Ben Moore-Maley

Oceanographer

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Professional Summary

I am a physical oceanographer with numerical ocean modeling experience on large parallel computing platforms. I am most experienced with high-resolution models of the coastal ocean, however I have worked with large, gridded ocean and atmospheric data products at the synoptic and global scales. I have used both physics-oriented and data-oriented methods for analyzing and interpreting model results, and I use a variety of software tools to conduct research including Python and Fortran.

Highlighted Skills

- Geophysical fluid dynamics
- High-performance computing
- Ocean model development
- Statistical analysis of large, gridded data sets
- Python, Fortran, Matlab, Bash/Unix, Git/Mercurial

Education

2022 | Ph.D. Oceanography, University of British Columbia, Vancouver, British Columbia
2015 | M.Sc. Oceanography, University of British Columbia, Vancouver, British Columbia
2007 | B.Sc. Biochemistry, The Evergreen State College, Olympia, Washington

Research Experience

2015-2022 | Doctoral Researcher, University of British Columbia (UBC)
Dissertation: *Wind-driven upwelling and nutrient supply in a productive estuarine sea*. doi:10.14288/1.0418447
Supervisor: Susan Allen, Professor, UBC

- Characterized wind-driven upwelling and circulation in the US/Canadian Salish Sea
- Contributed to development of the SalishSeaCast configuration of the NEMO ocean model
- Developed and ran experimental model configurations on high-performance computing clusters
- Applied data methods to model results: e.g., principal component analysis, spectral analysis
- Prepared and manipulated large oceanographic data sets in multiple formats: e.g., netCDF, SQL
- Developed automation, post-processing, analysis and visualization software in Python and Bash

2010-2014 | Master's Researcher, University of British Columbia (UBC)
Thesis: *The inorganic carbonate chemistry of the southern Strait of Georgia*. doi:10.14288/1.0167635
Supervisors: Susan Allen, Professor, UBC; Debby Ianson, Scientist, Fisheries and Oceans Canada

- Characterized seasonal carbonate chemistry variability in the US/Canadian Salish Sea
- Developed a carbonate chemistry module for a biophysical coupled model of the Strait of Georgia
- Developed and ran experimental model configurations
- Developed post-processing and visualization software using Matlab and Python

Field Experience

2016, 2017 | UBC Fraser River Sampling Cruises (3 days at sea)
Cruise IDs: none; **Vessel:** R/V Kraken; **Chief Scientists:** Richard Pawlowicz, Elise Olson

- ADCP, CTD, dissolved inorganic carbon and total alkalinity sampling

2015 | UBC Strait of Georgia Sediment Cruise (1 day at sea)
Cruise ID: none; **Vessel:** R/V John Strickland; **Chief Scientist:** Roger Francois

- Sediment core sampling

2013 | NOAA West Coast Ocean Acidification Cruise, legs 1-2 (15 days at sea)
Cruise ID: WCOA2013; **Vessels:** NOAA Ship Fairweather, R/V Point Sur; **Chief Scientist:** Richard Feely

- HPLC chlorophyll sampling, bongo net zooplankton tows, pteropod CO_2 exposure experiments

2011 | Fisheries and Oceans Canada Strait of Georgia Water Properties Cruises (11 days at sea)
Cruise IDs: 2011-09, 2011-10; **Vessels:** CCGS John P. Tully, CCGS Vector; **Chief Scientist:** Peter Chandler

- Dissolved oxygen, nutrient, dissolved inorganic carbon, total alkalinity and pH sampling

Teaching Experience

2016-2020 | **Graduate Teaching Assistant**, University of British Columbia
Introductory Oceanography (course numbers: EOSC 372, EOSC 373)

- Hosted weekly office hours with students
- Assembled, proctored and marked exams

2010-2011, 2015 | **Graduate Teaching Assistant**, University of British Columbia
Computer Methods in Earth, Ocean and Atmospheric Sciences (course number: EOSC 211)

- Supervised weekly Matlab labs; hosted weekly office hours with students
- Marked midterm assignments; proctored and marked exams

Other Projects

2011-2012 | **Developer**, Phyto'pedia, University of British Columbia

- Developed the Phyto'pedia web platform
- Supervised undergraduates involved in imaging phytoplankton and writing species profiles

Trainings

2017 | MEOPAR Marine Prediction Winter School, Mar 5-10, 2017, Rimouski, Quebec, Canada.
2014 | UBC Software Carpentry Bootcamp, Sep 25-26, 2014, Vancouver, British Columbia, Canada.

Community Engagement

2018 | **Guest Presenter**, *The Wonders of the Salish Sea* Community Education Program, Vancouver, British Columbia, Canada.

2015 | **Workshop Developer/Presenter**, GEOTRACES/Vancouver Aquarium Summer Camp Ocean Acidification Partnership, Vancouver, British Columbia, Canada.

Awards

2014-2015 | George L. Pickard Scholarship in Oceanography, UBC
2015 | Captain Thomas S. Byrne Scholarship, UBC

Publications

Peer review

Moore-Maley, B., and S. E. Allen (2022), Wind-driven upwelling and surface nutrient delivery in a semi-enclosed coastal sea, *Ocean Sci.*, **18**(1), 143–167, doi:10.5194/os-18-143-2022.

Cristiani, J., E. Rubidge, C. Forbes, **B. Moore-Maley**, and M. I. O'Connor (2021), A biophysical model and network analysis of invertebrate community dispersal reveals regional patterns of seagrass habitat connectivity, *Front. Mar. Sci.*, **8**, 717469, doi:10.3389/fmars.2021.717469.

Moore-Maley, B., D. Ianson, and S. E. Allen (2018), The sensitivity of estuarine aragonite saturation state and pH to the carbonate chemistry of a freshet-dominated river, *Biogeosci.*, **15**(12), 3743–3760, doi:10.5194/bg-15-3743-2018.

Bednaršek, N., R. A. Feely, N. Tolimieri, A. J. Hermann, S. A. Siedlecki, G. G. Waldbusser, P. McElhany, S. R. Alin, T. Klinger, **B. Moore-Maley**, and H. O. Pörtner (2017), Exposure history determines pteropod vulnerability to ocean acidification along the US West Coast, *Nat. Sci. Rep.*, **7**, 4526, doi:10.1038/s41598-017-03934-z.

Ianson, D., S. E. Allen, **B. Moore-Maley**, S. C. Johannessen, and R. W. Macdonald (2016), Vulnerability of a semienclosed estuarine sea to ocean acidification in contrast with hypoxia, *Geophys. Res. Lett.*, **43**(11), 5793-5801, doi:10.1002/2016GL068996.

Moore-Maley, B., S. E. Allen, and D. Ianson (2016), Locally driven interannual variability of near-surface pH and Ω_A in the Strait of Georgia, *J. Geophys. Res. Oceans*, **121**(3), 1600–1625, doi:10.1002/2015JC011118.

Other

Moore-Maley, B., D. Ianson, and S. E. Allen (2017), Wind-driven upwelling and seawater chemistry in British Columbia's shellfish aquaculture capital, *CMOS Bulletin*, **45**(5), 13-15.
`https://bulletin.cmos.ca/cmos-bulletin-scmo-vol-45-no-5-october-2017`

Conferences

Moore-Maley, B., and S. E. Allen, Wind-driven upwelling of surface nutrients in the Salish Sea, *2022 MEOPAR Annual Scientific Meeting*, Feb 1-9, 2022 (virtual).†

Moore-Maley, B., and S. E. Allen, Topographic influences on wind-driven upwelling in a large fjord sea, *Workshop on Physical Processes in Natural Waters*, Jun 15-18, 2020 (virtual).†

Moore-Maley, B., and S. E. Allen, Topographic influences on wind-driven upwelling in the Strait of Georgia, *54th Congress of the Canadian Meteorological and Oceanographic Society*, May 26-Jun 15, 2020 (virtual).†

Moore-Maley, B., V. Do, S. E. Allen, and D. Ianson, Topographic influences on wind-driven upwelling in a semi-enclosed temperate sea, *52nd Congress of the Canadian Meteorological and Oceanographic Society*, Jun 10-14, 2018, Halifax, Nova Scotia, Canada.†

Moore-Maley, B., V. Do, S. E. Allen, and D. Ianson, Wind-driven upwelling in the northern Strait of Georgia, *2018 Salish Sea Ecosystem Conference*, Apr 4-6, 2018, Seattle, Washington.†

Moore-Maley, B., S. E. Allen, and V. Do, Wind-driven water quality fluctuations in a large fjord estuary, *2018 Ocean Sciences Meeting*, Feb 11-16, 2018, Portland, Oregon.‡

Moore-Maley, B., S. E. Allen, D. Latornell, N. Soontiens, M. Dunphy, and J. Liu, Wind-driven circulation in the Salish Sea, *2017 MEOPAR Annual Scientific Meeting*, Jun 20-22, 2017, Montreal, Quebec, Canada.‡

Moore-Maley, B., S. E. Allen, D. Latornell, N. Soontiens, and J. Liu, Wind-driven currents in the Strait of Georgia from recent model hindcasts, *51st Congress of the Canadian Meteorological and Oceanographic Society*, Jun 4-8, 2017, Toronto, Ontario, Canada.†

Moore-Maley, B., D. Ianson, and S. E. Allen, Local inorganic carbon dynamics: Acidification status in the Georgia and Juan de Fuca Straits, *2016 Salish Sea Ecosystem Conference*, Apr 13-15, 2016, Vancouver, British Columbia, Canada.†

Moore-Maley, B., S. E. Allen, and D. Ianson, Long-term variability of pH and aragonite saturation state in the Strait of Georgia, *49th Congress of the Canadian Meteorological and Oceanographic Society*, May 31-Jun 4, 2015, Whistler, British Columbia, Canada.†

Moore-Maley, B., S. E. Allen, and D. Ianson, High seasonal variability of pH and aragonite saturation state in the Strait of Georgia, *48th Congress of the Canadian Meteorological and Oceanographic Society*, Jun 1-5, 2014, Rimouski, Quebec, Canada.‡

Moore-Maley, B., S. E. Allen, and D. Ianson, Mechanisms that influence pH and aragonite saturation state in the Strait of Georgia, *2014 Salish Sea Ecosystem Conference*, Apr 30-May 2, 2014, Seattle, Washington.†

Moore-Maley, B., S. E. Allen, and D. Ianson, Mechanisms that influence pH and aragonite saturation state in the Strait of Georgia, *22nd Biennial Conference of the Coastal and Estuarine Research Federation*, Nov 3-7, 2013, San Diego, California.†

Moore-Maley, B., S. E. Allen, and D. Ianson, The effects of physical processes on pH in the Strait of Georgia, *59th Annual Eastern Pacific Ocean Conference*, Sep 19-22, 2012, Mount Hood, Oregon.‡

Moore-Maley, B., J. Sklad, S. E. Allen, and D. Ianson, Toward effective carbon cycle modeling in an estuary using a one-dimensional vertical biophysical model, *2012 Ocean Sciences Meeting*, Feb 20-24, 2012, Salt Lake City, Utah.‡

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‡poster