

Brian Powell

Professor of Oceanography
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Professional Qualifications

2005 Ph.D., Aerospace Eng. (Physical Oceanography), Univ. of Colorado
2000 M.S., Computer Science, Univ. of Colorado
1993 B.S., Aerospace Eng., Univ. of Colorado

Academic Appointments

2018–current Professor of Oceanography, Univ. of Hawaii
2016–current Senior Fellow, Joint Institute for Marine and Atmospheric Research
2013–2018 Assoc. Professor of Oceanography, Univ. of Hawaii
2008–2013 Asst. Professor of Oceanography, Univ. of Hawaii
2006–2008 Postdoctoral Associate, Institute for Marine Science, UC–Santa Cruz
2005–2006 Postdoctoral Researcher, CIRES, CU–Boulder

Instruction

- Courses (* current instructor)

OCN 105/SUST 115*	3 cr	Sustainability in a Changing World
OCN/ERTH 312*	3 cr	Advanced Mathematics 1
OCN 481/681*	3 cr	Introduction to Ecosystem Modeling
OCN 760*	3 cr	Data Analysis with Python
OCN 310	3 cr	Global Environmental Change
OCN 418	2 cr	Advanced Environmental Monitoring Systems and Measurements

- Graduate Advisor/Sponsor

Øyvind Lundesgaard	Ph.D., 2015–2018	Physical Processes in a Western Antarctic Fjord
Emma Nuss	M.S., 2013–2016	Predicting pathogenic bacteria concentrations with a coupled microbial-physical model
Colette Kerry	Ph.D., 2010–2014	Predictability in a region of strong internal tides and dynamic mesoscale circulation: the Philippine Sea
Abby Johnson	M.S., 2009–2012	Characterizing the effluence near Waikiki, Hawaii with a coupled biophysical model.
Rebecca Baltes	M.S., 2009–2011	Observing System Simulation Experiments on the Oahu Regional Ocean Model

- Thesis Committee Member

Dianne Deaunu	Ph.D., 2020–current	Mika Siegelman	Ph.D., 2017–current
Sherry Chou	Ph.D., 2016–2020	Jakkob Wagenvoord	GES thesis, 2018–2020
Carleigh Volbrect	M.S., 2017–2019	Alma Castillo	M.S./Ph.D., 2013–2019
Conor Jerolmon	M.S., 2014–2016	Katharine Smith	Ph.D., 2013–2016
Emily Norton	M.S., 2011–2013	Ana Vaz	Ph.D., 2008–2012
Seth Travis	Ph.D., 2016–2020	Amanda Ziegler	Ph.D., 2015–2019
Victoria Futch	Ph.D., 2013–2019	Assaf Azouri	Ph.D., 2013–2016
Chantel Chang	M.S., 2014–2016	Ted Conroy	GES thesis, 2018–2020
Johanna Wren	Ph.D., 2013–2016	Christina Comfort	M.S., 2011–2012
Jake Cass	M.S., 2009–2010		

Publications

- Refereed Journal Articles

1. N. Ribbat, M. Roughan, B. S. Powell, S. Rao, and C. G. Kerry. Transport variability over the Hawkesbury Shelf (31.5–34.5 S) driven by the East Australian Current. *PLoS ONE*, in review, 2020
2. T. Friedrich, B. S. Powell, C. A. Stock, L. Hahn-Woernle, R. Dussin, and E. Curchitser. Drivers of phytoplankton blooms in Hawaii – a regional model study. *Global Biogeochem Cy*, in review, 2020
3. A. B. Leitner, T. Friedrich, C. D. Kelley, V. M. Moriwake, D. Partridge, B. S. Powell, and J. C. Drazen. Biogeophysical Influence of Large-scale Habitat Types on Deep-water Bottomfish Communities: a Hawaiian Case Study. *Mar. Ecol. Prog. Ser.*, 659:219–236, 2020
4. A. F. Ziegler, L. Hahn-Woernle, B. S. Powell, and C. R. Smith. Larval dispersal modeling suggests limited ecological connectivity between fjords on the West Antarctic Peninsula. *Int. and Comp. Biology*, in review, 2020
5. C. Kerry, M. Roughan, and B. S. Powell. Predicting the submesoscale circulation inshore of the east australian current by. *J. Marine Syst.*, 204:103286, 2020
6. L. Hahn-Woernle, B. S. Powell, Ø. Lundesgaard, and J. Melchior van Wessem. Sensitivity of the summer upper ocean heat content in a Western Antarctic Peninsula fjord. *Prog. Oceanog.*, 183 (102287), 2020
7. Ø. Lundesgaard, P. Winsor, M. Truffer, M. Merrifield, B. S. Powell, H. Statscewich, E. Eidam, and C. Smith. Hydrography and energetics of a cold subpolar fjord: Andvord Bay, western Antarctic Peninsula. *Prog. Oceanog.*, 181(102224), 2020
8. H. Simmons, B. S. Powell, S. Merrifield, S. Zedler, and P. Colin. Dynamical downscaling of equatorial flow response to Palau. *Oceanography*, 32(4):84–91, 2019. doi: <https://doi.org/10.5670/oceanog.2019.414>
9. B. Qiu, S. Chen, B. S. Powell, P. L. Colin, D. L. Rudnick, and M. C. Schönau. Nonlinear short-term upper ocean circulation variability in the tropical western Pacific. *Oceanography*, 32(4):22–31, 2019. doi: <https://doi.org/10.5670/oceanog.2019.408>
10. S. Zedler, B. S. Powell, B. Qiu, and D. Rudnick. Energy transfer in the western tropical Pacific. *Oceanography*, 32(4):136–145, 2019. doi: <https://doi.org/10.5670/oceanog.2019.419>

11. Øyvind Lundesgaard, Brian S. Powell, Mark Merrifield, Lisa Hahn-Woernle, and Peter Winsor. Response of an Antarctic Peninsula Fjord to Summer Katabatic Wind Events. *Journal of Physical Oceanography*, 49(6):1485–1502, 2019. doi: 10.1175/JPO-D-18-0119.1. URL <https://doi.org/10.1175/JPO-D-18-0119.1>
12. D. Partridge, T. Friedrich, and B. S. Powell. Reanalysis of the PacIOOS Hawaiian Island Ocean Forecast System, an implementation of the Regional Ocean Modeling System v3.6. *Geosci. Model Devel.*, 12(1):195–213, 2019. doi: <https://doi.org/10.5194/gmd-12-195-2019>
13. A. Castillo-Trujillo, D. Partridge, B. S. Powell, and P. J. Flament. Vorticity balance south shore of Oahu Hawaii, derived by high-frequency radio Doppler current observations. *J. Phys. Oceanogr.*, 49(1):211–225, 2019. doi: 10.1175/JPO-D-17-0270.1
14. S. Stevenson, B. S. Powell, K. Cobb, J. Nusbaumer, M. Merrifield, and D. Noone. 20th Century Seawater $\delta^{18}\text{O}$ Dynamics and Implications for Coral-Based Climate Reconstruction. *Paleoceanography*, 33, 2018. doi: 10.1029/2017PA003304
15. J. A.T.K. Wong-Ala, C. M. Comfort, J. M. Gove, M. A. Hixon, M. A. McManus, B. S. Powell, J. L. Whitney, and A. B. Neuheimer. How life history characteristics and environmental forcing shape settlement success of coral reef fishes. *Front. Mar. Science*, 5(65), 2018. doi: 10.3389/fmars.2018.00065
16. C. Kerry, M. Roughan, and B. S. Powell. Observation Impact in a Regional Reanalysis of the East Australian Current System. *J. Geophys. Res.*, 123(10), 2018. doi: 10.1029/2017JC013685
17. B. S. Powell. Quantifying How Observations Inform a Numerical Reanalysis of Hawaii. *J. Geophys. Res.*, 122(11):8,427–8,444, 2017. doi: 10.1002/2017JC012854
18. J. Souza and B. S. Powell. Different approaches to model the nearshore circulation in the south shore of O’ahu, Hawaii. *Ocean Science*, 13:31–46, 2017. doi: 10.5194/os-13-31-2017
19. C. Kerry, B. S. Powell, and G. Carter. Quantifying the Incoherent M_2 Internal Tide in the Philippine Sea. *J. Phys. Oceanogr.*, 46:2,483–2,491, 2016a
20. C. Kerry, B. S. Powell, M. Roughan, and P. Oke. Development and evaluation of a high-resolution reanalysis of the East Australian Current region using the Regional Ocean Modelling System (ROMS 3.4) and Incremental Strong-Constraint 4-Dimensional Variational (IS4D-Var) data assimilation. *Geosci. Model Devel.*, pages 3,779–3,801, 2016b. doi: 10.5194/gmd-9-3779-2016
21. S. Stevenson, B. S. Powell, M. Merrifield, K. Cobb, J. Nusbaumer, and D. Noone. Characterizing Seawater Oxygen Isotopic Variability in a Regional Ocean Modeling Framework: Implications for Coral Proxy Records. *Paleoceanography*, 30:1,573–1,593, 2015
22. J. Souza, B. S. Powell, A. C. Castillo-Trujillo, and P. Flament. The Vorticity Balance of the Ocean Surface in Hawaii from a Regional Reanalysis. *J. Phys. Oceanogr.*, 45:424–440, 2014
23. C. G. Kerry, B. S. Powell, and G. S. Carter. The Impact of Sub-Tidal Circulation on Internal Tide Induced Mixing in the Philippine Sea. *J. Phys. Oceanogr.*, 44:3,209–3,224, 2014a
24. C. G. Kerry, B. S. Powell, and G. S. Carter. The Impact of Subtidal Circulation on Internal Tide Generation and Propagation in the Philippine Sea. *J. Phys. Oceanogr.*, 44:1,386–1,405, 2014b
25. K. Chen, R. He, B. S. Powell, A. M. Moore, and H. G. Arango. Data Assimilative Modeling Investigation of Gulf Stream Warm Core Ring Interaction with Continental Shelf and Slope Circulation, Part 1: Method. *J. Geophys. Res.*, 119(9):5,968–5,991, 2014
26. I. Janeković, B. S. Powell, D. Matthews, M. A. McManus, and J. Sevajjian. 4D-Var Data Assimilation in a Nested, Coastal Ocean Model: A Hawaiian Case Study. *J. Geophys. Res.*, 118:1–14, 2013. doi: 10.1002/jgrc.20389

27. A. E. Johnson, B. S. Powell, and G. F. Steward. Characterizing the effluence near Waikiki, Hawaii with a coupled biophysical model. *Cont. Shelf Res.*, 54:1–13, 2013
28. B. S. Powell, B. D. Cornuelle, and C. Kerry. Using a numerical model to understand the connection between the ocean and acoustic travel-time measurements. *J. Acoust. Soc. Am.*, 134(4): 3,211–3,222, 2013
29. C. G. Kerry, B. S. Powell, and G. S. Carter. Effects of remote generation sites on model estimates of M_2 internal tides in the Philippine Sea. *J. Phys. Oceanogr.*, 43:187–204, 2013. doi: 10.1175/JPO-D-12-081.1
30. B. S. Powell, I. Janeković, G. S. Carter, and M. A. Merrifield. Sensitivity of Internal Tide Generation in Hawaii. *Geophys. Res. Lett.*, 39(L10606):1–6, 2012. doi: 10.1029/2012GL051724
31. I. Janeković and B. S. Powell. Analysis of imposing tidal dynamics to nested numerical models. *Cont. Shelf Res.*, 34:30–40, 2012
32. D. Matthews, B. S. Powell, and I. Janeković. Analysis of Four-dimensional Variational State Estimation of the Hawaiian Waters. *J. Geophys. Res.*, 117(C03013), 2012. doi: 10.1029/2011JC007575
33. D. Matthews, B. S. Powell, and R. F. Milliff. Dominant Spatial Variability Scales from Observations around the Hawaiian Islands. *Deep-Sea Res., Part I*, 58:979–987, 2011
34. A. M. Moore, H. G. Arango, G. Broquet, C. Edwards, M. Veneziani, B. S. Powell, D. Foley, J. Doyle, D. Costa, and P. Robinson. The Regional Ocean Modeling System (ROMS) 4-dimensional variational data assimilation systems: Part III – Observation impact and observation sensitivity in the California Current System. *Prog. Oceanog.*, 91:74–94, 2011b. doi: 10.1016/j.pocean.2011.05.005
35. A. M. Moore, H. G. Arango, G. Broquet, C. Edwards, M. Veneziani, B. S. Powell, D. Foley, J. Doyle, D. Costa, and P. Robinson. The Regional Ocean Modeling System (ROMS) 4-dimensional variational data assimilation systems: Part II – Performance and application to the California Current System. *Prog. Oceanog.*, 91:50–73, 2011a. doi: 10.1016/j.pocean.2011.05.003
36. A. M. Moore, H. G. Arango, G. Broquet, B. S. Powell, J. Zavala-Garay, and A. T. Weaver. The Regional Ocean Modeling System (ROMS) 4-dimensional variational data assimilation systems: Part I – System overview and formulation. *Prog. Oceanog.*, 91:34–49, 2011c. doi: 10.1016/j.pocean.2011.05.004
37. G. Broquet, A. M. Moore, C. A. Edwards, and B. S. Powell. Ocean state and surface forcing correction using the ROMS-IS4DVAR data assimilation system. *Mercator Ocean Quart. Newsl.*, 34: 5–13, 2009b
38. G. Broquet, C. A. Edwards, A. Moore, B. S. Powell, M. Veneziani, and J. D. Doyle. Application of 4D-Variational data assimilation to the California Current System. *Dynam. Atmos. Oceans*, 48: 69–92, 2009a
39. B. S. Powell and A. M. Moore. Estimating the 4DVAR Analysis Error from GODAE Products. *Ocean Dynamics*, 59:121–138, 2009
40. B. S. Powell, A. M. Moore, H. G. Arango, R. F. Milliff, and R. R. Leben. Near real-time ocean circulation assimilation and prediction in the Intra-Americas Sea with ROMS. *Dyn. Atmos. Oceans*, 48:46–68, 2009
41. B. S. Powell, H. G. Arango, A. M. Moore, E. Di Lorenzo, R. F. Milliff, and D. Foley. 4DVAR Data Assimilation in the Intra-Americas Sea with the Regional Ocean Modeling System (ROMS). *Ocean Modelling*, 25:173–188, 2008

42. E. Di Lorenzo, A. M. Moore, H. G. Arango, B. D. Cornuelle, A. J. Miller, B. S. Powell, B. S. Chua, and A. F. Bennett. Weak and Strong Constraint Data Assimilation in the inverse Regional Ocean Modeling System (ROMS): development and application for a baroclinic coastal upwelling system. *Ocean Modelling*, 16:160–187, 2007
43. B. S. Powell, R. R. Leben, and N. L. Guinasso Jr. Comparison of Buoy and Altimeter-derived Shelf Currents using an Optimal Operator. *Remote Sens. Let.*, 3:192–196, 2006
44. B. S. Powell and R. R. Leben. An optimal filter for geostrophic mesoscale currents from along-track satellite altimetry. *J. Atmos. Oceanic Tech.*, 21:1633–1642, 2004
45. R. R. Leben and B. S. Powell. Accuracy assessment of Jason-1 and TOPEX/Poseidon along-track sea surface slope. *Marine Geodesy*, 26:355–366, 2003

- Refereed Book Chapters

1. B. S. Powell. Treating nonlinearities in data-space variational assimilation. In S. Park and L. Xu, editors, *Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications*, volume 2, pages 233–250. Springer-Verlag, 2013

- Theses

1. B. S. Powell. *Global Warming and Mesoscale Eddy Dynamics: An Oceanic Mechanism for Dissipation of Heat*. PhD thesis, University of Colorado at Boulder, 2005
2. B. S. Powell. Reinforcement learning in game play. Master’s thesis, University of Colorado, 2000

Awards

2009–2014 ONR Young Investigator Award

Recent Service (past 5 years)

- Dept. of Oceanography

2020–current	Assoc. Chair, Dept. of Oceanography
2018–current	Head, Physical Oceanography Division
2017–current	Member, GES Steering Committee
2014–current	Student Advisor for GES Undergraduate Program
2009–current	Graduate Math Entrance Exam
2019–2020	Member, Dept. Personnel Committee
2017	Chair, Dept. Faculty Search Committee

- UH/SOEST

2019–current	Member, SOEST Research Council
2015–current	Member, JIMAR Senior Fellow Council
2013–current	Member, UH High Performance Supercomputing Committee
2008–current	Member, PacIOOS Steering Committee
2020, 2021	Member, UH Presidential Investigative Committees
2018–2019	Chair, Manoa Faculty Senate
2016–2019	Senator, Manoa Faculty Senate

- Post-Doctoral/Researcher Sponsor/Supervisor

2018–current	Dr. Tobias Friedrich	2018–2020	Dr. Lindsay Veazey
2016–2019	Dr. Lisa Hahn-Woernle	2016–2018	Dr. Sarah Zedler
2015–2018	Dr. Dale Partridge	2015–2017	Sarah Williamson, M.S.
2013–2015	Dr. Samantha Stevenson	2012–2014	Dr. Joao de Souza
2009–2011	Dr. Ivica Janeković	2009–2011	Marcia Hsu, M.S.
2009–2011	Dr. Dax Matthews	2008–2010	Dr. Andrei Natarov