Dr. Britt Raubenheimer
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Education:

B.A. Middlebury College, Physics, 1987
Ph.D. Scripps Institution of Oceanography, 1996

Professional Experience:

Postdoctoral Researcher, Scripps Institution of Oceanography, 1996-1999
Assistant Scientist, Woods Hole Oceanographic Institution, 1999-2003
Associate Scientist, Woods Hole Oceanographic Institution, 2003-2015
Senior Scientist, Woods Hole Oceanographic Institution, 2015-present

Honors and Awards:

ONR NDSEG Fellowship 1990-1993
ONR AASERT Fellowship 1993-1996
Mellon Postdoctoral Fellowship 1996-1999
ONR Young Investigator Award 2000-2003
NSF Career Award 2003-2007
WHOI Doherty Chair in Education 2013
WHOI Arons Award for Excellence in Teaching, Advising, and Mentoring 2014
Co-author, CHL Outstanding Journal Submission 2016
ASBPA Bob Dean Coastal Academic Award 2017
International Coastal Sediments Award, 2023

Research Interests & Activities: My research interests include surf and swash-zone processes including feedbacks among oceanographic, morphological, hydrogeological, atmospheric, and geo-technical processes during extreme events. I lead the NSF-funded Nearshore Extreme Events Reconnaissance (NEER) Association (https://neerassociation.org) and participate on the Leadership Corps for the CONVERGE (https://converge.colorado.edu). I enjoy working with students and postdocs. publications and presentations have been shared. Together we have developed, presented, and published new fundamental science concepts and models, and developed community-driven science efforts such as iFlood (https://iflood.org/).

Refereed Publications (* represents a student or postdoc as 1st author):

1. Holland, K.T., B. Raubenheimer, R.T. Guza, and R.A. Holman, Run-up kinematics on a natural beach, **J. Geophys. Res., 100**, 4985-4993, 1995.
2. Raubenheimer, B., R.T. Guza, S. Elgar, and N. Kobayashi, Swash on a gently sloping beach, **J. Geophys. Res., 100**, 8751-8760, 1995.
3. Raubenheimer, B., and R.T. Guza, Observations and predictions of run-up, **J. Geophys. Res., 101**, 25,575-25,588, 1996.
4. Raubenheimer, B., R.T. Guza, and S. Elgar, Wave transformation across the inner surf zone, **J. Geophys. Res., 101**, 25,589-25,598, 1996.

5. Elgar, S., R.T. Guza, B. Raubenheimer, T.H.C. Herbers, and E. Gallagher, Spectral evolution of shoaling and breaking waves on a barred beach, **J. Geophys. Res., 102**, 15,797-15,805, 1997.
6. Raubenheimer, B., S. Elgar, and R.T. Guza, Estimating wave heights from pressure measured in a sand bed, **J. Water. Port Coastal Ocean Eng., 124**, 151-154, 1998.
7. Raubenheimer, B., R.T. Guza, and S. Elgar, Tidal watertable fluctuations in a sandy ocean beach, **Water Res. Res., 35**, 2313-2320, 1999.
8. Lentz, S., and B. Raubenheimer, Field observations of wave setup dynamics, **J. Geophys. Res., 104**, 25,867-25,875, 1999.
9. Elgar, S., R.T. Guza, W.C. O'Reilly, B. Raubenheimer, T.H.C. Herbers, Wave energy and direction observed near a pier, **J. Water. Port Coastal Ocean Eng., 127**, 2-6, 2001.
10. Raubenheimer, B., R.T. Guza, and S. Elgar, Field observations of wave-driven setdown and setup, **J. Geophys. Res., 106**, 4629-4638, 2001.
11. Elgar, S., B. Raubenheimer, and R.T. Guza, Current meter performance in the surf zone, **J. Atmos. Ocean Tech., 18**, 1735-1746, 2001.
12. Raubenheimer, B., Observations and predictions of fluid velocities in the surf and swash zones, **J. Geophys. Res., 107**, 3190, doi:10.1029/2001JC001264, 2002.
13. Elgar, S., B. Raubenheimer, and T.H.C. Herbers, Bragg reflection of ocean waves from sandbars, **Geophys. Res. Lett., 30(1),** doi:10.1029/2002GL016351, 2003.
14. *Schmidt, W.E., B.T. Woodward, K.S. Millikan, R.T. Guza, B. Raubenheimer, and S. Elgar, A GPS-tracked surfzone drifter, **J. Atmos. Ocean Tech., 20(7),** 1069-1075, 2003.
15. Cowen, E.A., I.M. Sou, P.L.-F. Liu, and B. Raubenheimer, PIV measurements within a laboratory generated swash zone, **J. Eng. Mech., 120(10),** 1119-1129, 2003.
16. Raubenheimer, B., Steve Elgar, and R.T. Guza, Observations of swashzone velocities: a note on friction coefficients, **J. Geophys. Res., 109,** C01027, doi:10.1029/2003JC001877, 2004.
17. Elgar, S., B. Raubenheimer, and R.T. Guza, Quality control of acoustic Doppler velocimeter data in the surfzone, **J. Meas. Sci. Tech., 16**, doi:10.1088/0957-0233/16/10/002, 1889-1893, 2005.
18. *Farquharson, G., S. Frasier, B. Raubenheimer, and S. Elgar, Microwave radar cross sections and Doppler velocities measured from the surf zone, **J. Geophys. Res., 110,** C12024, doi:10.1029/2005JC003022, 2005.
19. *Thomson, J., S. Elgar, B. Raubenheimer, T. H. C. Herbers, and R. T. Guza, Tidal modulation of infragravity waves via nonlinear energy losses in the surfzone, **Geophys. Res. Lett., 33,** L05601, doi:10.1029/2005GL025514, 2006.
20. *Hsu, T.-J., and B. Raubenheimer, A numerical and field study on inner-surf and swash sediment transport, **Cont. Shelf. Res., 26**, 589-598, 2006.
21. *Apotsos, A., B. Raubenheimer, S. Elgar, R.T. Guza, The effects of wave rollers and bottom stress on wave setup, **J. Geophys. Res., 112,** C02003, doi:10.1029/2006JC003549, 2007.
22. *Thomson, J., S. Elgar, T. H. C. Herbers, B. Raubenheimer, and R.T. Guza, Refraction and reflection of infragravity waves by complex bathymetry, **J. Geophys. Res.,** 112, C10009, doi:10.1029/2007JC004227, 2007.
23. *Apotsos, A., B. Raubenheimer, S. Elgar, and R.T. Guza, Testing and calibrating parametric wave transformation models on natural beaches, **Coastal Eng., 55**, 224-235, 2008a.

24. *Apotsos, A., B. Raubenheimer, S. Elgar, R.T. Guza, Wave-driven setup and alongshore flows observed onshore of a submarine canyon, **J. Geophys. Res., 113,** C07025, doi:10.1029/2007JC004514, 2008b.
25. Elgar, S., and B. Raubenheimer, Wave dissipation by muddy seafloors, **Geophys. Res. Lett., 35**, L07611, doi:10.1029/2008GL033245, 2008.
26. Elgar, S., and B. Raubenheimer, Currents in a small sandy tidal channel, **Cont. Shelf. Res., 31,** 9–14 2010.
27. Gorrell, L., B. Raubenheimer, S. Elgar, and R. Guza, SWAN Predictions of waves observed in shallow water onshore of complex bathymetry, **Coastal Eng., 58,** 510-516, 2011.
28. Gast, R.J., L. Gorrell, B. Raubenheimer, S. Elgar, Impact of erosion and accretion on the distribution of enterococci in beach sands, **Cont. Shelf Res., 31**, 1457-1461, doi:10.1016/j.csr.2011.06.011, 2011.
29. Raubenheimer, B., D. Ralston, S. Elgar, *D. Giffen, R. Signell, Winds on the Skagit tidal flats, Washington, **Cont. Shelf Res.,** 10.1016/j.csr.2012.02.001, 2012.
30. Elgar, S., B. Raubenheimer, J. Thomson, M. Moulton, Resonances in an evolving hole in the swash zone, **J. Water. Ports Coastal Ocean Eng., 138,** 299-302, 2012.
31. *Pavel, V., B. Raubenheimer, S. Elgar, Processes controlling stratification on the northern Skagit Bay tidal flats, **Cont. Shelf Res.,** doi:10.1016/j.csr.2012.06.012, 2012.
32. *Clark, D.B., S. Elgar, and B. Raubenheimer, Vorticity generation by short-crested wave breaking, **Geophys. Res. Lett.**, 39, L24604, doi:10.1029/2012GL054034, 2012.
33. *Engelstad, A., T. Janssen, T. Herbers, G. van Vledder, S. Elgar, B. Raubenheimer, L. Trainor, A. Garcia-Garcia, Wave evolution across the Louisiana shelf, **Cont. Shelf Res.,** 52, 190-202, 2013.
34. Nittrouer, C.A., B. Raubenheimer, R.A. Wheatcroft, Lessons learned from comparisons of mesotidal sand- and mudflats, **Cont. Shelf Res.**, http://dx.doi.org/10.1016/j.csr.2013.03.003i, 2013.
35. MacMahan, J., J. van de Kreeke, A. Reniers, S. Elgar, B. Raubenheimer, E. Thornton, M. Weltmer, P. Rynne, J. Brown, Fortnightly tides and subtidal motions in a choked inlet, **Estuar. Coastal Shelf Sci.**, **150**, 325-331, DOI: 10.1016/j.ecss.2014.03.025, 2014.
36. *Moulton, M., S. Elgar, and B. Raubenheimer, Improved time resolution of the evolution of surfzone bathymetry, **Ocean Dynamics**, doi: 10.1007/s10236-014-0715-8, 2014.
37. *Wargula, A., B. Raubenheimer, and S. Elgar, Wave-driven along-channel subtidal flows in a well-mixed ocean inlet, **J. Geophys. Res.**, doi:10.1002/2014JC009839, 2014.
38. *Orescanin, M., B. Raubenheimer, and S. Elgar, Observations of wave effects on inlet circulation, **Cont. Shelf Res.,** http://dx.doi.org/10.1016/j.csr.2014.04.010, 2014.
39. *Moulton, M., S. Elgar, and B. Raubenheimer, A surfzone morphological diffusivity estimated from the evolution of excavated holes, **Geophys. Res. Lett.,** 41, doi:10.1002/2014GL060519, 2014.
40. *Hansen, J., T. Janssen, B. Raubenheimer, F. Shi, P. Barnard, and I. Jones, Observations of surfzone alongshore pressure gradients, **Coastal Eng., 91,** doi: 10.1016/j.coastaleng.2014.05.010, 2014.
41. *Diaz Mendez, G., M. Haller, B. Raubenheimer, S. Elgar, D. Honegger, Radar remote sensing estimates of waves and wave forcing at a tidal inlet, **J. Atmos. Ocean Tech., 32,** 842-854, 2015.
42. *Hansen, J., B. Raubenheimer, J. List, and S. Elgar, Modeled alongshore circulation and force balances onshore of a submarine canyon**, J. Geophys. Res., 120**, doi:10.1002/2014JCO10555, 2015.

43. Gast, R., S. Elgar, B. Raubenheimer, Observations of transport of bacterial-like microspheres through beach sand, **Cont. Shelf Res., 19**, 1-6, 2015.
44. *Goncharenko, Y.V., G. Farquharson, F. Shi, B. Raubenheimer, S. Elgar, Estimating nearshore breaking-wave heights using ATI SAR, **IEEE Geo. Remote Sens. Lett.**, *12*(10), 2061-2065, 2015.
45. *Chen, J.-L., T.-J. Hsu, F. Shi, B. Raubenheimer, and S. Elgar, Hydrodynamic and sediment transport modeling of New River Inlet (NC) under the interaction of tides and waves, **J. Geophys. Res.,** doi:10.1002/2014JC010425, 2015.
46. Spydell, M., F. Feddersen, M. Olabarrieta, J.-L. Chen, R.T. Guza, B. Raubenheimer, and S. Elgar, Observed and modeled drifters at a tidal inlet, **J. Geophys. Res.,** doi:10.1002/2014JC010541, 2015.
47. Brodie, K.L., B. Raubenheimer, S. Elgar, *R.K. Slocum, J.E. McNinch, Lidar and pressure measurements of inner-surf zone waves and setup, **J. Atmos. Ocean Tech., *32*(10),** 1945-1959, 2015. (**Winner 2016 CHL Outstanding Journal Submission**)
48. *Hopkins, J., S. Elgar, B. Raubenheimer, Observations and model simulations of wave-current interaction on the inner shelf, **J. Geophys. Res**., **121**, 198-208, doi/ 10.1002/2015JC010788, 2016.
49. *Orescanin, M., S. Elgar, B. Raubenheimer, Changes in bay circulation in an evolving multiple inlet system, **Cont. Shelf Res., 124**, 13-22, doi:10.1016/j.csr.05.005, 2016.
50. Feddersen, F., M. Olabarrieta, R.T. Guza, *D. Winters, B. Raubenheimer, S. Elgar, Observations and modeling of a tidal inlet dye tracer plume, **J. Geophys. Res**., 121, doi:10.1002/2016JC011922, 2016.
51. *Moulton, M., S. Elgar, B. Raubenheimer, J.C. Warner, N. Kumar, Rip currents and alongshore flows in channels dredged in the surf zone, **J. Geophys. Res**., 10.1002/2016JC012222, 2017.
52. Hansen, J.E., B. Raubenheimer, S. Elgar, J.H. List, T.C. Lippmann, Physical linkages between offshore bathymetry and surf zone morphologic change, **J. Geophys. Res.,** 10.1002/2016JC012319, 2017.
53. *Hopkins, J., S. Elgar, B. Raubenheimer, Flow separation effects on shoreline evolution at Martha's Vineyard, **Coastal Eng.,** 125, doi:10.1016/j.coastaleng.2017.04.007, 2017.
54. *Slivinski, L., L.J. Pratt, I.I. Rypina, M.M. Orescanin, B. Raubenheimer, J. MacMahan, S. Elgar, Assimilating Lagrangian data for parameter estimation in a multiple-inlet system, **Ocean Model.,** 113, 131-144, 2017.
55. *Orescanin, M., S. Elgar, B. Raubenheimer, L. Gorrell, Effects of a shallow flood shoal and friction on hydrodynamics of a multiple-inlet system, **J. Geophys. Res.,** 10.1002/2016JC012502, 2017.
56. *Moulton, M., G. Dusek, S. Elgar, B. Raubenheimer, Comparison of rip-current hazard-likelihood forecasts with observed rip-current speeds, **Wea. Forecasting,** 10.1175/WAF-D-17-0076.1, 2017.
57. Brodie, K.L., M. Palmsten, T. Hesser, P. Dickhudt, B. Raubenheimer, H. Ladner, S. Elgar, Evaluation of video-based linear depth inversion performance and applications using altimeters and hydrographic surveys in a wide range of environmental conditions, **Coastal Eng.,** 36, 147-160, 2018.
58. *Wargula, A., B. Raubenheimer, S. Elgar, Curvature- and wind-driven cross-channel flows at an unstratified tidal bend, **J. Geophy. Res.,** 10.1002/2017JC013722, 2018.
59. *Hopkins, J., S. Elgar, B. Raubenheimer, Storm Impact on Morphological Evolution of a Sandy Inlet, **J. Geophy. Res.,** 10.1029/2017JC013708, 2018.

60. *Wargula, A., B. Raubenheimer, S. Elgar, J.-L. Chen, F. Shi, P. Traykovski, Flow asymmetry owing to inertia and waves on an unstratified, shallow ebb shoal, **J. Geophy. Res.,** *123*(9), 6779-6799, 2018.
61. Elgar, S., B. Raubenheimer, D. Clark, M. Moulton, Extremely low frequency (0.1 to 1.0 mHz) surfzone currents, **Geophys. Res. Lett.,** 10.1029/2018GL081106, 2019.
62. U.S. Coastal Research Program (USCRP), Advancing the Understanding of Storm Processes and Impacts, Elko, N., Dietrich, C., Cialone, M., Stockdon, H., Bilskie, M.W., Boyd, B., Charbonneau, B., Cox, D., Dresback, K., Elgar, S., Tomiczek, V., Lewis, A., Limber, P., Long, J., Massey, C., Mayo, T., McIntosh, K., Nadal, N., Raubenheimer, B., Wargula, A. (Eds.), **Shore and Beach, 87(1), 37**, 2019**.**
63. *Reffitt, M., M. Orescanin, Britt Raubenheimer, Thomas Chris Massey, Steve Elgar, Modeling Storm Surge in a Small Tidal Two-inlet System, **J. Waterway Ports Coast. Ocean Eng.**, *46*(6), 04020043, 2020.
64. Elgar, S., B. Raubenheimer, Field evidence for inverse energy cascades in the surf zone, **J. Phys. Ocean., 50,** 2315-2321, 10.1175/JPO-D-19-0327.1, 2020.
65. De Schipper, M.A., B. Ludka, B. Raubenheimer, A.P. Luijendijk, T.A. Schlacher, Beach nourishment has complex implications for the future of sandy shores, **Nature Rev. Earth Environ.**, 10.1038/s43017-020-00109-9, 2020.
66. *Rafati, Y., Tian-Jian Hsu, Steve Elgar, Britt Raubenheimer, Ellen Quataert, and Ap van Dongeren, Modeling the hydrodynamics and morphodynamics of sandbar migration events, **Coastal Eng.,** *166*, 103885, 2021.
67. *Baker, C., M. Moulton, B. Raubenheimer, S. Elgar, N. Kumar, Modeled Three-Dimensional Currents and Eddies on an Alongshore-Variable Barred Beach, **J. Geophys. Res.**, http://dx.doi.org/10.1029/2020JC016899, 2021.
68. Geng, X., Heiss, J. W., Michael, H. A., Li, H., Raubenheimer, B., & Boufadel, M. C., Geochemical fluxes in sandy beach aquifers: Modulation due to major physical stressors, geologic heterogeneity, and nearshore morphology, ***Earth-Science Reviews*****,** *221*, 103800, 2021.
69. *Housego, R., B. Raubenheimer, S. Elgar, S. Cross, C. Legner, D. Ryan, Coastal flooding generated by ocean wave-and surge-driven groundwater fluctuations on a sandy barrier island. ***J. Hydrology***, 603, 126920, 2021.
70. Elko, N**.**, Foster, D., Kleinheinz, G., Raubenheimer, B., Brander, S., Kinzelman, J., Kritzer, J.P., Munroe, D., Storlazzi, C., Sutula, M., Mercer, A., Coffin, S., Fraioli, C., Ginger, L., Morrison, E., Parent-Doliner, G., Akan, C., Canestrelli, A., DiBenedetto, M., Lang, J., and Simm, J., Human and ecosystem health in coastal systems, ***Shore & Beach*****,** 90(1), pg 64-91. http://doi.org/10.34237/1009018, 2021.
71. *Cadigan, J.J., *J. Bekkaye, N. Jafari, *L. Zhu, *A. Booth, Q. Chen, Britt Raubenheimer, *B. Harris, *C. O'Conner, R. Lane, G.P. Kemp, J. Day, J.W. Day, H, Ulloa, Impacts of coastal infrastructure on shoreline response to major hurricanes in southwest Louisiana, **Frontiers Built Env**., 2022.
72. *Florence, M., Stark, N., Raubenheimer, B., Elgar, S., Nearshore vertical pore pressure gradients and onshore sediment transport under tropical storm forcing, ASCE **Journal of Waterway, Port, Coastal, and Ocean Engineering**, 2022 (Editor's Choice Selection).
73. *Paldor, A., N. Stark, M. Florence, B. Raubenheimer, S. Elgar, R. Housego, R. Frederiks, H. Michael, Coastal topography and hydrogeology control critical groundwater gradients and potential beach surface instability during storm surges, **Hydrology and Earth System Sciences**, 26(23), 5987-6002, 2022.

74. Phillips, B.M., F.J. Masters, B. Raubenheimer, M. Olabarrieta, E.S. Morrison, P.L. Fernández-Cabán, C.C. Ferraro, J.R. Davis, T.A. Rawlinson, and M.B. Rodgers, An experimental platform to study wind, hydrodynamic, and biochemical conditions in the littoral zone during extreme coastal storms, **Frontiers in Ocean Observing: Emerging Technologies for Understanding and Managing a Changing Ocean**, E.S. Kappel, V. Cullen, M.J. Costello, L. Galgani, C. Gordó-Vilaseca, A. Govindarajan, S. Kouhi, C. Lavin, L. McCartin, J.D. Müller, B. Pirenne, T. Tanhua, Q. Zhao, and S. Zhao, eds, Oceanography 36 (Supplement 1), https://doi.org/10.5670/oceanog.2023.s1.19, 2023 (Special Issue, Lightly peer-reviewed).
75. *Housego, R., B. Raubenheimer, S. Elgar, M. Wu, Hydraulic head fluctuations in an intermediate depth coastal surface aquifer, **J. Hydrology,** https://doi.org/10.1016/j.jhydrol.2023.130017, 2023.
76. Elgar, Steve, Ciara Dooley, Levi Gorrell, Britt Raubenheimer, Observations of two-dimensional turbulence in the surfzone, **Phys. Fluids**, 35, doi: 10.1063/5.0159170 2023.
77. Straub, J.A., Mary A. Cialone, Britt Raubenheimer, Jenna A. Brown, Nicole Elko, and Katherine L. Brodie, **Shore & Beach**, The During Nearshore Event Experiment (DUNEX): A collaborative coastal community experiment to address coastal resilience, 2023 (Lightly peer-reviewed journal).
78. *Christensen, D.F., B. Raubenheimer, and S. Elgar, The roles of bathymetry and waves in rip-channel dynamics, JGR Earth-Surface, http://dx.doi.org/10.1029/2023JF007389, 2024.
79. *Chen, Jinshi, Britt Raubenheimer, and Steve Elgar, Wave and roller transformation over barred bathymetry, JGR Oceans, in press, 2024.

Data Publications and Reports

1. Elgar, S., and B. Raubenheimer, PVLAB: SURF ZONE VORTICITY AND ADVECTION (RODSEX) FIELD EXPERIMENT, 10.17603/ds2-c9p4-7264, 2019.
2. Jafari, N. Bekkaye, J. Brothers, P. Cadigan, J. Chen, Q. Fathinezhad, A. OConnor, C. Raubenheimer, B., Preliminary Data Report, in *NEER: Hurricane Laura Reconnaissance*. DesignSafe-CI. https://doi.org/10.17603/ds2-4bcp-hj75, 2020.
3. Elgar, S., and B. Raubenheimer, BATHYD_TIME_SERIES, Zenodo, https://doi.org/10.5281/zenodo.4924900, 2021.
4. Mieras, R. Holsclaw, A. Jernigan, T. Miller, A. Boot, K. Raubenheimer, B., NEER Preliminary Data Report : Winter Storm January 2022, in *NEER: Winter Storm January 2022 Reconnaissance*. DesignSafe-CI. https://doi.org/10.17603/ds2-p3gq-pb19, 2022.
5. Elgar, S., and B. Raubenheimer, PRJ-3510 | Surfzone Energy Cascades: Alongshore array of current meters and pressure gages in 2 m depth, and one gage in ~1 m depth, Duck, NC, DesignSafe-CI, https://doi.org/10.17603/ds2-1vvz-nc16, 2022.
6. Athanasopoulos-Zekkos, A. Jafari, N. Raubenheimer, B. Grilliot, M. Dedinsky, K. Zdebski, J., Bekkaye, J. Robichaux, S. Lin, H. Wartman, J. Franklin, N. Park, I. Storesund, R. Hubler, J. Soltani, A. Ahmed, A. Sasanakul, I. Bray, J. Gilbert, R. Russo, B., GEER/NEER - Post Hurricane Ida, in *GEER/NEER - Post Hurricane Ida*. DesignSafe-CI, https://doi.org/10.17603/ds2-8ks9-ag46 v1, 2023.
7. Raubenheimer, B., R. Mieras, N. RAPID, A. Lyda, J. Zdebski, O. Cordero, K. Dedinsky, M. Grilliot. Pre-hurricane Ian Imagery of Fort De Soto and Cedar Key, Florida", in RAPID/NEER: Pre Hurricane Ian. DesignSafe-CI. https://doi.org/10.17603/ds2-5dxp-8523 v2, 2023.

8. Elgar, S., B. Raubenheimer, M. Moulton. (2023) "BARGAP: waves, currents, and bathymetry near dredged channels in the surfzone seafloor", in BARGAP: waves, currents, and bathymetry near dredged channels in the surfzone seafloor. DesignSafe-CI. https://doi.org/10.17603/ds2-t76g-p598.
9. Elgar, Steve, and Britt Raubenheimer 2023 Duck94 Time Series, Zenodo, https://doi.org/10.5281/zenodo.8286253
10. Elgar, Steve, and Britt Raubenheimer 2023 SandyDuck 1997 timeseries, Zenodo, https://doi.org/10.5281/zenodo.8286465
11. Elgar, Steve, Britt Raubenheimer 2024 SINKEX PUV and Survey Data (FRF 2023) Zenodo, https://doi.org/10.5281/zenodo.11179912

Invited Presentations

1. Review of swashzone processes, presented at St. Petersburg Meeting, St. Petersburg, FL, 1998.
2. Swashzone field observations and models, presented at Workshop Addressing the Effects of Surf Zone Sediment Properties on Shock Wave and Explosive Bubble Behavior, NRL-Stennis, MS, 1999.
3. Wave runup velocities, presented at ARO Nearshore Workshop, Duck, NC, 1999.
4. Swashzone fluid velocities, presented at AGU Special Session in Honor of Thomas Kinder, Dec 2001.
5. Swashzone fluid velocities, presented at Cornell Univ, Civil Eng. Dept. Seminar, Nov 2002.
6. Surfzone morphology, presented at the WHOI Coastal Forum entitled "The Moving Shoreline: Coastal Change in Response to Rising Sea Level", Apr 2004.
7. Modeling and measurement of swashzone fluid velocities, presented at International Conference on Coastal Engineering, Swashzone Workshop, Sep 2004.
8. Shoreline change: Days to years, presented at the WHOI Shoreline Change Forum, Sep 2004.
9. Nearshore research, Biology Club, Chaminade University, Honolulu, 2006.
10. PVLAB: Recent multi-investigator experiments, ONR Tidal Flats Planning Meeting, Honolulu, HI, 2007.
11. Wave Transformation in the surf, on muddy coasts, and on tidal flats, Gordon Research Conference, Jun 2009.
12. Skagit tidal flat hydrodynamics: If my hat and sunglasses blow off on the flats, where will they go?, Skagit River System Cooperative, Sep 2009.
13. Wave effects on nearshore flows, Rutgers, Apr 2013.
14. Tides, storms, and shifting sands near Katama Inlet, Sea Grant panel, 2013.
15. Wave and wind effects on inlet circulation, AGU Fall Meeting, 2014.
16. Barrier island groundwater: Sound to sea, USACE Field Research Facility, 2015.
17. Storm-driven groundwater structure, Oregon State University, 2015.
18. Waves and setup, USACE Field Research Facility, 2015.
19. The future of nearshore processes: Ongoing research, National Nearshore Collaboration Workshop, Kitty Hawk, NC, 2016.
20. DUNEX: During Nearshore Event Experiment, US Coastal Research Program Storms Workshop, St. Petersburg, FL, Apr, 2018.
21. NEER: Nearshore Extreme Event Reconnaissance, Future of Coastal Engineering workshop, D.C., Nov, 2018.

22. Lidar measurements of waves, runup, and dune erosion during storms, UNH, 2019.
23. The nearshore water-land system during major storms, Coastal Sediments, FL, 2019 **(keynote).**
24. Transdisciplinary research during major storms, International Coastal Resilience Symposium, Puerto de Abrigo S/N, Sisal, Yucatán, 2019 (**keynote**).
25. Peek, L., D. Frost, T. Kijewski-Correa, B. Raubenheimer, J. Wartman, CONVERGE Federal Briefing – Rapid Response Disaster Research: NSF-Supported Research Networks and Resources, NSF, 2020.
26. Raubenheimer, B., The Nearshore Extreme Events Reconnaissance (NEER) pre-storm rapid response for storm inundation, National Windstorm Impact Reduction Program Extreme Event Research Workshop, NIST, 2020.
27. Raubenheimer, B., Development of a nearshore extreme events reconnaissance community, Coastal Engineering Proceedings, 12-12, 2020 (**keynote**). https://doi.org/10.9753/icce.v36v.keynote.12
28. Raubenheimer, B., J. Chen, S. Elgar, H. Michael, L. Moore, N. Stark, NEER 2021 hurricane research goals, SHORELINE21, 2021.
29. Raubenheimer, B. R. Housego, S. Elgar, L. Gorrell, Coastal groundwater – an oceanographer's perspective, Scripps CASPO seminar, May 2022.
30. Raubenheimer, B., S. Elgar, L. Gorrell, R. Housego, A. Paldor, H. Michael, N. Stark, M. Florence, J. Heiss, B. Mase, The ocean, the beach, the groundwater, and storms, Eurocoast zoominar, Jan 2023.
31. Stark, N. B. Raubenheimer, One big thing: NEER response to Hurricane Laura, Converge meeting, National Science Foundation, Feb 2023.
32. Raubenheimer, B., State of Coastal Research, Scale-free Wave Flume Workshop, Univ. Del., May 2023 (**keynote**).
33. Raubenheimer, B., Steve Elgar, R. Housego, C. Piecuch, S. Das, Collecting observations to improve flood predictions, SIO Flood Workshop, San Diego, Jan 30-31, 2024.

Field Experiments:

San Onofre Experiment, Oct 1993, co-chief scientist. Designed and managed experiment to collect field observations of surfzone waves and wave run-up.

Dozer Duck Experiment, Jun/Sep 1994, participating scientist. Responsible for deployment and analysis of 8 surfzone pressure sensors during two 1-week long experiments.

Duck94 Experiment, Jul-Nov 1994, participating scientist. Assisted with deployment and maintenance of pressure sensors, current meters, and sonar altimeters used to study wave transformation across the surfzone.

Pier2 Attenuation Study, Jul 1996, chief scientist. Designed and managed deployment of 10 pressure sensors in the surfzone to observe attenuation of pressure fluctuations through a sand bed.

Torrey Pines Experiment, Sep-Nov 1996, chief scientist. Designed and managed swashzone experiment containing 38 pressure sensors and 7 current meters to observe wave run-up, infiltration, and watertable fluctuations.

Pier3 Sensor Study, Nov 1996, chief scientist. Deployed pressure gages in surfzone to test sensors prior to deployment at the SandyDuck Experiment in July 1997.

SandyDuck Experiment, Jul-Dec 1997, co-chief scientist. Designed and managed deployment of 11 Paro-scientific pressure gages to investigate wave setup in the surfzone and 2 SonTek current meters to obtain preliminary measurements of swashzone fluid velocities.

Xtree Current Meter Study, Nov 1998, co-chief scientist. Deployed 6 current meters, 2 sonar altimeters, and a pressure gage to evaluate current meter performance when sensors are intermittently submerged and to study vertical velocities in the surfzone.

SwashX Experiment, Sep-Oct 2000, chief scientist. Deployed 12 acoustic doppler velocimeters, 8 pressure gages, and a pulse-coherent acoustic doppler profiler to investigate the horizontal and vertical structure of fluid velocities in the surf and swashzones.

Truro Sandbar Study, Jul 2000, Aug-Nov 2001, Jun 2002, co-chief scientist. Surveyed bathymetry along 8 km of coastline and measured pressure, fluid velocity, suspended sediment concentration, and water density to investigate the processes important to the development, maintenance, and destruction of the multiple sandbars near Truro, MA.

Swashzone Laboratory Experiments, Mar 2001-2004, co-chief scientist. Using particle image velocimetry to investigate turbulent production and dissipation in the inner surf and swash zones, including the cross-shore variation of the ratio of breaking-wave to shear production.

NCEX, Sep-Dec 2003, co-chief scientist. Deployed 25 colocated acoustic doppler velocimeters and pressure gages along 2 km of coastline between 3.3 and 1.0-m water depths to study the two-dimensional horizontal structure of the wave-driven setup onshore of the Scripps submarine canyon

SwashX II, Oct-Nov 2003, chief scientist., Deployed 4 internally-recording ADVs and 5 vertical stacks of 3 2-dimensional ADV in the swashzone, and 9 internally-recording pressure-current meter systems at the northern end of the NCEX array to measure alongshore swashzone currents.

HoleX Experiment, Sep 2005, co-chief scientist, Deployed 16 ADV in and near a 1.5-m deep, 10-m diameter hole dug in the beach at low tide and mapped the temporal changes in sand elevations to investigate the feedback between the bathymetric evolution.

Beach Pathogens Pilot, Sep 2006, co-chief scientist, Collected sediment cores and beach profiles before and after an erosional event to investigate the fate of pathogens in the beach, and the hazards posed to human health.

WormsEx, Mar-Apr 2007, Feb-Apr 2008 co-chief scientist, Deployed 8 to 16 ADV from 2- to 5-m water depth across the muddy Louisiana shelf to measure mud-induced wave damping.

STiFEx08 & 09, Aug-Sep 2008, Jun-Sep 2009, chief scientist, Deployed over 120 instruments, including ADV, CTD sensors, pressure gages, current profilers, and weather stations over a 4 km by 4 km region of the Skagit River tidal flats to investigate the processes driving the circulation and wave generation in shallow water.

HOLEx and BeachBugs'10, Aug – Sep 2010, co-chief scientist w/ Steve Elgar, Deployed 12-16 colocated ADV and pressure gages around depressions dug in the surfzone seafloor to investigate rip currents and sediment transport. Deployed a cross-shore transect of 3 colocated ADV and pressure gages, as well as 2 optical sensors and an accelerometer (w/ Alex Sinclair, PhD student UW), to investigate bubbles and fluid accelerations in breaking waves. Deployed a cross-shore transect of 3 colocated ADV and pressure gages, as well as 3 additional buried pressure gages, while spiking the sand with nanospheres that can be used as proxy for pathogens to investigate pathogen movement in beach sands owing to waves, infiltration, groundwater flow, erosion, and accretion (w/ Becky Gast).

Katama, Jul-Oct 2011, chief scientist, Deployed 15 collocated pressure gages, ADV, and profilers to investigate circulation in a two-inlet system with ocean wave forcing. Mapped the seafloor elevations throughout the harbor, bay, and ebb shoal for preliminary studies of bathymetric evolution.

Duck11, May 2011 co-chief scientist (w/ D. Clark & S. Elgar); Oct-Nov 2011 chief scientist, Deployed circle array with 12 acoustic Doppler velocimeters to investigate vorticity

generated by breaking-wave-crest ends. Deployed 7 pressure gages to examine wave transformation and setup in the inner surf, and to evaluate Lidar measurements (collected by K. Brodie, Field Research Facility)

RIVET12/DARLA, Apr-Jun 2012, chief scientist, Deployed 30 pressure gages, 13 current profilers, and 20 acoustic Doppler velocimeters to study waves, circulation, and morphological evolution in and near a coastal inlet.

Duck '12, Jun – Aug 2012, collaborator, S. Elgar chief scientist, Deployed pressure gages and current meters around and in man-made channels to investigate rip current generation and evolution, and the associated sediment transport.

Katama '12 & '13 & '14 & '15, Oct-Nov 2012, Jun-Sep 2013, Jun-Aug 2014, Jul-Aug 2015, co-chief scientist w/ Steve Elgar. Deployed pressure gages, current profilers, acoustic Doppler velocimeters, and drifters to investigate tidal levels and currents in a rapidly evolving two-inlet system.

Vortex '13, Sep-Oct 2013 co-chief scientist (w/ D. Clark and S. Elgar) Deployed circle array with 14 acoustic Doppler velocimeters to investigate vorticity generated by breaking-wave-crest ends.

Advection '13, Sep-Oct 2013, chief scientist (w/ J. Hansen and S. Elgar) Deployed 3 spatially dense alongshore arrays in the surfzone to investigate advective accelerations.

BIGSSS '14, '15','16, '17, Sep 2014-present, chief scientist (w/ S. Elgar) Installed 30 groundwater monitoring wells across the Outer Banks with CTD to monitor effects of wind setup in the sound and ocean waves and setup on groundwater movement and salt-water intrusion.

LOWFAT, May 2015, co-chief scientist with S. Elgar & K. Brodie, measured sea surface with lidar and deployed pressure gages, current meters, sonic altimeters, and OBS at 4 locations on the foreshore, bar trough, bar crest, and shoaling zone to examine lidar measurements of waves and effects of bubbles and suspended sediments.

Little Pond '15 and Waquoit '15, Aug - Oct 2015, co-chief scientist with E. Johnson & S. Elgar, measured flow rates with pulse-coherent and boat-mounted current profilers to evaluate video and IR methods to measure bathymetry and flow discharge at Little Pond and Waquoit Bay inlets, Falmouth, MA.

BathyDuck, Sep – Oct 2015, co-chief scientist with S. Elgar & K. Brodie, deployed an array of 9 sonic altimeters and current meters to evaluate remote-sensing-based models for estimating bathymetry, and measured the sea surface with a lidar and deploying a sonic altimeter and current meter in the surf to obtain pilot data for a study to examine wave breaker type on a natural beach.

Hurricane Matthew, Oct 2016, co-chief scientist with S. Elgar, deployed 3 ADV and a wave-current profiler in 2-4 m water depth, a sonar altimeter in the upper swash, and a lidar overlooking the dune and measuring runup during Hurricane Matthew to measure wave transformation and dune erosion during an extreme storm.

Big Swash, Sep-Oct 2017, chief scientist, deployed 2 ADV in the swash during the passage of Hurricanes Jose and Maria to measure flows during extreme events.

TGP '18, Apr 2018 – present, co-chief scientist w/ Elgar, Surveyed bathymetry in Tisbury Great Pond, and topography of beach, and deployed 2 CTD in pond to measure salinity and water levels during man-made breaching of the barrier island to investigate processes contributing to recovery of the inlet and beach.

DUNEX Pilot, Sep – Oct 2019, chief scientist w/ Elgar, Deployed lidar, ADV, buried pore pressure gages, and moisture sensors in collaboration with colleagues from Virginia Tech.,

Oregon State Univ., and US Army Corps to study swash and wave-dune collision processes during storms.

DUNEX, Aug – Oct 2021, chief scientist w/ Elgar, lead scientist for multi-institutional, multi-agency field study, Deployed lidar, ADV, buried pore pressure gages, and moisture sensors in collaboration with colleagues from U. Mass-Lowell, UW, Northeastern, Virginia Tech., Delft Inst. Tech, U. Copenhagen, US Army Corps, USGS to study surf, swash, wave-dune collision, groundwater, and morphological change processes during storms.

SINKEX, Sep – Oct 2023, co-chief scientist w/ Elgar, students, and postdocs, deployed swash moisture sensor array, optical and IR cameras for surf and swash PIV, 7 ADV for studies of flows, turbulence, and wave reflection, and conducted daily beach surveys.

Educational Activities

WHOI/MIT Joint Program (JP) PhD Students (awards & current position):

Alex Apotsos, 06/02 – 08/07 (recipient AGU Congressional Fellowship 2007, USGS Mendenhall Postdoctoral Fellowship 2008, Fulbright Fellowship/AAAS Policy Fellowship 2011, now at Williams College)
Vera Pavel, 02/07 – 06/12
Anna Wargula, 07/11 – 05/17 (FHL student award 2012, PASI student award 2013, NDSEG Fellow 2013-2016, now at USNA)
Rachel Housego, 07/15-present (NSF GRFP 2017-2019, now at Penn State)
Suzi Clark (co-advisor), 09/15-08/17 (pre-generals)
Jinshi Chen, 06/19-present (PADI Foundation award, MathWorks Fellowship)
Ciara Dooley (co-advisor), 06/19-present (NDSEG Fellowship)

WHOI/MIT JP Navy Masters Students

Austin Faddish, 06/22 – 08/24
Charles Murman, 06/22 – 08/24
Seth Ammons, 06/22 – 08/24
Faith Brooks, 06/23 – 08/25

WHOI Postdoctoral Scholars (current position):

Tim Maddux, 06/02-11/04 (OSU Hinsdale Laboratory)
Jeff Hansen, 10/11 – 04/13 (UWA Assistant Professor)
Erika Johnson, 11/14 – 11/16 (WHOI postdoc with S. Elgar, NRL)
Drude Christensen, 03/21 – present (Villum Foundation postdoc)
Paige Hovenga, 10/21 – 06/23 (co-advisor w/ Elgar)
Alex Muscalus, 01/23 – present (co-advisor w/ Elgar)
Reza Salatin, 09/23 – present (co-advisor w/ Elgar)
Florian Grossmann, 09/24 – present (co-advisor w/ Elgar)

WHOI Summer Student Fellows (current position): Leslie Goemaat (lawyer), Melissa Moulton (WHOI PhD student, WHOI conference travel awardee, UW-APL), Kyle List (coastal consulting, WHOI conference travel awardee), C. Garrity (LL Bean), M. Smith (UW PhD student, WHOI conference travel awardee, WHOI Asst. Sci.), M. Munro (Mech. Eng. Oracle), J. Chen (WHOI PhD student), M. Burnham (U. Georgia, Env. Eng. major)

NSF and Doherty-funded student fellows (current position): Anil Shukla (doctor), Rick Weismiller (watershed consultant), Rachel Horwitz (Dalhousie), Catie Lichten (McGill PhD graduate), Kristie Loncich (BU PhD, high school teacher), Leslie Goemaat (also SSF, lawyer), Levi Gorrell (WHOI Res. Assoc.), Megan Crocker (petroleum geologist), Andy Pickering (OSU), Erika Ladouceur (ocean instrument consultant), Dana Giffen (coastal

consulting), Sean Kilgallin (coastal consultant), Seth Zippel (WHOI postdoc), Regina Yopak (URI PhD student), Armelle de Vienne (Colgate graduate), Brandon Grant (Moffett & Nichol Coastal Engineering), Adam Clinch (Stantec Coastal Consulting); Roham Bahktyar (Stevens Inst), L. Montoya (NCSU PhD student, USNA Prof.), K. Frost (NorTek), A. Jimenez (Moffat & Nichol Coastal Engineering), T. Araujo (U. Miami Masters student), H. Lane (Old Dominion Masters student), J. Arroyave (U. Miami PhD student), M. Roman-Rivera (USC PhD student), V. Bennett (Queens U. Masters student)

Outreach, Lay Publications, and Public Presentations

Science Fair project advisor
Ste. Adele High School, Canada 2004.
Clark Fork Middle School, Idaho, 2005, 2006.
Finding the Beach, publication in Dialogue Magazine, 2006.
Panelist, Woods Hole Diversity Day, 2006.
Panelist, Science Career Day, Middlebury College, Middlebury, VT, 2006.
Nearshore Research, presentation at Chaminade University, Honolulu, 2006.
Blind Science, presentation to National Federation of the Blind students, 2007.
Curlers, Rollers, and Waves: The Science of Sand and Surf, Ocean Explorium, Mar 2010.
A View of the Nearshore, WHOI Trustees presentation, Oct 2010.
Seeing the Nearshore, AAUW presentation, Nov 2010.
An Office on the Beach, CCCC Nontraditional Career Day, Jun 2011.
iFlood – Citizen Science Flood Reports on the Outer Banks, NC, Green Drinks OBX, Oct 2019.

Community Partnerships and Media Coverage

iFlood, Town of Duck: https://www.youtube.com/watch?v=R7yiouPQ5xQ
Oceanus Magazine, https://www.whoi.edu/oceanus/feature/with-worsening-storms-and-a-covid-era-real-estate-boom-can-the-outer-banks-protect-its-shoreline/
Oceanus Magazine, https://www.whoi.edu/oceanus/feature/burrows-on-the-beach/
Coastal Review, https://coastalreview.org/2021/07/dunex-research-delayed-by-pandemic-set-to-resume/
Racing Hurricane Ida, https://scienceline.org/2021/11/racing-hurricane-ida-how-to-measure-a-storm/

Professional Affiliations:

American Geophysical Union
American Society of Civil Engineers