

Steven L. Dykstra

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I research ocean-land-atmosphere interactions, focusing on river-marine transitions and the role of human impacts. By differentiating effects of climate change, natural variability, and the built environment, my research advances our scientific understanding of flood risks, global warming impacts, and predicting environmental change. Equally important is my **teaching of environmental stewardship** in academia, for outdoor education, and to diverse groups throughout the world.

EDUCATION

- 2021 **PhD in Marine Science**, Dauphin Island Sea Lab/University of South Alabama
(dissertation title: The role of river discharge on flooding and tides in the fluvial-marine transition)
- 2010 **Masters of Environmental Science**, Taylor University
- 2008 **Bachelors of Science in Geology**, Calvin University

PROFESSIONAL EXPERIENCE:

Academic:

2023 Aug start Assistant Professor, College of Fisheries and Ocean Science, University of Alaska Fairbanks

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- 2015-2021 *Member and Contributor*, Consortium for Oil Spill Exposure Pathways in Coastal River Dominated Ecosystems (CONCORDE), Gulf of Mexico Research Initiative
- 2016-2021 *Leader and Organizer*, Dauphin Island Sea Lab Weekly Study Group
- 2019-2020 *Contributor* to Core Investigative Team, NOAA Bottlenose Dolphin Unusual Mortality Event Along the Northern Gulf of Mexico
- 2015-2017 *Organizing Member*, CONCORDE Mentorship Program
- 2015 *Contributor*, Water Quality in Bangs Lake: Effects of Recurrent Phosphate Spills to a Coastal Estuary, Grand Bay National Estuary Research Reserve

PUBLICATIONS: PEER-REVIEWED (10, 1 in-review)

- Dykstra, S. L.**; Riche, G., Yankovsky, S. (**in-review**). Forcing conditions of cross-shelf plumes on a wide continental shelf, Winyah Bay, South Atlantic Bight. *Geophysical Research Letters*.
- Dykstra, S. L.**; Dzwonkowski, B.; Torres, R. (2022). The role of river discharge and geometric structure on diurnal tidal dynamics, Alabama, USA. *Journal of Geophysical Research: Oceans*. <https://doi.org/10.1029/2021JC018007>.
- Gadeken, K. J.; Clemo, W. C.; Ballentine, W.; **Dykstra, S. L.**; Fung, M.; Hagemeyer, A.; Dorgan, K. M.; Dzwonkowski, B. (2021). Transport of biodeposits and benthic footprint around an oyster farm, Damariscotta Estuary, Maine. *PeerJ*, <https://doi.org/10.7717/peerj.11862>.
- Dykstra, S. L.**; Dzwonkowski, B. (2021). The role of intensifying precipitation on coastal river flooding and compound river-storm surge events, northeast Gulf of Mexico. Special section: Floodplains as complex adaptive systems. *Water Resources Research*, <https://doi.org/10.1029/2020WR029363>.
- Axler, K. E.; Sponaugle, S.; Briseño-Avena, C.; Hernandez Jr., F.; Warner, S. J.; Dzwonkowski, B.; **Dykstra, S. L.**; Cowen, R. K. (2020). Variability in fine-scale distributions and predator-prey relations of larval fishes during a high discharge event in the northern Gulf of Mexico. Special issue: Latest advances in research on fish early life stages. *Marine Ecology Progress Series*, 650, <https://doi.org/10.3354/meps13397>.
- Greer, A. T.; Boyette, A. D.; Cruz, V. J.; Cambazoglu, M. K.; Dzwonkowski, B.; Chiaverano, L. M.; **Dykstra, S. L.**; Briseño-Avena, C.; Cowen, R. K.; Wiggert, J. D. (2020). Contrasting fine-scale distributional patterns of zooplankton driven by the formation of a diatom-dominated thin layer. *Limnology and Oceanography*, 22, <https://doi.org/10.1002/lno.11450>.
- Dykstra, S. L.**; Dzwonkowski, B. (2020). The propagation of fluvial flood waves through a backwater-estuarine environment. Special section: Coastal hydrology and oceanography. *Water Resources Research*, 55, <https://doi.org/10.1029/2019WR025743>.
- Dzwonkowski, B.; Fournier, S.; Reager, J. T.; Milroy, S.; Park, K.; Shiller, A. M.; Greer, A. T.; Soto, I.; **Dykstra, S. L.**; Sanial, V. (2018). Tracking sea surface salinity and dissolved oxygen on a river-influenced, seasonally stratified shelf, Mississippi Bight, northern Gulf of Mexico. *Continental Shelf Research*, <https://doi.org/10.1016/j.csr.2018.09.009>.
- Dzwonkowski, B.; Fournier, S.; Park, K.; **Dykstra, S. L.**; Reager, J. T. (2018). Water column stability and the role of velocity shear on a seasonally stratified shelf, Mississippi Bight, northern Gulf of Mexico. *Journal of Geophysical Research: Oceans*, <https://doi.org/10.1029/2017JC013624>.
- Greer, A. T.; Shiller, A. M.; Hofmann, E. E.; Wiggert, J. D.; Warner, S. J.; Parra, S. M.; Pan, C.; Book, J. W.; Joung, D.; **Dykstra, S. L.**; Krause, J. W.; Dzwonkowski, B.; Soto, I. M.; Cambazoglu, M. K.; Deary, A. L.; Briseño-Avena, C.; Boyette, A. D.; Kastler, J. A.; Sanial,

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- 2016 Graduate Student Research Grant, Geological Society of America, “Morphology driven transport at river mouths, tidal inlets, and their subsequent estuarine plumes” (\$2,500, Not Funded)
- 2015 Graduate Research Fellowship Program, National Science Foundation, “Hydrodynamics of Coastal Inlets and their subsequent estuarine plumes”, (\$114,000, Not Funded)

OUTREACH/SERVICE

- 2020-2021 Town of Dauphin Island Sensitive Wetland Management Plan
- 2015-2021 DISL events: Discovery Day, Boardwalk Talks, Coastal Cleanup
- 2013 International Student/Development Mentoring Program (Horizons International)
- 2012-2013 Zeravshan Valley Irrigation Development (Global Partners Tajikistan)
- 2002-2012 Student Ministry Leader & Mentor (Blythefield Hills/Crossroads Bible Church)
- 2010 Hanoi Municipal Arsenic Project (Dynamic Solutions Intl.- Vietnam)
- 2008-2009 Hoosier River Watch (Taylor University, Indiana DEM)
- 2006 Ngorngoro Conservation Area WASH (Hilfe für die Massai- Tanzania)
- Ongoing Reviewer: Water Resources Research (2023, 2022, 2021x2), Estuaries and Coasts (2021, 2020x3), AGU Advances (2022), Estuarine Coastal and Shelf Science (2023x2), Climatic Change (2022), I. J. Env. Res. and Public Health (2023), Env. Processes (2021), Continental Shelf Res. (2017x2)

COURSES INSTRUCTED (9 university sessions, 15 outdoor courses, 11 invited lectures)

University Courses Taught:

- 2022 Coastal Processes (UofSC: MSCI/GEOL 215) 1 session: Instructor of Record
- 2018-2019 Ocean Science Lab (USA: MAS 134L) 4 sessions: Teaching Assistant
- 2009 Geomorphology (TU: ENS 361) 1 session: Teaching Assistant
- 2009 General Chemistry I Lab (TU: CHE 201) 3 sessions: Teaching Assistant

Outdoor Education Courses Taught:

- 2013 Slot canyon geology (canyoneering; Expedition Therapy): 1 week
- 2013 Ponderosa Pine Forest Ecology (backpacking; Expedition Therapy): 1 week
- 2013 Wilderness First Aid (camping; Expedition Therapy): 1 week
- 2013 Wilderness Survival Skills (backpacking; Expedition Therapy): 1 week
- 2013 Novice Aviation and RC Development (various; Expedition Therapy): 1 week
- 2012 Spiritual Renewal on Coastal Lake MI (backpacking; CBC): 3 days
- 2011 Spiritual Renewal on Manitou Island (backpacking; CBC): 1 week
- 2011 Spiritual Renewal in Northern Hardwoods (various; CBC): 3 days
- 2009 Natural History of SW&SE US National Parks (various; Intrepid Travel): 3 weeks
- 2009 Geology of the Southwestern United States (various; Intrepid Travel): 3 weeks
- 2009 Coastal Process of California (various; Intrepid Tr 612 t12 0 0 1 465.4i9

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2019	Ocean Science (USA: MAS 134)
2019, 2017	Marine Sciences II (USA: MAS 332)
2018	Coastal Morphology & Processes (UWF: GEO 5225)
2017	Marine Sciences I (USA: MAS 331)
2009	Hydrogeology (TU: ENS 362)
2009	Geomorphology (TU: ENS 361)

MENTORING ACTIVITIES

Academic Mentoring:

2023-present	<i>Graduate Research Assistant, Nicole Webster (UAF): Committee Member</i>
2023-present	<i>Graduate Research Assistant, Isabella Moore (UofSC): Committee Member</i>
2022-present	<i>Graduate Research Assistant, Mahsa Ahmadpoor (UofSC)</i>
2022-present	<i>Graduate Research Assistant, William Logan (UofSC)</i>
2022-present	<i>Graduate Research Assistant, Reyna Sanchez Gomez (Cal Poly)</i>
2021-present	<i>Graduate Research Assistant, Lindsay Mullins (Mississippi State)</i>
2021-2022	<i>Graduate Research Assistant, Matt Lobo (Princeton/Portland State)</i>
2021-2022	<i>Undergrad/Graduate Estuary Fieldwork Techs, four students (UofSC)</i>
2021-2022	<i>Undergraduate Research Assistant, Olivia Szot (UofSC)</i>
2021-2022	<i>Graduate Research Assistant, Nick McGuire (Cal Poly)</i>
2016-2017	<i>Graduate Coastal Fieldwork Techs, numerous (USA, USM, UA, AU)</i>
2008-2009	<i>Graduate Student Outdoor Educators, 6 students (Taylor U.)</i>

Non-Academic Mentoring:

2002-2021	Student Ministry, ~100 students (middle school through college)
2014	Wilderness Therapy, 8 students (Expedition Therapy)

Mentoring Programs Created:

2013	International Student Mentoring, part of Internship Program (Horizons Int.)
2011-2012	Christian Discipleship, Mentor-Mentee Trainings (Crossroads Bible Church)

SELECTED TRAININGS and CERTIFICATES (19)

2023	Arctic Chief Scientist Training Cruise (UNOLS:AICC & NSF:OPP)
2022	Sediment Transport and River Mechanics (UofSC: G. Parker/E. Viparelli)
2020	Grant Writing Workshop: NASA ROSES (NASA, AGU)
2020	Introduction to the Community WRF-Hydro Modeling System (NCAR, AGU)
2020	Python for Remote Sensing: Analysis, Visualization, and Workflow (AGU)
2020	Surface Processes: How to Build Coupled Models (CSDMS, GSA)
2020	NASA Data Made Easy: Getting Started with SAR (NASA, GSA)
2016	Summer School on Estuarine Physics (Univ. of Bordeaux: A. Valle-Levinson)
2016	Motorboat Operator Certification Course (Scientific Boating Safety Association)
2015	Environmental Fluids Dynamics Code Explorer Training (Dynamic Sol. Intl.)
2015	CPR and First Aid Instructor (ProTrainings)
2013	Wilderness First Responder (Wilderness Medicine Institute)
2012	Engaging Middle Eastern People Cultural Training (Horizons International)
2012	Advanced Personal Protection & Captivity Survival Course (Ft. Sherman)
2012	Pre Field Training (Pioneers International)
2011	Cultural Intelligence (Life International)
2010	Fundraiser Training (Pioneers International)
2009	Commercial Drivers License (Class B)

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2017

Gulf of Mexico Research Initiative: Global Applications for Local Circulation
<https://gulfresearchinitiative.org/grad-student-dykstra-sees-global-applications-local-ocean-circulation-maps/>

PUBLICATIONS: DATA and TOOLS (18 Data Publications, 1 Tool)

Dykstra, S. L., R. Torres, E. Viparelli, S. A. Talke, A. E. Yankovsky (2022). Historical Water Level Data of the Greater Charleston Region (1975-1992), Previously Unpublished by NOAA, HydroShare,

<http://www.hydroshare.org/resource/6426732916294b03950d5cc9ca15b252>

Dykstra, S. L., R. Torres, E. Viparelli, S. Talke, A. E. Yankovsky (2022). Water Level and Temperature Data of the Greater Charleston Region (Ashley, Cooper, and Wando Rivers), Field Collected 2021 May-November,

HydroShare, <http://www.hydroshare.org/resource/87a32300574b4489b1716d5ed058c085>

Szot, O.; **Dykstra, S. L.** (2022). Longitudinal DEM Tool for the Extraction of River and Estuary Cross Sections. Published by GitHub, inc. https://github.com/onszot/longitudinal_DEM

Dykstra, S. L.; Dzwonkowski, B. (2020). The Thalweg and Sub-Tidal Flow of a Backwater-Estuarine Environment. *Estuaries and Coasts*, 43(1), 1-15.

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- Dzwonkowski, B.; Lockridge, G.; **Dykstra, S. L.** (2018). Drifter data at Main Pass, Mobile Bay Release 1 (2015/09/04) Consortium for Oil Spill Exposure Pathways in Coastal River-Dominated Ecosystems (CONCORDE). <https://doi.org/10.7266/N7ZW1HW9>
- Dzwonkowski, B.; **Dykstra, S. L.**; O'Brien, S.; Lockridge, G. (2018). CTD profiles, Main Pass, Mobile Bay, Alabama, April 3, 2016 Consortium for Oil Spill Exposure Pathways in Coastal River-Dominated Ecosystems (CONCORDE). <https://doi.org/10.7266/N7D50KCT>
- Wiggert, J. D.; O'Brien, S. J.; **Dykstra, S. L.**; Dzwonkowski, B.; Wallace, D. J.; Lockridge, G. (2018). Total Suspended Solids in situ data, northern Gulf of Mexico, Mobile Bay river plume, March-April 2016 Consortium for Oil Spill Exposure Pathways in Coastal River-Dominated Ecosystems (CONCORDE). <https://doi.org/10.7266/N74Q7S2Z>
- Wiggert, J. D.; O'Brien, S. J.; **Dykstra, S. L.**; Dzwonkowski, B.; Wallace, D. J.; Lockridge, G. (2018). LISST-100X (type B) grain size distribution, northern Gulf of Mexico, Mobile Bay river plume, October 2015 Consortium for Oil Spill Exposure Pathways in Coastal River-Dominated Ecosystems (CONCORDE). <https://doi.org/10.7266/N7J1016T>
- Wiggert, J. D.; O'Brien, S. J.; **Dykstra, S. L.**; Dzwonkowski, B.; Wallace, D. J.; Lockridge, G. (2018). LISST-100X (type B) grain size distribution, sediment distribution, Mobile Bay river plume, March-April 2016 Consortium for Oil Spill Exposure Pathways in Coastal River-Dominated Ecosystems (CONCORDE). <https://doi.org/10.7266/N7D798F3>
- Wiggert, J. D.; O'Brien, S. J.; **Dykstra, S. L.**; Dzwonkowski, B.; Wallace, D. J.; Lockridge, G. (2018). Total Suspended Solids in situ data, northern Gulf of Mexico, Mobile Bay river plume, October 2015 Consortium for Oil Spill Exposure Pathways in Coastal River-Dominated Ecosystems (CONCORDE). <https://doi.org/10.7266/N78G8HRT>

RESEARCH PRESENTATIONS: PRESENTOR (29, 7 invited)

Dykstra, S. L., Viparelli, E.; Szot, O.; Talke, S. A.; Yankovsky, A. E.; Torres, R. (2022, Dec). Water Level Trend Variability from Tidal Oscillations, Charleston Harbor, USA. American Geophysical Union Fall Conference. Poster presentation in Chicago, IL.

Dykstra, S. L. (2022, Oct). Differentiating climate change, natural variability, and direct human impacts in coastal environments. College of Fisheries and Ocean Science Seminar, University of Alaska Fairbanks. **Invited** oral presentation in Fairbanks, AK.

Dykstra, S. L., Baranes, H.; Talke, S. A.; Jay, D. (2022, Oct). The many factors influencing sea level trends and variability in deltas. Physics of Estuaries and Coasts Conference. Oral presentation in Perth, Australia.

Dykstra, S. L. (2022, Mar). River, tide, and storm surge interactions in natural and engineered channels, the Tombigbee-Alabama Delta and Charleston Harbor System. School of Earth, Ocean, and Environment Seminar, University of South Carolina. **Invited** oral presentation in Columbia, SC.

Dykstra, S. L. (2022, Feb). Longitudinal shifts of tide-river dynamics. Delta Seminar at the University of Texas at Austin. **Invited** oral presentation.

Dykstra, S. L., Dzwonkowski, B. (2021, Dec). The role of intensifying precipitation on coastal river flooding and compound ri33 G(D)-6(yk)-6(s)-6(tr)6(a, S)-6(. L.;)TJETQq0.00000912 0 612 7Aae1 320

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- Dykstra, S. L. (2021, Mar).** The role of river discharge on flooding and tides in the fluvial-marine transition. University of South Alabama PhD Defense. Oral presentation. [youtube.com/watch?v=jegetUWPtSA](https://www.youtube.com/watch?v=jegetUWPtSA)
- Dykstra, S. L., Dzwonkowski, B. (2020, Dec).** Linking global precipitation intensification to coastal river and compound flooding. American Geophysical Union Fall Conference. Oral presentation.
- Dykstra, S. L. (2020, Nov).** River flow in coastal environments. Woods Hole Oceanographic Institution Applied Ocean Physics & Engineering Seminar. **Invited** oral presentation.
- Dykstra, S. L. (2020, Nov).** Determining the timing and magnitude of river discharge events for shellfish closures. Dauphin Island Sea Lab Seminar. Oral presentation.
- Dykstra, S. L., Dzwonkowski, B. (2020, Sep).** River flood wave dynamics in a deltaic-estuarine environment. September EuroCoast Meeting. **Invited** oral presentation hosted online by Utrecht University, Netherlands.
- Dykstra, S. L., Dzwonkowski, B. (2019, Dec).** The increasing frequency of coastal flooding, northeast Gulf of Mexico Watersheds. American Geophysical Union Fall Conference. Poster presentation in San Francisco, CA.
- Dykstra, S. L., Dzwonkowski, B. (2019, Nov)**

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Environment, Main Pass, Mobile, AL. Graduate Research Forum at the University of South Alabama. Poster presented in Mobile, AL.

Dykstra, S. L., Dzwonkowski, B., Lockridge, G., O'Brien, S. J., Wiggert, J. (2016, Mar). Lagrangian Observations of a Tidal Plume through an Ebb Tidal Delta. Gulf of Mexico

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Many, G., Bourrin, F., Durrieu de Madron, X., Ody, A., Doxaran, D., Cauchy, P. (2018), Glider and satellite monitoring of the variability of the suspended particle distribution and size in the Rhône ROFI, *Progress in Oceanography*, 163, 123–