Member National Oceanographic Partnership Program (NOPP)
Ocean Information Technology Infrastructure Steering
Committee (1999 - 2002)

PI or Co-PI on eight DoD HPC Challenge projects, one DoD HPC Frontier project,
one DoD HPC Institute, and three DoD HPC CHSSI projects or portfolios

Dr. Delores M. Etter Top Navy Scientists and Engineers of the Year 2013 Award.

For the Development and Operational Transition of the Navy's Global Ocean
Forecast System (GOFS).

Case study on "Eddy-resolving Global Ocean Modeling and Prediction" archived
in the Permanent Research Collection of the Smithsonian National Museum of
American History, 2000

Research Interests:

Numerical solution of finite difference and finite volume forms of partial differential equations, and their application to the development of eddy resolving numerical ocean circulation models. Ocean model design, development and maintenance. Application of scalable supercomputers to numerical ocean modeling. Model coupling.

Selected Refereed Publications (by year):

- E. Blanchard-Wrigglesworth, A. Barthelemy, M. Chevallier, R. Cullather, N. Fuckar, F. Massonnet, P. Posey, W. Wang, J. Zhang, C. Ardilouze, C.M. Bitz, G. Vernieres, A. Wallcraft, and M. Wang, 2016: [Multi-model seasonal forecast of Arctic sea-ice: forecast uncertainty at pan-Arctic and regional scales](#) *Climate Dynamics* doi:10.1007/s00382-016-3388-9
- Ngodock, H.E., I. Souopgui, A.J. Wallcraft, J.G. Richman, J.F. Shriver and B.K. Arbic, 2016: [On improving the accuracy of the M₂ barotropic tides embedded in a high-resolution global ocean circulation model](#) *Ocean Modelling* vol 97 doi:10.1016/j.ocemod.2015.10.011
- Buijsman M.C., J.K. Ansong, B.K. Arbic, J.G. Richman, J.F. Shriver, P.G. Timko, A.J. Wallcraft, C.B. Whalen and Z.X. Zhao, 2016: [Impact of Parameterized Internal Wave Drag on the Semidiurnal Energy Balance in a Global Ocean Circulation Model](#) *Journal of Physical Oceanography* vol 46 doi:10.1175/JPO-D-15-0074.1
- Hebert D.A., R. A. Allard, E. J. Metzger, P. G. Posey, R. H. Preller, A. J. Wallcraft, M. W. Phelps and O. M. Smedstad, 2015: [Short-term sea ice forecasting: An assessment of ice concentration and ice drift forecasts using the U.S. Navy's Arctic Cap Nowcast/Forecast System](#) *Journal of Geophysical Research: Oceans* vol 120 doi:10.1002/2015JC011283
- Buijsman M.C., B. K. Arbic, J. A. M. Green, R. W. Helber, J. G. Richman, J. F. Shriver, P. G. Timko and A. Wallcraft, 2015: [Optimizing internal wave drag in a forward barotropic model with semidiurnal tides](#) *Ocean Modelling* vol 85 doi:10.1016/j.ocemod.2014.11.003
- Muller M., B. K. Arbic, J. G. Richman, J. F. Shriver, E. L. Kunze, R. B. Scott, A. J. Wallcraft and L. Zamudio, 2015: [Toward an internal gravity wave spectrum in global ocean models](#) *Geophysical Research Letters* vol 42, doi:10.1002/2015GL063365
- Posey P.E., E. J. Metzger, A. J. Wallcraft, D. A. Hebert, R. A. Allard, O. M. Smedstad, M. W. Phelps, F. Fetter, J. S. Stewart, W. N. Meier, and S. R. Helfrich, 2015: [Improving Arctic sea ice edge forecasts by assimilating high horizontal resolution sea ice concentration data into the US Navy's ice forecast systems](#) *The Cryosphere* vol 9 1735-1745
- Metzger, E.J., O.M. Smedstad, P.G. Thoppil, H.E. Hurlburt, J.A. Cummings, A.J. Wallcraft, L. Zamudio, D.S. Franklin, P.G. Posey, M.W. Phelps, P.J. Hogan, F.L. Bub and C.J. Dehaan, 2014: [US Navy Operational Global Ocean and Arctic Ice Prediction Systems](#). *Oceanography* vol 27 3, <http://dx.doi.org/10.5670/oceanog.2014.66>.
- Arbic, B.K., A.J. Wallcraft and E.J. Metzger, 2010: Concurrent simulation of the eddy general circulation and tides in a global ocean model, *Ocean Modelling*, 32, 175-187.
- Kara, A.B., A.J. Wallcraft, P.J. Martin and E.P. Chassignet, 2008: Performance of mixed layer models in simulating SST in the equatorial Pacific Ocean, *J. Geophys. Res.*, 113.
- Wallcraft A.J., A.B. Kara, H.E. Hurlburt, E.P. Chassignet and G.H. Halliwell, 2008: Value of bulk heat flux parameterizations for ocean SST prediction, *J. Marine Sys.*, 74, doi:10.1016/j.marsys.2008.01.009.
- Chassignet, E.P., H.E. Hurlburt, O.M. Smedstad, G.R. Halliwell, A.J. Wallcraft, E.J. Metzger, B.O. Blanton, C. Lozano, D.B. Rao, P.J. Hogan and A. Srinivasan, 2006: Generalized vertical coordinates for eddy-resolving global and coastal ocean forecasts. *Oceanography*, 19,118-129.
- Wallcraft, A.J., A.B. Kara, and H.E. Hurlburt, 2005: Convergence of Laplacian diffusion versus resolution of an ocean model. *Geophys. Res. Lett.*, 32, L07064, doi:10.1029/2005GL022514.
- Wallcraft, A.J. 2000: SPMD OpenMP vs MPI for Ocean Models. *Concurrency: Practice and Experience*, 12, 1155-1164.
- Jacobs, G.A., Hurlburt, H.E., Kindle, J.C., Metzger, E.J., Mitchell, J.L., Teague, W.J., Wallcraft, A.J., 1994: Decade-scale trans-Pacific propagation and warming effects of an El Niño anomaly. *Nature*, 370, 360-363.