

Kathryn E. F. Shamberger – Curriculum Vitae

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<https://ocean.tamu.edu/people/profiles/faculty/shambergerkathryn.html>

Education

- 2011 **Ph.D. in Chemical Oceanography**
University of Washington, Seattle, WA.
Dissertation title: *Calcification, Organic Production, and Carbon Dioxide on a Hawaiian Coral Reef.*
Advisor: Dr. Richard A Feely
- 2005 **M.S. in Chemical Oceanography**
University of Hawaii-Manoa, Honolulu, HI.
Thesis title: *Processes Controlling Air-Sea Exchange of CO₂ in Kaneohe Bay, Oahu, Hawaii.*
Advisor: Dr. Fred T Mackenzie
- 2001 **B.A. in Marine Science, emphasis in Chemistry**
University of San Diego, San Diego, CA.
Graduated with honors
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Positions Held

- 2021 – current Associate Professor, Texas A&M University (TAMU)
- 2014 – 2021 Assistant Professor, TAMU
- 2013 Postdoctoral Investigator, Woods Hole Oceanographic Institution
- 2011 – 2013 Postdoctoral Scholar, Woods Hole Oceanographic Institution
- 2005 – 2011 Graduate Research Assistant, University of Washington
- 2003 – 2005 Graduate Research Assistant, University of Hawaii
- 2002 – 2003 Graduate Teaching Assistant, University of Hawaii
- 2001 Intern, Center for Tropical Research, Mote Marine Laboratory
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Research Interests

Ocean acidification, seawater carbonate chemistry, coastal ocean carbon cycling, impacts of climate change on ocean ecosystems, calcifying marine ecosystems, ecosystem-level calcification and production, tropical coral reefs, deep-sea coral reefs, oyster reefs.

Honors and Awards

2020	TAMU College of Geosciences Montague-Center for Teaching Excellence Scholar
2018	TAMU Association of Former Students Distinguished Achievement College-Level Teaching Award
2011 – 2013	Woods Hole Oceanographic Institution Postdoctoral Scholarship
2007	Best poster award, Surface Ocean Lower Atmosphere Study (SOLAS) Summer School
2001	Anderson Scholarship for internship with Mote Marine Laboratory, Center for Tropical Research
2000 – 2001	Member of Mortar Board Senior Honors Society, Alcala chapter, University of San Diego
1999	Alcala Leadership Program, University of San Diego
1997 – 2001	University of San Diego Honors Program
1997 – 2001	Trustee Scholarship (academic scholarship), University of San Diego

Publications

**Indicates graduate student advisee; Shamberger previously published as Fagan*

Refereed Publications

19. Shore, Amanda, Jordan A Sims, Michael Grimes, Lauren I Howe-Kerr, Lauren Stadler, Jason B Sylvan, **Kathryn E F Shamberger**, Sarah Whitney Davies, Lory Z. Santiago-Vazquez, Adrienne M.S. Correa. 2021. On a Reef Far, Far Away: Anthropogenic Impacts Following Extreme Storms Affect Sponge Health and Microbiomes. *Frontiers in Marine Science*. 8:608036. doi: 10.3389/fmars.2021.608036

18. Steve S. Doo, *Andrea Kealoha, Andreas Andersson, Anne L. Cohen, *Tacey L. Hicks, Zackary I. Johnson, Matthew H. Long, Paul McElhany, Nathaniel Mollica, **Kathryn E. F. Shamberger**, Nyssa J. Silbiger, Yuichiro Takeshita, D. Shallin Busch. 2020. The challenges of detecting and attributing ocean acidification impacts on marine ecosystems. *ICES Journal of Marine Science*. doi:10.1093/icesjms/fsaa094.

17. *Kealoha A.K., **Shamberger K.E.F.**, DiMarco S.F., Thyng K.M., Hetland R.D., Manzello D.P., Slowey N.C., Enochs I.C. 2020b. Surface Water CO₂ Variability in the Gulf of Mexico (1996-2017). *Scientific Reports*. 10.1038/s41598-020-68924-0

16. Lentz S.J, Cohen A.L., **Shamberger K.E.F.**, Barkley H.C. 2020. Observations and a Model of Net Calcification Declines in Palau's Largest Coral Reef Lagoon between 1992 and 2015. *Journal of Geophysical Research:Oceans*, 125, e2020JC016147. <https://doi.org/10.1029/2020JC016147>

15. *Kealoha A.K., S.M. Doyle, **K.E.F. Shamberger**, J.B. Sylvan, R.D. Hetland, S.F. DiMarco. 2020a. Localized hypoxia may have caused coral reef mortality at the Flower Garden Banks. *Coral Reefs*. 39, 119–132. <https://doi.org/10.1007/s00338-019-01883-9>

14. Wright, Rachel M., Adrienne M.S. Correa, Lucinda A. Quigley, Lory Z. Santiago-Vázquez, **Kathryn E. F. Shamberger**, Sarah W. Davies. 2019. Gene expression of endangered coral (*Orbicella* spp.) in Flower Garden Banks National Marine Sanctuary after Hurricane Harvey. *Frontiers in Marine Science*. 6:672. doi:10.3389/fmars.2019.00672
13. ***Kealoha A.K.**, **Shamberger K.E.F.**, Reid E., Davis K.A., Lentz S.J., Brainard, R., Oliver T., Rappe M., Roark E.B., Rii S. 2019. Heterotrophy of oceanic particulate organic matter elevates net ecosystem calcification. *Geophysical Research Letters*. 46, 9851–9860. <https://doi.org/10.1029/2019GL083726>
12. **Shamberger, K.E.F.**, S.J. Lentz, A.L. Cohen. 2018. Low and Variable Ecosystem Calcification in a Coral Reef Lagoon under Natural Acidification. *Limnology and Oceanography*, 63(2), 714-730, 10.1002/lno.10662.
11. Baco, Amy R., Nicole Morgan, E. Brendan Roark, Mauricio Silva, **Kathryn E. F. Shamberger**, Kelci Miller. 2017. Defying Dissolution: Discovery of Deep-Sea Scleractinian Coral Reefs in the North Pacific. *Scientific Reports*, 7, 5436, 10.1038/s41598-017-05492-w.
10. DeCarlo, T.M., A.L. Cohen, G.T.F. Wong, F.-K. Shiah, S.J. Lentz, K.A. Davis, **K.E.F. Shamberger**, P. Lohmann. 2017. Community production modulates coral reef pH and the sensitivity of ecosystem calcification to ocean acidification. *JGR-Oceans*, 122, 10.1002/2016JC012326.
9. Albright, R., Caldeira, L., Hosfelt, J., Kwiatkowski, L., Maclaren, J. K., Mason, B. M., Nebuchina, Y., Ninokawa, A., Pongratz, J., Ricke, K. L., Rivlin, T., Schneider, K., Sesboue, M., **Shamberger, K.**, Silverman, J., Wolfe, K., Zhu, K., Caldeira, K. 2016. Reversal of ocean acidification enhances net coral reef calcification. *Nature*, 531, 362-365, 10.1038/nature17155.
8. Barkley, H.C., Cohen, A.L., Golbuu, Y., Starczak, V.R., DeCarlo, T.M., and **Shamberger, K.E.F.** 2015. Changes in coral reef communities across a natural gradient in seawater pH. *Science Advances*, 1, e1500328, 10.1126/sciadv.1500328.
7. DeCarlo, T.M., A.L. Cohen, H.C. Barkley, Q. Cobban, C. Young, **K. Shamberger**, R. Brainard, Y. Golbuu. 2015. Coral macrobioerosion is accelerated by ocean acidification and nutrients. *Geology*, 10.1130/G36147.1.
6. **Shamberger, K. E. F.**, Cohen, A. L., Golbuu, Y., McCorkle, D. C., Lentz, S. J., Barkley, H. C. 2014. Diverse Coral Communities in Naturally Acidified Waters of a Western Pacific Reef. *Geophysical Research Letters*, 41, 10.1002/2013GL058489.
5. Drupp, P. S., De Carlo, E. H., Mackenzie, F. T., Sabine, C. L., Feely, R. A., **Shamberger K. E. F.** 2013. Comparison of CO₂ Dynamics and Air-Sea Gas Exchange in Differing Tropical Reef Environments. *Aquatic Geochemistry*, 10.1007/s10498-013-9214-7.
4. Massaro, R. F. S., De Carlo, E. H., Drupp, P. S., Mackenzie, F. T., Maenner-Jones, S., **Shamberger, K. E.**, Sabine, C. L., Feely, R. A. 2012. Multiple Factors driving Variability of

CO₂ Exchange Between the Ocean and Atmosphere in a Tropical Coral Reef Environment. *Aquatic Geochemistry*, 18(4), 357-386, 10.1007/s10498-012-9170-7.

3. **Shamberger, K. E. F.**, Feely, R. A., Sabine, C. L., Atkinson, M. J., DeCarlo, E. H., Mackenzie, F. T., Drupp, P. S., Butterfield, D. A. 2011. Calcification and Organic Production on a Hawaiian Coral Reef. *Marine Chemistry*, 127(1-4), 64-75, 10.1016/j.marchem.2011.08.003.

2. **Fagan, K. E.** and Mackenzie, F. T. 2007. Air-sea CO₂ exchange in a subtropical estuarine-coral reef system, Kaneohe Bay, Oahu, Hawaii. *Marine Chemistry*, 106(1-2): 174-191. doi:10.1016/j.marchem.2007.01.016

1. E. Gaidos, B. Deschenes, L. Dundon, **K. Fagan**, C. Mcnaughton, L. Menviel-Hessler, N. Moskovitz, and M. Workman. 2005. Beyond the Principle of Plenitude: A Review of Terrestrial Planet Habitability. *Astrobiology*, 5(2): 100-126.

Publications Under Review

***Hicks, T.L., Shamberger K.E.F.**, Fitzsimmons, J.N., Jensen, C., DiMarco, S. *In review*. Tropical Cyclone-Induced Coastal Acidification. *Nature Communications Earth and Environment*.

Shawn M. Doyle, Miabel J. Self, Joseph Hayes, **Kathryn E.F. Shamberger**, Adrienne M.S. Correa, Sarah W. Davies, Lory Z. Santiago-Vázquez, and Jason B. Sylvan. *In review*. Microbial Community Dynamics Provide Evidence for Hypoxia During a Coral Reef Invertebrate Mortality Event. *Applied and Environmental Microbiology*.

Emily Osborne, Xiping Hu, Emily R. Hall, Kimberly Yates, Jennifer Vreeland-Dawson, **Katie Shamberger**, Leticia Barbero, J. Martin Hernandez-Ayon, Fabian Gomez, ***Tacey Hicks**, Yuan-Yuan Xu, Melissa McCutcheon, Michael Acquafredda, Cecilia Chapa-Balcorta, Orion Norzagaray, Denis Pierrot, Alain Munoz-Caravaca, Kerri Dobson, Nancy Williams, Nancy Rabalais, and Padmanava Dash. *In review*. Ocean Acidification in the Gulf of Mexico: Drivers, Impacts, Unknowns, and the Role of the Gulf of Mexico Coastal Acidification Network. *Progress in Oceanography*.

Non-Refereed Publications

Manzello D.P. and **Shamberger K.E.F.** 2015. Is there a CO₂ tipping point for coral reefs? Spring 2015 Ocean Carbon & Biogeochemistry Newsletter.

Field Experience (295 days total)

Aug-Oct 2021 (45 days) R/V *Kilo Moana*. Remote participant on Northwest Hawaiian Islands and Emperor Seamount Chain deep-sea coral research cruise.

Project Co-PI.

Jun 2018 (1 day) R/V *Trident*. Galveston Bay research cruise. Carbonate chemistry lead.

Nov 2017	(1 day) R/V <i>Trident</i> . Hurricane Harvey Galveston Bay research cruise. <u>Carbonate chemistry lead.</u>
Oct 2017	(6 days) R/V <i>Point Sur</i> . Hurricane Harvey Flower Garden Banks research cruise. <u>Project Co-PI.</u>
Sep 2017	(2 days) R/V <i>Pelican</i> . Hurricane Harvey Texas coast and Flower Garden Banks research cruise. <u>Project Co-PI.</u>
Feb 2017	(3 days) Palau International Coral Reef Center. Filmed a Google 360 video with TAMU on my coral reef research. <u>Project lead.</u>
Jan 2017	(17 days) Hawaii Institute of Marine Biology. Coral reef field work in Kaneohe Bay, Oahu, HI. <u>Project lead.</u>
Jan 2015	(16 days) Palau International Coral Reef Center. Coral reef field work in Palau. <u>Project Co-PI.</u>
Jun-Jul 2014	(10 days) Dongsha Atoll Research Station, Dongsha Atoll Marine National Park. Coral reef field work in the South China Sea. <u>Project Co-PI.</u>
Oct-Nov 2013	(21 days) Palau International Coral Reef Center. Coral reef field work in Palau. <u>Project Co-PI.</u>
Feb-Mar 2013	(35 days) One Tree Island Research Station. Coral reef field work on the Great Barrier Reef. Helped develop experimental methods and collected and analyzed carbonate chemistry water samples.
Mar-Apr 2012	(18 days) Palau International Coral Reef Center. Coral reef field work in Palau. <u>Project Co-PI.</u>
Sep 2011	(10 days) Palau International Coral Reef Center. Coral reef field work in Palau. Helped coordinate and collect seawater samples.
Jan-Feb 2010	(19 days) Hawaii Institute of Marine Biology. Coral reef field work in Kaneohe Bay, Oahu, HI. <u>Project lead.</u>
Aug-Sep 2009	(18 days) Hawaii Institute of Marine Biology. Coral reef field work in Kaneohe Bay, Oahu, HI. <u>Project lead.</u>
Jan-Feb 2009	(21 days) Hawaii Institute of Marine Biology. Coral reef field work in Kaneohe Bay, Oahu, HI. <u>Project lead.</u>
Jun 2008	(18 days) Hawaii Institute of Marine Biology. Coral reef field work in Kaneohe Bay, Oahu, HI. <u>Project lead.</u>
Sep 2007	(1 day) Hawaii Institute of Marine Biology. Coral reef field work in Kaneohe Bay, Oahu, HI. Scouted out sites for instrument deployment for 2008 field work.
Feb-Mar 2006	(29 days) R/V <i>Hi'ialakai</i> . NOAA Coral Reef Ecosystem Division research cruise in American Samoa. <u>Carbonate chemistry lead.</u>
2003-2004	(25 days) Hawaii Institute of Marine Biology. Coral reef field work in Kaneohe Bay, Oahu, HI. 1 day research cruises every other week from Sep 2003 through Sep 2004. <u>Project lead.</u>
Mar 2000	(24 days) The School for Field Studies, Turks & Caicos Islands, British West Indies. Performed coral reef benthic and fish surveys via scuba on reefs surrounding South Caicos island.

Presentations

+Indicates undergraduate student advisee, *Indicates graduate student advisee

Presentations only included for which Shamberger or a student advisee was the presenter

Shamberger previously presented as Fagan

Conference Presentations

36. **K. E. F. Shamberger**, A. L. Cohen, S. J. Lentz, H. C. Barkley, T. M. DeCarlo, D. C. McCorkle, M. Gouezo, Yimnang Golbuu, G. Rengiil. 2022. Coral Reef Ecosystem Metabolism Over Twenty Years on Palau's Barrier Reef. 15th International Coral Reef Symposium, Bremen, Germany. Oral presentation accepted, **session chair**. Moved from 2020 to 2022 for COVID-19.

35. ***Kealoha A.K., K. E. F. Shamberger**, Reid EC, Davis KA, Lentz SJ, Brainard RE, Oliver TA, Rappe MS, Roark EB, Rii YM Heterotrophy of oceanic particulate organic matter elevates net ecosystem calcification. 2022. 15th International Coral Reef Symposium, Bremen, Germany. Oral presentation accepted, **session chair**. Moved from 2020 to 2022 for COVID-19.

34. ***Hicks, T. L., K. E. F. Shamberger**, Roark EB, Baco AR, Miller K. 2022. Characterizing Seawater Biogeochemistry of Deep-Sea Coral Reefs Across the Northwest Hawaiian Islands and Emperor Seamount Chain. 15th International Coral Reef Symposium, Bremen, Germany. Oral presentation accepted. Conference moved from 2020 to 2022 for COVID-19.

33. ***Savoie, A. M., Shamberger, K. E. F., *Smith, S, *Hicks, T. L., DiMarco SF, Knapp A.** 2022. Impacts of Hurricane Harvey on Carbonate Chemistry along the Texas Continental Shelf. ASLO Ocean Sciences Meeting 2022. Conference moved from in person to virtual only for COVID-19. Oral presentation.

32. ***Hicks, T. L., K. E. F. Shamberger**, Roark EB, Baco AR, Miller K. 2021. Characterizing Seawater Biogeochemistry of Deep-Sea Coral Reefs Across the Northwest Hawaiian Islands and Emperor Seamount Chain. 14th International Coral Reef Symposium, Bremen, Germany. Oral presentation accepted. Conference moved from 2020 to 2022 for COVID-19.

31. **Shamberger, K. E. F., *AK Kealoha**, S Doyle, JB Sylvan, RD Hetland, SF DiMarco. 2020. Localized Hypoxia May Have Caused Coral Reef Mortality at the Flower Garden Banks. ASLO Ocean Sciences Meeting 2020, San Diego, CA, USA. Oral presentation.

30. ***Hicks, T. L., Shamberger, K. E. F., Jensen, C., Fitzsimmons, JN.** 2020. Carbonate Chemistry of Galveston Bay Estuary: Impact of Hurricane Harvey and Implications for Oyster Reef Health. ASLO Ocean Sciences Meeting 2020, San Diego, CA, USA. Poster presentation.

29. ***Hicks, T. L., Shamberger, K. E. F., Jensen, C., Fitzsimmons, JN.** 2020. The Seawater Carbonate Chemistry of Galveston Bay, Texas and Implications for Oyster Reef Health. 11th State of the Bay Symposium, Galveston, TX. Oral.

28. ***Smith, S, Shamberger, K. E. F., +L Barrett**, JB Sylvan, A Correa, LZ Santiago, S Davies. 2020. Seawater carbonate chemistry at the Flower Garden Banks National Marine Sanctuary in

the Northwestern Gulf of Mexico following Hurricane Harvey. ASLO Ocean Sciences Meeting 2020, San Diego, CA, USA. eLightning oral/poster presentation.

27. *Hicks TL, **Shamberger, K. E. F.**, +Henderson C, Jensen C, Fitzsimmons JN. 2019. Impact of Hurricane Harvey on the Carbonate Chemistry of Galveston Bay, Texas. AGU Virtual Poster Showcase. Poster presentation.

26. +Barrett, L., **Shamberger, K. E. F.**, *Hicks, T. L., +Hooper, M., Correa, A. M. S., Davies, S. W., Santiago-Vazquez, L. Z., Sylvan J. B. 2019. Post-Harvey Carbonate Chemistry at the Flower Garden Banks Coral Reefs. Aquatic Sciences Meeting 2019, Puerto Rico, USA. Oral presentation.

25. *Hicks, T. L., **Shamberger, K. E. F.**, +Henderson, C., Jensen, C. 2018. Impact of Hurricane Harvey on the Carbonate Chemistry of Galveston Bay, Texas. Hurricane Harvey Symposium, Port Aransas, TX. Oral presentation.

24. *Kealoha A.K., **K.E.F. Shamberger**, S.F. DiMarco, S.M. Doyle, R.D. Hetland, J.B. Sylvan. 2018. Seawater Chemical Anomalies Following the 2016 EFGB Localized Mortality Event. 2016 Flower Garden Banks Localized Mortality Event Mini-Symposium, February 2018, Galveston, TX. Oral presentation.

23. **Shamberger, K. E. F.**, Lentz, S. J., Cohen, A. L. 2018. Low and Variable Ecosystem Calcification in a Coral Reef Lagoon under Natural Acidification. Ocean Sciences Meeting 2018, Portland, OR, USA. Poster presentation.

22. *Kealoha, A.K., **Shamberger, K. E. F.**, Reid, E. C, Davis, K. A., Lentz, S. J., Rii, Y. M., Rappe, M.S., Oliver, T. and Brainard, R. E. 2018. The Relationship between Oceanic Organic Matter and Net Ecosystem Calcification on a Hawaiian Coral Reef. Ocean Sciences Meeting 2018, Portland, OR, USA. Oral presentation.

21. *Hicks, T. L., **Shamberger, K. E. F.**, +Henderson, C. 2018. Impact of Hurricane Harvey on the Carbonate Chemistry of Galveston Bay, Texas. Ocean Sciences Meeting 2018, Portland, OR, USA. Oral presentation.

20. +Ashley Davis, **Kathryn E. F. Shamberger**, E. Brendan Roark, Amy R. Baco, +Jahna Brooks, Kelci Miller. 2018. Carbonate Saturation Horizons in the Northwestern Hawaiian Islands: Implications for Deep-Sea Corals. Ocean Sciences Meeting 2018, Portland, OR, USA. Poster presentation.

19. +Ashley Davis, **Kathryn E. F. Shamberger**, E. Brendan Roark, Amy R. Baco, +Jahna Brooks, Kelci Miller. 2017. Characterization of Carbonate Saturation Horizons Near Deep-sea Coral Beds in the Northwestern Hawaiian Islands. Aquatic Sciences Meeting 2017, Honolulu, HI, USA. Oral presentation.

18. *Kealoha, A. and **Shamberger, K. E. F.** 2016. Spatiotemporal Trends in Surface Seawater CO₂ in the Gulf of Mexico. AGU 2016 Fall Meeting, San Francisco, CA, USA. Poster presentation.
17. **Shamberger, K. E. F.**, Cohen, A. L., Lentz, S. J., Barkley, H.C., DeCarlo, T.M., McCorkle, D. C., Golbuu, Y., 2016. Spatiotemporal Variability in Net Ecosystem Calcification of a Western Pacific Coral Reef System. 13th International Coral Reef Symposium, Honolulu, HI, USA. Oral presentation.
16. **Shamberger, K. E. F.**, Lentz, S. J., Cohen, A. L. 2016. Net Ecosystem Calcification by a Coral Reef Community under Natural Acidification. Ocean Sciences Meeting 2016, New Orleans, LA, USA. Oral presentation.
15. +Brooks, J., **Shamberger, K. E. F.**, Roark, E.B., Baco-Taylor, A. 2016. Seawater Carbonate Chemistry of Deep-sea Coral Beds off the Northwestern Hawaiian Islands. Ocean Sciences Meeting 2016, New Orleans, LA, USA. Oral presentation.
14. **Shamberger, K. E. F.**, Lentz, S. J., Cohen, A. L., 2015. Net Ecosystem Calcification by a Coral Reef Community under Natural Acidification. Ocean Acidification Principle Investigators Meeting, Woods Hole, MA, USA. Poster presentation.
13. **Shamberger, K. E. F.**, Lentz, S. J., Cohen, A. L., McCorkle, D. C., Golbuu, Y. 2014. Carbonate Chemistry Variability on a Coral Reef with Tidally Driven Flow. Gordon Research Conference Global Ocean Change Biology: Interactive Effects of Multiple Global Change Variables 2014, Waterville Valley, NH, USA. Poster presentation.
12. **Shamberger, K. E. F.**, Lentz, S. J., Cohen, A. L., McCorkle, D. C., Golbuu, Y., 2014. A Decline in Net Ecosystem Calcification by Coral Reefs of the Palauan Archipelago. Ocean Sciences Meeting 2014, Honolulu, HI, USA. Oral presentation.
11. **Shamberger, K. E. F.**, Cohen, A. L., Golbuu, Y., McCorkle, D. C., Lentz, S. J., Barkley H. C. 2013. Processes Driving Natural Acidification of Western Pacific Coral Reef Waters. AGU 2013 Fall Meeting, San Francisco, CA, USA. Oral presentation and **session chair**.
10. **Shamberger, K. E. F.**, Cohen, A. L., McCorkle, D. C., Golbuu, Y., Lentz, S. J. 2012. Natural Acidification of Coral Reef Communities in the Western Pacific Warm Pool. 12th International Coral Reef Symposium, Cairns, Queensland, Australia. Oral presentation.
9. **Shamberger, K. E. F.**, Drupp, P., Feely, R. A., Sabine, C. L., Solomon, R. F., De Carlo, E. H., Mackenzie, F. T., Atkinson, M. J. 2011. Controls on Diel and Seasonal Aragonite Saturation State and Carbon Dioxide Variability in a Hawaiian Coral Reef Ecosystem. AGU 2011 Fall Meeting, San Francisco, CA, USA. Oral presentation.
8. **Shamberger, K. E. F.**, Feely, R. A., Sabine, C. L., Atkinson, M. J., DeCarlo, E. H., Mackenzie, F. T., Drupp, P. S., Butterfield, D. A. 2011. Calcification, Production, and CO₂ on a Hawaiian Coral Reef. Ocean Sciences Meeting 2011, San Juan, Puerto Rico. Oral presentation.

7. **Shamberger, K. E. F.**, Feely, R. A., Sabine C. L., Drupp, P. S., De Carlo, E. H., Mackenzie, F. T., Atkinson, M. J., Butterfield, D.A. 2010. Ocean Acidification and Calcification on a Hawaiian Coral Reef. Ocean Sciences Meeting 2010, Portland, OR. Poster presentation.
6. **Kathryn E. Fagan**, Solomon, R. F., Sabine, C. L., Feely, R. A., De Carlo, E. H., Mackenzie, F. T. 2008. Variability in the Surface Water Inorganic Carbon Parameters of a Hawaiian Coral Reef System and Implications for Calcification Rates. Ocean Sciences Meeting 2008, Orlando, Florida. Poster presentation.
5. **Kathryn E. Fagan**, Feely, R. A., Sabine C. L., Solomon, De Carlo, E. H., Mackenzie, F. T., Musielewicz, S. 2007. Inorganic Carbon Variability in a Hawaiian Coral Reef System and Implications for Field Based Calcification Rate Studies. SOLAS Summer School, October 2007, Corsica, France. Oral and poster presentations.
4. **Kathryn E. Fagan**. 2007. Biogeochemistry and Climate. Graduate Climate Conference, October 2007, University of Washington Center for Sustainable Forestry at Pack Forest, WA. Oral presentation and **session chair**.
3. **Kathryn E. Fagan**, Francois Paquay, Daniel E. Lockett IV, and Fred T. Mackenzie. 2005. Processes controlling air-sea exchange of CO₂ in subtropical Pacific estuaries. Ocean Sciences Meeting 2005 Meeting, Salt Lake City, UT. Oral presentation.
2. **Kathryn E. Fagan**, Fred T. Mackenzie, and Andreas J. Andersson. 2004, Processes controlling air-sea exchange of carbon dioxide in a subtropical Pacific estuary, *EOS Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract, OS13A-0521. Poster presentation.
1. **Kathryn E. Fagan**, Fred T. Mackenzie, Daniel W. Sadler, and Justin Dilg. 2004. Processes controlling air-sea exchange of carbon dioxide, Kaneohe Bay, Oahu, Hawaii. PICES 13 Fall 2004 Meeting, Honolulu, HI. Oral presentation.

Invited Presentations

- 2021 Romanak, K., Knap, A., **Shamberger, K. E. F.**, Rowe, G. 2021. Task 4: Seawater Column Monitoring. Gulf of Mexico Partnership for Offshore Carbon Storage (GoMCarb) and SECARB Offshore Joint Partnership Meeting. Gulf Coast Carbon Center and the Southern States Energy Board. Virtual team oral presentation.
- 2018 **Shamberger, K. E. F.**, Kealoha, A., Davis, K., Reid, E., Lentz, S. J., Rappe, M., Rii, S., Brainard, R., Oliver, T. 2018. Coral Reef Climate Change Vulnerability: Effects of Oceanic Particulate Organic Matter Uptake on Net Ecosystem Calcification. NOAA Headquarters, Silver Spring, MD.
- 2018 *Kealoha, A., **Shamberger, K.**, Reid, E., Davis, K., Lentz, S., Brainard, R., Oliver, T., Rappe, M., Young, C., Rii, S., Roark, B., Slowey, N. 2018. Heterotrophy of oceanic particulate organic matter elevates net ecosystem calcification. NOAA Pacific Island Fisheries Science Center, Honolulu, HI.

- 2014 **Shamberger, K. E. F.**, Cohen, A. L., Lentz, S. J., McCorkle, D. C., Golbuu, Y., Barkley H. C. 2014. Processes Driving Natural Acidification and Decline in Net Ecosystem Calcification of Diverse Palauan Coral Reefs. Texas A&M University at Galveston, Galveston, TX.
- 2014 **Shamberger, K. E. F.**, Cohen, A. L., Lentz, S. J., McCorkle, D. C., Golbuu, Y., Barkley H. C. 2014. Processes Driving Natural Acidification and Decline in Net Ecosystem Calcification of Diverse Palauan Coral Reefs. Scripps Institution of Oceanography, University of California San Diego, San Diego, CA.
- 2013 **Shamberger, K. E. F.** 2013. Variable Responses of Coral Reefs to Ocean Acidification: Lessons from the Field. Department of Earth, Ocean, and Atmospheric Science, Florida State University, Tallahassee, FL.
- 2013 **Shamberger, K. E. F.**, Feely, R. A., Sabine, C. L., Atkinson, M. J., DeCarlo, E. H., Mackenzie, F. T., Drupp, P. S., Butterfield, D. A. 2013. Calcification, Organic Production, and Carbon Dioxide on a Hawaiian Coral Reef. Department of Oceanography, Texas A&M University, College Station, TX.
- 2013 **Shamberger, K. E. F.** 2013. Coral Reef Responses to Ocean Acidification: Lessons from the Field. Department of Oceanography, Texas A&M University, College Station, TX.
- 2012 **Shamberger, K. E. F.**, Feely, R. A., Sabine, C. L., Atkinson, M. J., DeCarlo, E. H., Mackenzie, F. T., Drupp, P. S., Butterfield, D. A. 2012. One size does not fit all: Coral reef responses to ocean acidification in the Hawaiian Islands. University of Massachusetts Boston, May 2012, Boston, MA.
- 2010 **Kathryn E. F. Shamberger.** 2010. Calcification and Production on a Hawaiian Coral Reef. Woods Hole Oceanographic Institute, November 2010, Woods Hole, MA.
- 2010 **Kathryn E. F. Shamberger.** 2010. Ocean Acidification and Coral Calcification on a Hawaiian Reef. Hawaii Institute of Marine Biology, University of Hawaii, February 2010, Kaneohe, HI
- 2008 **Kathryn E. Fagan,** Richard A. Feely, and Christopher L. Sabine. 2008. Ocean Acidification: How We Have Changed the Chemistry of the World's Oceans and Implications for Calcifying Organisms. GSA Joint Annual Meeting, October 2008, Houston, TX

Teaching Experience

- 2014-current Texas A&M University, College Station, TX
 Introduction to Oceanography (OCNG 251)

- Undergraduate introduction to the field of oceanography for non-science majors.

Professional Communication in Oceanography (OCNG 303)

- I developed this undergraduate course, which provides instruction, practice, and feedback on writing, presenting, and career development in the field of oceanography.

Communicating Ocean Sciences (OCNG 603)

- I developed this graduate course, which provides instruction, practice, and feedback on presenting scientific information clearly in presentations and in writing to scientific and non-scientific audiences.

2011-2012

Woods Hole Oceanographic Institution, Woods Hole, MA

Guest Lecturer, Ocean Science Short Course, WHOI, Woods Hole, MA

- Gave a lecture on ocean acidification to a group of BP employees who were taking an ocean science short course at WHOI.

Guest Lecturer, Sea Education Association (SEA), Woods Hole, MA

- Gave a lecture on ocean acidification and coral reefs to undergraduate students participating in a semester of marine research through the SEA Semester program.

Guest Lecturer, Palau Community College, Korror, Palau

- Gave a lecture on my research in Hawaii and how it relates to Palauan reefs, emphasizing the effects of ocean acidification and the variability in the seawater CO₂ system of coral reefs.

2006-2011

University of Washington, Seattle, WA

Guest Lecturer, Seattle area schools, WA

- Gave lectures on climate change and ocean acidification to high school, community college, and undergraduate classes at several schools in the Seattle area, WA.

2002-2003

University of Hawaii-Manoa, Honolulu, HI

Teaching Assistant, Introduction to Oceanography Lab

- Taught introduction to oceanography laboratory course. Gave short lectures and ran laboratory, computer, and field trip exercises.

1998-1999

University of San Diego, San Diego, CA

Student Tutor

- Tutored freshman and sophomore undergraduate students in biology, college algebra, calculus I, and calculus II.

Student Mentorship

Graduate Students – Committee Chair

<u>Dates</u>	<u>Name</u>	<u>Degree</u>	<u>Department</u>	<u>Graduation</u>
Aug 2021 – current	Samantha McClain	PhD	Oceanography	Projected 2026
Aug 2020 – current	Allison Savoie	PhD	Oceanography	Projected 2024
Aug 2017 – current	Tacey Hicks	PhD	Oceanography	Projected 2022
Aug 2018 – Dec 2020	Serena Smith	MS	Oceanography	2020
Aug 2014 – May 2019	Andrea Kealoha	PhD	Oceanography	2019

Graduate Students – Committee Member

<u>Dates</u>	<u>Name</u>	<u>Degree</u>	<u>Department</u>	<u>Graduation</u>
2022 – current	Anna Ramos	MS	Oceanography	Projected 2024
2021 – current	Juliana Giraldo	PhD	Mar Bio, TAMUG	Projected 2026
2020 – current	Makeda Mills	PhD	Oceanography	Projected 2025
2019 – current	Alyssa Schultz	PhD	Geography	Projected 2025
2019 – current	Richard Rosas	PhD	Oceanography	Projected 2024
2018 – current	Kourtney Higgins	PhD	Geography	Projected 2024
2016 – 2018	Kelci Miller	MGsc	Geography	2018
2016 – 2018	Vance Nygard	MS	Oceanography	2018
2014 – current	John Schiff	PhD	Geography	Projected 2021
2014 – 2017	Connie Previti	MS	Oceanography	2017
2013 – 2016	Jordan Young	MS	Oceanography	2016
2012 – 2017	Michael Evans	PhD	Oceanography	2017

Undergraduate Students – Research Advisor

<u>Dates</u>	<u>Name</u>	<u>Degree</u>	<u>Graduation</u>
2021 Fall – current	Peyton Ford	BS Mechanical Engineering	Projected 2024
2021 Spr – current	Jose Martinez	BS Oceanography	Projected 2022
2020 Spr – current	Mahima Yogesh	BS Bioenvironmental Sci	Projected 2022
2020 Sum REU-current	Kathlyn Doroski	BA Chem, Vassar College	Projected 2022
2018 Fall – 2019 Fall	Shelley Culver	BS Oceanography	On leave
2017 Fall – 2019 Spr	Cody Padlo	BS Environmental Geosci	2019
2017 Fall – 2018 Sum	Miranda Hooper	BS Environmental Geosci	2018
2018 Summer REU	Lauren Barrett	Geos&Chem, BloomsburgU	2019
2017 Summer REU	Cameron Henderson	BS Mar Sci, USCarolina	2019
2016 & 2017 Sum REU	Ashley Davis	BS Mar Sci, USCarolina	2019
2016 Fall – 2017 Spr	Faith Benner	BS Biomedical Sciences	2017
2015 Spr – 2016 Spr	Kelci Miller	BS Environmental Studies	2016
2015 Spr – 2016 Spr	Jahna Brooks	BS Environmental Geosci	2017

Student Honors and Awards

+Indicates undergraduate student advisee, *Indicates graduate student advisee

Awards listed are those Shamberger nominated students for or advised students on the application/presentation

2021 – 2025	* <u>Samantha McClain</u> , TAMU Aviles-Johnson Graduate Fellowship
2020 – 2024	* <u>Allison Savoie</u> , TAMU College of Geosciences Graduate Merit Fellowship
2019	* <u>Tacey Hicks</u> , NSF Graduate Research Fellowship Program Honorable Mention
2018	* <u>Andrea Kealoha</u> , NOAA Sea Grant John A. Knauss Marine Policy Fellowship (declined)
2018	* <u>Andrea Kealoha</u> , TAMU Oceanography Chapman Award for Graduate Research
2018	+ <u>Lauren Barret</u> , TAMU Observing the Ocean REU Symposium 2 nd Place Presentation Conference Travel Award
2017 – 2021	* <u>Tacey Hicks</u> , TAMU College of Geosciences Graduate Merit Fellowship
2017	+ <u>Ashley Davis</u> , TAMU SEAWATER Undergraduate Conference Travel Award
2017	+ <u>Jahna Brooks</u> , TAMU Excellence in Oceanography Award
2017	+ <u>Jahna Brooks</u> , TAMU Student Research Week Best Undergraduate Poster
2016 – 2019	* <u>Andrea Kealoha</u> , NOAA Nancy Foster Graduate Fellowship
2016	* <u>Andrea Kealoha</u> , TAMU Oceanography John Wormuth Memorial Award for Excellence in Undergraduate Teaching
2015	+ <u>Jahna Brooks</u> , TAMU SEAWATER Symposium 1 st Place Presentation Undergraduate Conference Travel Award

Professional Service

2021	Unlearning Racism in the Geosciences <ul style="list-style-type: none"> • Led a “pod” of graduate and undergraduate researchers in my lab. • Extensive background reading, interviews, and discussions about racism in the geosciences and strategies for making the field more just, equitable, diverse, and inclusive. • Our pod met with and made recommendations to leadership in the Department of Oceanography (department head and assistant department heads) and College of Geosciences (associate dean for diversity, equity, and inclusion). Many of our recommendations were instituted at the department and college levels.
2019 – current	Advisory Board Member for NOAA Ocean Acidification Program project led by Xinping Hu at TAMU-Corpus Christi <ul style="list-style-type: none"> • Provide guidance on ways to make the project successful and ensure it meets NOAA OAP objectives for optimizing ocean acidification observing systems.
2016 – current	Steering Committee Member for the Gulf of Mexico Coastal ocean Acidification Network (GCAN) <ul style="list-style-type: none"> • Technical chair of the steering committee from 2017-2018. • GCAN is a collaboration between the Gulf of Mexico Coastal Ocean Observing System Regional Association (GCOOS RA), the National

- Oceanic and Atmospheric Administration's Ocean Acidification Program (NOAA OAP), federal and state agency representatives, resource managers, industry partners and research scientists to identify impacts and develop strategies to mitigate ocean acidification on the Gulf of Mexico large marine ecosystem.
- 2016 – current Panel reviewer: NSF Chemical Oceanography and NSF Partnerships for International Research and Education (PIRE).
- 2014 – current Ad hoc proposal reviewer: NSF Chemical Oceanography; NSF Ocean Acidification, under NSF Science, Engineering and Education for Sustainability (SEES); NOAA Integrated Ocean Observing System (IOOS); NOAA Ocean Acidification Program.
- 2012 – 2013 Postdoctoral Association, Secretary, Woods Hole Oceanographic Institution
- Organized and facilitated three separate career building workshops for postdocs and graduate students on 1) academic job applications, 2) academic interviews, and 3) job negotiations.
- 2009 – current Peer reviewer: Aquatic Geochemistry, Biogeosciences, Coral Reefs, Geophysical Research Letters, Global Biogeochemical Cycles, ICES Journal of Marine Science, Journal of Experimental Marine Biology and Ecology, Journal of Geophysical Research-Oceans, Limnology and Oceanography, Marine Chemistry, Nature Communications, Oceanography, Scientific Reports.
- 2007 – current National and international conference sessions chaired:
- 2021: “Thinking outside the reef: how do open-ocean processes influence coral reefs now and in the future?”, 14th International Coral Reef Symposium, Bremen, Germany.
- 2018: “Open Ocean – Coral Reef Teleconnections” (merged with another session), Ocean Science Meeting, Portland, OR, USA.
- 2013: “The Carbonate System Chemistry of Coastal Ecosystems: Physical, Chemical and Biological Drivers”, American Geophysical Union Fall Meeting, San Francisco, CA, USA.
- 2007: “Biogeochemistry and Climate”, Graduate Climate Conference, University of Washington, Center for Sustainable Forestry, Pack Forest, WA.
- 2007 Co-organizer of the 2nd Graduate Climate Conference, University of Washington, Center for Sustainable Forestry, Pack Forest, WA.
- This annual conference is organized and attended entirely by graduate students. I helped organize and fund the second conference. The conference was hosted by the University of Washington for several years and now alternates between UW and WHOI.
- 2004 – current Member of American Geophysical Union, Association for the Sciences of Limnology and Oceanography, International Coral Reef Society.

Workshops Attended

- 2019 NOAA Ocean Acidification Program Xinping Hu Project Team Meeting, Corpus Christi, TX
- 2018 TAMU CAREER Proposal Writing Workshop, College Station, TX

- 2018 4th Ocean Acidification PI Meeting, sponsored by Ocean Carbon Biogeochemistry and NSF, Portland, OR
- 2016 Texas One Gulf Consortium Workshop, University of Houston, Houston, TX
- 2015 TAMU ADVANCE Stress-Free Writing/Power Writing Workshop, College Station, TX
- 2015 3rd Ocean Acidification PI Meeting, sponsored by Ocean Carbon Biogeochemistry and NSF, Woods Hole Oceanographic Institution, Woods Hole, MA
- 2014 TAMU ADVANCE Center Roadmap for a Successful Academic Career Workshop, College Station, TX
- 2014 Centers for Ocean Science Education Excellence (COSEE) Early Career Workshop, Honolulu, HI
- 2014 TAMU Center for Teaching Excellence, Technology-Enhanced Approaches for Engaging Students in Large Classes Workshop, College Station, TX
- 2012 Coral Reef Ocean Acidification Monitoring Portfolio Workshop, sponsored by NOAA and Nova Southeastern University Oceanographic Center, Dania Beach, FL
- 2008 Anthropogenic Stresses on Ocean Ecosystems Workshop, University of Washington, Seattle, WA
- 2007 Ocean Carbon and Biogeochemistry Scoping Workshop on Ocean Acidification Research, Scripps Institution of Oceanography, San Diego, CA
- 2005 Impacts of Ocean Acidification on Coral Reefs and Other Marine Calcifiers, sponsored by NSF, NOAA, and USGS, St. Petersburg, Florida,

Selected Media Coverage

- 2021 “Pollution From Hurricane Harvey Traveled 100 Miles Off Texas Coast”
Texas A&M Today:
<https://today.tamu.edu/2021/04/06/pollution-from-hurricane-harvey-traveled-100-miles-off-texas-coast/>
- 2021 “Flooding in Houston polluted reefs more than 100 miles offshore”
NSF Research News:
https://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=302536&WT.mc_id=USNSF_1
- 2020 “Texas Matters: Acidifying Gulf Waters”
Texas Public Radio:
<https://www.tpr.org/post/texas-matters-acidifying-gulf-waters-rep-nevarez-gets-sober>
- 2020 “Study Says Carbon Dioxide Levels Rising In Gulf Of Mexico”
Texas A&M Today:
<https://today.tamu.edu/2020/07/23/study-says-carbon-dioxide-levels-rising-in-gulf-of-mexico/>
- 2020 "What killed the colorful coral reefs in the Gulf of Mexico sanctuary?" Research @ Texas A&M:
<https://research.tamu.edu/2020/01/24/what-killed-the-colorful-coral-reefs-in-this-gulf-of-mexico-sanctuary/>
- 2020 “Researchers think they know what caused coral to die at Flower Garden Banks”
Galveston County The Daily News:

- 2019 https://www.galvnews.com/news/article_f558c6a2-4e8e-5a5b-b030-a99e1c4c6c92.html
"Texas A&M Team Finds New Ways For Coral Reef Ecosystems To Grow" Texas A&M Today:
<https://today.tamu.edu/2019/08/29/texas-am-team-finds-new-ways-for-coral-reef-ecosystems-to-grow/>
- 2017 "Palau's Coral Reefs | Beyond Texas 360° VR" YouTube (Texas A&M University):
<https://www.youtube.com/watch?v=LF6rI-fZdas>
- 2017 "A Giant Blob of Floodwater From Harvey Is Still Moving Through the Gulf" The Atlantic:
<https://www.theatlantic.com/science/archive/2017/10/harvey-freshwater-gulf-of-mexico/543408/>
- 2017 "Harvey runoff menaces Texas' coral reefs" ScienceDaily and Rice University:
<https://www.sciencedaily.com/releases/2017/10/171016102805.htm>
- 2015 "Palau's Improbably Healthy Coral Reefs" NOVA PBS:
<https://www.pbs.org/wgbh/nova/article/acidic-coral-refugia/>
- 2015 "Pacific Mystery: Coral Reefs Thriving, But How?" Texas A&M Today:
<https://today.tamu.edu/2015/06/05/pacific-mystery-coral-reefs-thriving-but-how/>
- 2014 "On the Cusp of Climate Change - Coral Reefs" The New York Times:
https://www.nytimes.com/interactive/2014/09/22/science/on-the-cusp-of-climate-change.html?_r=2
- 2014 "Pacific Coral Thrives in Acidified Waters" NBC News:
<https://www.nbcnews.com/science/science-news/pacific-coral-thrives-acidified-waters-n17906>
- 2014 "In Palau, scientists hope they've found a coral reef to save all coral reefs" The World: <https://www.pri.org/stories/2014-01-02/palau-scientists-hope-theyve-found-coral-reef-save-all-coral-reefs>

Outreach

- 2017 – current EPA funded collaboration with the Texas Floating Classroom: brings middle and high school students from underrepresented and underserved areas in TX to participate in a research cruise in Corpus Christi Bay, TX and provides training, lesson plans, and publically available data for teachers to incorporate into their State of Texas Assessments of Academic Readiness (STAAR) curriculum.
- 2017 – current Local outreach activities: lead K-12 and high school students in the Bryan/College Station, TX area through hands on ocean acidification activities through local programs including the TAMU College of Geosciences GEOX summer camp, Children's Museum Under the Sea Camp, and TAMU College of Science Open House.
- 2016 – current On the Ocean Podcast: this podcast airs weekly on KAMU-FM, features oceanography research, and is produced by the TAMU Department of Oceanography and KAMU. I have written several scripts on my research and every student that takes my graduate Communicating Ocean Science course writes a script, all of which are recorded and aired on KAMU.
- 2013 Invited Earth Day speaker for New Hampton High School in New Hampshire.

- 2012 – 2014 Gave a talk to the entire student body and faculty entitled “Climate Change, Double Trouble for Tropical Coral Reefs: Warming and Acidification.”
Synergy project: participated in this collaboration between artists and MIT/Woods Hole Oceanographic Institution scientists that produced an exhibition at the Boston Museum of Science and New Bedford Art Museum, which let viewers explore oceanography through art: <http://www.whoi.edu/website/synergy/about-synergy>.
- 2012 Public Ocean Acidification Event, Woods Hole Oceanographic Institution: ran a table with information and activities on coral reef ocean acidification field research for the general public.
- 2012 Guest Lecture, Woods Hole Oceanographic Institution, Woods Hole, MA: gave a lecture on ocean acidification to a group of about twenty BP employees who were taking an ocean science short course at WHOI.
- 2012 Guest Lecture, Sea Education Association (SEA), Woods Hole, MA: gave a lecture on ocean acidification and coral reefs to undergraduate students participating in a semester of marine research through the SEA Semester program.
- 2011 Guest Lecture and Field Trip, Palau Community College, Korror, Palau: gave a lecture on my research in Hawaii and how it relates to Palauan reefs, emphasizing the effects of ocean acidification. Took students out for a short research cruise and taught them how to collect water samples from a Niskin.
- 2011 Educurious Ecological Impacts of Climate Change: worked with high school students in Bellevue, WA via the Educurious website on science projects as part of an interactive course.
- 2008 Centers for Ocean Science Education Excellence (COSEE) Ocean Learning Communities event: gave overview on impacts of ocean acidification to science educators.
- 2006 – 2011 Guest Lectures: gave lectures on climate change and ocean acidification to high school, community college, and undergraduate classes at several schools in the Seattle area, WA.
- 2004 – 2009 National Ocean Science Bowl: volunteered several times in Honolulu, HI and Seattle, WA to help run this high school oceanography competition.
- 2004 – 2009 Judged high school science fairs in Honolulu, HI and Seattle, WA.

Certifications

- 2008 U.S. Coast Guard approved Boat U.S. Foundation General Boating certification.
- 2000 – 2003 Scientific diver, stress rescue, advanced, and wreck scuba diving certifications.

Updated March 2022