

Jay A. Austin

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Research Interests

Developing an understanding of circulation, transport, and air-sea interaction in the coastal zone, especially the inner shelf, estuaries and lakes. Primary tools include observations and numerical models. Interested in understanding the role that circulation plays in determining biological distributions.

Current position

August 2005-present: Assistant Professor, Department of Physics and the Large Lakes Observatory, University of Minnesota, Duluth.

Previous Positions:

July 2004-August 2005: Self Supporting Research Professional (SSRP), Old Dominion University Research Foundation, Norfolk, VA. Affiliated with the Center for Coastal Physical Oceanography, ODU.

October 2000- July 2004: Research Assistant Professor, Old Dominion University, Norfolk, VA.

Education

September 1998-October 2000: Postdoctoral Research Associate, Center for Oceanic and Atmospheric Sciences, Oregon State University, with John A. Barth.

1992-1998: Candidate for Ph.D. in Physical Oceanography, MIT/WHOI Joint Program. Advisor was Steven J. Lentz. Thesis ("Wind-driven Circulation on a Shallow, Stratified Shelf") was successfully defended on July 27, 1998. Official graduation date: February 1999.

1991-1992: Graduate student, Center for Applied Mathematics, Cornell University.

1991-1994: National Science Foundation Graduate Fellowship.

1991: Summer Fellowship Student, Woods Hole Oceanographic Institution, advisor was Kathryn A. Kelly.

1991: M.S. candidate and instructor, Mathematics, California Polytechnic State University, San Luis Obispo.

1986-1990: B.S., 1990 in Physics and Mathematics, Cum Laude, from California Polytechnic State University, San Luis Obispo, CA.

Peer-reviewed Papers

Crouch, J.R., Y. Shen, **J.A. Austin**, and M.S. Dinniman, Interactive Chesapeake Bay Simulation. Accepted (pending minor revisions) at *Computers and Geosciences*, 2/2007.

Savidge, D.A., and **J. Austin**, The Hatteras Front: August 2004 Velocity and Density Structure. Accepted (pending minor revisions) at *J. Geophys. Res.*, 2/2007.

Austin, J.A. and S. Colman, Lake Superior summer water temperatures are increasing more rapidly than regional air temperatures: a positive ice-albedo feedback. In press, *Geophysical Research Letters*, 2/2007.

Dale, A.C., M.D. Levine, J.A. Barth, and **Austin, J.A.**, A dye tracer reveals cross-shelf dispersion and interleaving on the Oregon Shelf. *Geophys. Res. Lett.*, 33, L03604, doi:10.1029/2005GL024959, 2006.

Cannell, C.J., D.J. Stilwell, and **J. A. Austin**, A Simulation Tool to support the development of adaptive sampling algorithms for multiple autonomous underwater vehicles. Proc. Of the IEEE Workshop on Autonomous Underwater Vehicles, Sebasco Estates, ME, 2004.

Austin, J.A. and S. Atkinson, The Design and Testing of small, Low-cost GPS-tracked drifters, *Estuaries*, 12/2004.

Austin, J.A., Estimating Effective Longitudinal Dispersion in the Chesapeake Bay, *Estuarine, Coastal, and Shelf Science* 60, 359-368, 2004.

Austin, J.A., Estimating the mean ocean-bay exchange rate for the Chesapeake Bay, *Journal of Geophysical Research*, *Journal of Geophysical Research* 107, (C11), 3192, doi:10.1029/2001JC001246, 2002.

Austin, J.A., and J. Barth, Variation in the position of the upwelling front during the 1999 upwelling season, *Journal of Geophysical Research* 107, (C11), 3180, doi:10.1029/2001JC000858, 2002.

Austin, J.A. and J. Barth, Drifter Behavior on the Oregon-Washington Shelf during Downwelling, *J. Phys. Ocean.* 32 (11), 3132-3144, 2002.

Austin, J.A., and S. J. Lentz, The Inner Shelf Response to wind-driven Upwelling and Downwelling, *Journal of Physical Oceanography* 32 , no. 7, pp. 2171-2193, 2002.

Oke, P.R., J.S. Allen, R.N. Miller, G.D. Egbert, J. Barth, **J.A. Austin**, P.M. Kosro, and M. Levine, A Modeling Study of the three-dimensional Continental Shelf Circulation off Oregon, part I: Model-Data comparisons. *J. Phys. Ocean.* 32, no. 5, pp 1360-1382, 2002.

Austin, J.A., The Role of the Alongshore Wind in the Heat Balance of the North Carolina Inner Shelf. *Journal of Geophysical Research*, 104, C8, 1999.

Austin, J.A. and S.J. Lentz. The Relationship between Synoptic Weather Systems and Meteorological Forcing on the North Carolina Inner Shelf. *Journal of Geophysical Research*, 104, C8, 1999.

Stern, M.E., and **J. A. Austin**, Entrainment of Shelf Water by a Bifurcating Continental Boundary Current. *Journal of Physical Oceanography*, v.25, No. 12, 1995.

Kelly, K.A., M.J. Caruso, and **J.A. Austin**, Wind-Forced Variations in Sea Surface Height in the Northeast Pacific Ocean. *Journal of Physical Oceanography*, v.23, No. 11, 1993.

Austin, J. A., The Mechanics of the Leaky Faucet Experiment. *Physics Letters A*, v.155, 148-154, 1991.

Book Review (peer-reviewed)

Austin, J.A., review of “Changing Sea Levels: the effects of Tides, Weather, and Climate” by David Pugh. *EOS, the Transactions, American Geophysical Union*, v. 85, #45, 9 November 2004.

Technical Reports

Austin, J.A., J. Barth, and S. Pierce, MiniBAT Hydrographic Surveys of the Oregon Shelf, May-September 1999, OSU-COAS Data Report #178, Ref. 00-2, April 2000.

Alessi, C.A., S.J. Lentz and **J. A. Austin**, Coastal Ocean Processes Inner-Shelf Study: Coastal and Moored Physical Oceanographic Measurements. WHOI-96-06, 1996.

Waldorf, B. W., J.L. Largier, S. Rennie, and **J. Austin**, Coastal Ocean Processes (CoOP) Pilot Project Data Report: R/V Cape Hatteras Shipboard Measurements: Underway, CTD, and ADCP data, October 1994. SIO reference series No. 96-9, 1996.

Waldorf, B. W., J.L. Largier, S. Rennie, **J. Austin**, and C. Greengrove, Coastal Ocean Processes (CoOP) Pilot Project Data Report: R/V Cape Hatteras Shipboard Measurements: Underway, CTD, and ADCP data, August 1994. SIO reference series No. 95-29, 1995.

Active Grants and Contracts

NSF Grant: *Collaborative Research: Cross-shelf Transport and alongshelf exchange processes in regions of multiple mesoscale fronts*. co-PI with Dana Savidge, SkIO (Lead PI) and Glenn Gawarkewicz and Jim Churchill, WHOI. Amount (to ODU): \$100,297

NSF Grant: *Collaborative Research: The Interaction of Estuarine Circulation and Wind-Driven Shelf Circulation*. Lead PI, with Arnaldo Valle-Levinson (ODU) and Jamie Pringle (UNH), co-PIs. Amount requested (to UMD): \$265,863. Start date: 1 July, 2005.

UM Grant-in-Aid *Measuring the temporal Variability of CO₂ flux at a single location in Lake Superior*. \$25000.

Minnesota Sea Grant. *The Development of Interactive Numerical Models for Classroom Use*. With Jessica Crouch and Michael Dinniman, co-PI,s (Both at Old Dominion University). \$140,000.

Completed Grants

NSF Grant: *Collaborative Research: Dye Tracer and Modeling Investigations of cross-shelf circulation during Coastal Upwelling*, start date 2/01/2002. Lead PI: Andy Dale (OSU). Total amount: \$412,000. To ODU: \$106,634.

NOAA grant: *Chesapeake Bay Observing System Experimental Integration Demonstration*. Lead ODU PI, with Larry Atkinson, John Klinck, Tom Royer, and Arnaldo Valle-Levinson, ODU co-PIs, and co-PIs from VIMS and Horn Point Laboratories. Start date: 1 October, 2004. Amount (to ODU): \$90,600.

NOAA Contract: *Development of Experimental Web-based Surface Current Radar Products*. Start date: 1/1/2005. Amount: \$20,000.

Governor of Virginia seed grant: *The Chesapeake Interactive Modeling Project*. Lead PI, with co-PIs Michael Dinniman, Elizabeth Smith, and John Klinck, CCPO, and Jessica Crouch, Lee Belfore, and Yuzhong Shen, Virginia Modeling and Simulation Center, ODU, \$105,988.

Subcontracted by the Oregon State University PISCO (Partnership for the Interdisciplinary Study of the Coastal Oceans) group to assist with the analysis of physical oceanographic data collected on the inner shelf. Amount: \$10,851.

NSF SGER grant: *A high-fidelity simulation environment to support research in adaptive sampling for Autonomous Underwater Vehicles*. Lead PI: Daniel Stilwell, Virginia Tech. Start date: 1/1/2004. Amount (to ODU): \$14,876.

Grants Submitted or in preparation:

NSF: *Thermal Bar Dynamics in Lake Ontario*. \$245,653 (to UMD; proposed). Lead PI: Joseph Atkinson, U. Buffalo.

NSF: Collaborative Research: The role of Ice in the response of Large Lakes to a Changing Climate, with K. Matsumoto, co-PI (UMTC).

At-Sea Experience

July 15-23, 2005: R/V Fay Slover, mooring recovery and hydrographic surveying near Cape Hatteras (co-PI, with Dana Savidge, PI).

January 17-February 2, 2005: R/V Savannah, mooring deployments and towed vehicle surveys off of Cape Hatteras. (Co-PI, with Dana Savidge, PI).

August 1-14, 2004: R/V Slover, towed instrument surveys off of Cape Hatteras (co-PI, with Dana Savidge lead PI).

June 2004: R/V Savannah, 2 days, instrument testing (co-PI, Dana Savidge, Lead PI).

June 2003: R/V New Horizon, 8 days, dye tracer studies (co-PI, Andrew Dale, lead PI)

June-September 2002: Participated in tracer dye studies off the Oregon coast.

February 2001- : Currently organizing and conducting monthly hydrographic surveys at the mouth of the Chesapeake Bay.

July-August 2000: R/V Sacajawea, organized and conducted towed-vehicle surveys of Oregon inner shelf, developed horizontal towing technique (six one-day cruises).

April-September 1999: R/V Sacajawea, organized and conducted towed-vehicle surveys of Oregon Inner Shelf (Twenty one-day cruises).

September 1996: R/V Endeavor, EN288, Georges Bank. CTD operator, R.C. Beardsley, PI.

August 1995: R/V Endeavor, EN273, Georges Bank. Mooring recovery, CTD operator, S.J. Lentz, PI.

November 1994: R/V Endeavor, EN258. Mooring recovery for CoOP ISS, S.J. Lentz, PI.

October 1994: R/V Cape Hatteras, CH1694. CTD/ADCP surveys of the North Carolina Coast as part of CoOP ISS, J.L. Largier, PI.

August 1994: R/V Cape Hatteras, CH1394. CTD/ADCP surveys of the North Carolina Coast as part of CoOP ISS, J.L. Largier, PI.

August 1994: R/V Endeavor, EN249. Mooring deployment for the CoOP Inner shelf Study (ISS), S.J. Lentz, PI.

Teaching Experience:

Spring 2007: Physics 5541- Fluid Dynamics

Spring 2006, Fall 2006: Physics 2011- General Physics

Fall 2005: Limnology 5101- Physical Limnology

Fall 2001-Spring 2002: Instructor, Oceanography 306, Old Dominion University

Fall 1996: TA, Introductory Physical Oceanography, MIT/WHOI, Nelson Hogg, Principal Instructor.

Summer 1995: Sea Education Association cruise C145A, assistant and advisor.

Winter, 1991: Instructor, Pre-calculus, Cal Poly San Luis Obispo

Fall 1990: Instructor, College Mathematics, Cal Poly San Luis Obispo

1987-1990: Organized and directed observing sessions at the Cal Poly Astronomical Observatory.

Departmental and Community Service

2006: Water Resources Science Admissions Committee

2005-present: Member of Environmental Sciences Major taskforce.

June-August 2005: Mentor in ODU's REU program.

January 2005: Proposed and held first ChesTech Technical Services meeting at ODU

November 2004 – July 2005: ODU OEAS Technical Services Committee.

February 2004 – July 2005: Member, ODU Faculty Senate

2003-July 2005: ODU OEAS Ships Committee.

August 2003: Panelist, New York SeaGrant.

June-August 2003: Mentor in ODU's MUST REU program.

October 2002: Co-chaired the 2002 Mid-Atlantic Bight Physical Oceanography and Meteorology Meeting (MABPOM) at Old Dominion University.

2001-July 2005: Conducting monthly Hydrographic surveys at the Chesapeake Bay Mouth as part of departmental long-term observing effort.

1999-2000: Physical Oceanography seminar coordinator at Oregon State University.

1997-present: Active reviewer of journal articles for *Journal of Physical Oceanography* (8), *Journal of Geophysical Research* (9), *Continental Shelf Research* (5), *Estuaries* (2), *Marine Biology* (1), *Limnology and Oceanography* (1), *Weather and Forecasting* (1), *Estuarine, Coastal, and Shelf Science* (1), and *Water Resources Research* (1).

1999-present: Active reviewer of grant proposals for the National Science Foundation (10), Georgia Sea Grant (1), LISS/EPA (2) and GEM (1).

Summer 1997: Hosted Steven Vogel (Zoology, Duke U.) as the visiting At-Large H. Burr Steinbach Scholar.

Summer 1996: Helped organize and host a symposium on pollution in coastal and estuarine zones.

Summer 1994: Hosted G. Holloway as the visiting H. Burr Steinbach Scholar for the Physical Oceanography Department.

1994-1997: Student Representative, MIT/WHOI joint program.

Students Advised:

Undergraduates: Sten Atkinson, Sarah Brodie (ODU).

Graduate Students: Joshua Allen, Bruce Ludewig (UMD)

Postdoctoral Scholar: Andrea van der Woude (UMD)

References

Steven J. Lentz, Associate Scientist, Woods Hole Oceanographic Institution, Woods Hole, MA 02543, steve@magus.whoi.edu, (508)289-2808.

Jack Barth, Professor, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR. 97331, barth@oce.orst.edu, (541)737-1607.

Robert C. Beardsley, Senior Scientist, Woods Hole Oceanographic Institution, Woods Hole, MA 02543, rbeardsley@whoi.edu, (508)289-2536.

Larry C. Atkinson, Eminent Professor, Old Dominion University, Norfolk, VA 23529, atkinson@ccpo.odu.edu, (757)623-4926.