

YAJUAN LIN

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RESEARCH INTERESTS

Biological Oceanography, Microbiome, Biogeochemistry, Climate Solutions

A. PROFESSIONAL PREPARATION

<u>Institution</u>	<u>Division</u>	<u>Degree</u>	<u>Year</u>
Duke University	Marine Science and Conservation	Ph.D.	2013
Peking University	Life Sciences/Geology	B.S.	2006

B. APPOINTMENTS

2022 – present	Assistant Professor, Department of Life Sciences, Texas A&M University – Corpus Christi
2020 – 2022	Assistant Professor, Biology/Environmental Research Center, Duke Kunshan University (DKU), China
2018 – 2020	Research Scientist, Earth and Ocean Sciences, Duke University
2016 – 2018	Postdoc, European Institute for Marine Studies (IUEM), Université de Bretagne Occidentale, France
2013 – 2015	Postdoc, Earth and Ocean Sciences, Duke University
2010 – 2013	Research Assistant/Teaching Assistant, Duke Marine Lab, Duke University
2007 – 2009	Research Assistant, Biological Oceanography, University of Hawaii at Manoa
2006 – 2007	Undergraduate Research Assistant, School of Life Sciences, Peking University, China

C. PUBLICATIONS

Lemaitre, N., Faure, E., Zamora, R., Archer, C., Sieber M., Ellwood, M., Hassler, C., **Lin, Y.**, Cassar N., Maignien, L., and Vance, D. Biological impacts on the nickel cycle in the Southern Ocean: insights from isotopes and metagenomics. *In review*.

Li, Z., **Lin, Y.**, and Cassar, N. On the influence of phytoplankton size fractions on the carbon export ratio in the surface ocean. (2024) *Ecological Modeling*, 495, 110798.

Wen, X., Fang, C., Huang, L., Miao, J., and **Lin, Y.** A citizen science approach for mapping total microbial communities and waterborne pathogens in household drinking water in China. Preprint in *medRxiv*. <https://doi.org/10.1101/2023.10.16.23297104>. *In review*.

Miao, J., Chen, T., Misir, M., and **Lin, Y.** Deep learning for predicting 16S rRNA copy number. (2024) *Scientific Reports*, 14 (1), 14282.

Gu, S., Berthelot, H., **Lin, Y.**, Tang, W., Robidart, J., Eren., A. M., Ducklow, H., and Cassar, N. Sedimentary diazotroph contribution to measurable N₂ fixation in Antarctic waters. (2024) *Communications Earth & Environment*. *In press*.

- Lombard, F., *et al.* Open science resources from the Tara Pacific expedition across coral reef and surface ocean ecosystems. (2023) *Scientific Data*, 10 (1), 324
- Lin, Y.**, Moreno, C., Marchetti, A., Ducklow, H., Schofield, O., Delage, E., Meredith, M., Li, Z., Eveillard, D., Shaffron, S., and Cassar, N. (2021) Decline in plankton diversity and carbon flux with reduced sea ice extent along the Western Antarctic Peninsula. *Nature Communications*, 12 (1), 1-9.
- Landwehr, S., *et al.* (2021). Biogeochemistry and physics of the Southern Ocean-atmosphere system explored with data science. *Earth System Dynamics*, 12 (4), 1295-1369.
- Brown, M., Bowman, J., **Lin, Y.**, Feehan, C., Cassar, N., Moreno, C., Marchetti, A., and Schofield, O. (2021) Low diversity of a key phytoplankton group along the West Antarctic Peninsula. *Limnology and Oceanography*, 66, 2470-2480.
- Gorsky, G., *et al.* (2019). Expanding *Tara* Oceans protocols for underway, ecosystematic sampling of the ocean-atmosphere interface during *Tara* Pacific expeditions. *Frontiers in Marine Science*. DOI: 10.3389/fmars.2019.00750
- Lin, Y.**, Gifford, S., Ducklow, H., Schofield, O., and Cassar, N. (2019). Towards quantitative microbiome community profiling using internal standards. *Applied and Environmental Microbiology*, 85.5: e02634-18.
- Wang, S., **Lin, Y.**, Gifford, S., Eveleth, R., & Cassar, N. (2018). Linking patterns of net community production and marine microbial community structure in the western North Atlantic. *ISME J.*, 1.
- Lin, Y.**, Cassar, N., Marchetti, C., Moreno, A., Ducklow, H., and Li, Z. (2017). Specific eukaryotic plankton are good predictors of net community production in the Western Antarctic Peninsula. *Scientific Reports*, 7, 14845.
- Moreno, C. M., **Lin, Y.**, Davies, S., Monbureau, E., Cassar, N., & Marchetti, A. (2017). Examination of gene repertoires and physiological responses to iron and light limitation in Southern Ocean diatoms. *Polar Biology*, 1-18.
- Eveleth, R., Cassar, N., Sherrell, R.M., Ducklow, H., Meredith, M.P., Venables, H.J., **Lin, Y.**, Li, Z. (2016). Ice melt influence on summertime net community production along the Western Antarctic Peninsula. *Deep Sea Research Part II: Topical Studies in Oceanography*, 139, 77-88.
- Larkin, A., Blinbry, S., Howes, C., **Lin, Y.**, Loftus, S., Schmaus, C., Zinser, E., and Johnson, Z. (2016). Niche partitioning and biogeography of high light adapted *Prochlorococcus* across taxonomic ranks in the North Pacific. *ISME J.*, 10(7), 1555-1567.
- Chandler, J., **Lin, Y.**, Gainer, P., Post, A., Johnson, Z., and Erik, Z. (2016). Variable but persistent coexistence of *Prochlorococcus* ecotypes along temperature gradients in the ocean's surface mixed layer. *Environmental Microbiology Reports*, 8(2), 272-284.
- Ribalet, F., Swalwell, J., Clayton, S., Jiménez, V., Sudek, S., **Lin, Y.**, Johnson, Z., Worden, A., and Armbrust, E. V. (2015). Light-driven synchrony of *Prochlorococcus* growth and mortality in the subtropical Pacific gyre. *PNAS*, 112(26), 8008-8012.
- Jiao, N., Luo, T., Zhang, R., Yan, W., **Lin, Y.**, Johnson, Z. I., Tian, J., Yuan, D., Yang, Q., Sun, J., Hu, D., and Wang, P. (2014). Presence of *Prochlorococcus* in the aphotic waters of the western Pacific Ocean. *Biogeosciences*, 11, 2391-2400.

Lin Y., Gazsi K., Lance V. P., Larkin A., Chandler, J., Zinser E. R., and Johnson Z. I. (2013). *In situ* activity of a dominant *Prochlorococcus* ecotype (eHL-II) from rRNA content and cell size. *Environmental Microbiology*. 15(10), 2736-2747.

Hunt, D. E.*, **Lin, Y.***, Church, M. J., Karl, D. M., Tringe, S. G., Izzo, L. K., & Johnson, Z. I. (2013). Relationship between Abundance and Specific Activity of Bacterioplankton in Open Ocean Surface Waters. *Applied and Environmental Microbiology*, 79(1), 177-184. * co-first authors

Bittar, T. B., **Lin, Y.**, Sassano, L. R., Wheeler, B. J., Brown, S. L., Cochlan, W. P., and Johnson, Z. I. (2013). Carbon Allocation under Light and Nitrogen Resource Gradients in Two Model Marine Phytoplankton. *Journal of Phycology*. 49(3), 523-535.

Johnson, Z. I., and **Lin, Y.** (2009). *Prochlorococcus*: Approved for export. *PNAS*, 106(26), 10400-10401.

Wang, D., and **Lin, Y.** (2007). A new species of Metacaladophyton from the Late Devonian of China. *International Journal of Plant Sciences*, 168(7), 1067-1084.

D. SYNERGISTIC ACTIVITIES

- *Teaching and mentoring:*

Teaching: Marine Organisms and Processes (TAMUCC, graduate level), Microbiology (TAMUCC & Duke Kunshan University, undergrad level), Biogeochemistry (DKU, undergrad level), Water Pollution (DKU, undergrad level)

Guest lecturer: Aquatic Pollution (Duke, graduate level), Changing Oceans (Duke, graduate level).

Graduate advisor: Mahima Yogesh (MS, TAMUCC), Zhiwen Zhong (PhD, TAMUCC)

Graduate committee: Kevin Labrador (PhD, TAMUCC), Yue Liu (PhD, TAMUCC), Laurynn Torres (PhD, TAMUCC), Jesus Baca (MS, TAMUCC), Alex Niebergall (PhD, Duke), Shuai Gu (MS, Duke), Ariana Desouza (PhD, Duke)

Undergrad senior thesis: Wendy Wen, Merlin Miao, Chutong Fang, Lihan Huang, Yunyi Ru, Yiyang Weng

NSF REU students: Elise Keister, Lisa Izzo

- *Grants:*

Google Cloud for Researchers (2023-2024), \$5,000. PI. Project “Model DNA sequences using deep learning models”.

TAMUCC seed grant (2023), \$5,000. Co-PI (Lead PI: Chris Bird). Project “Using eDNA to test for functional biodiversity from phytoplankton to fishes in the center of marine biodiversity”.

Antarctic Circumnavigation Expedition (2016 - 2018), \$67,464. Co-PI (Lead PI: Nicolas Cassar). Project “The Biogeochemical Compass: Navigating the Flows of Energy and Matter within the Southern Ocean”. Joint funding between EPFL (Switzerland) and the partnering Swiss Polar Institute.

- *Reviewer:*

Research Journals: *The ISME Journal, Microbiome, Limnology and Oceanography, Global and Planetary Change, Frontiers Microbiology, Aquatic Microbial Ecology, Continental Shelf Research, Scientific Reports, Journal of Geophysical Research, Deep Sea Research Part II, etc.*

Grants: National Science Foundation (years 2021, 2022, 2023), the North Pacific Research Board (year 2020).

- *Outreach and scientific communications:*

TARA Pacific Expedition “meet a scientist on board” to allow students and teachers to explore the scientific instruments used aboard the schooner TARA, in Lorient, France (2016) and Boston, USA (2018).

Durham Museum of Life and Science Ocean’s Lab events for kids (2015).

Mentoring Hispanic female high school students Patricia Quinones and Shekinah Eugenio for Science Fair 2009.

- *Research cruises:*

XR05 Cruise in Gulf of Mexico, R/V Pelican, Feb 2023

Antarctic Circumnavigation Expedition, R/V Akademik Treshnikov, Nov 2016 – Mar 2017

TARA Pacific Expeditions, the schooner TARA, May 2016

Antarctica Palmer Long Term Ecological Program, R/V Laurence M. Gould, Jan-Feb 2014

N₂ fixation method testing in the Sargasso Sea, R/V Atlantic Explorer, Aug 2017 and Aug 2015

POWOW2 in North Pacific Ocean, R/V Kilo Moana, Jan-Feb 2013

CH0510 Sargasso Sea, R/V Cape Hatteras, May 2010

Hawaii Ocean Time-series (HOT) 215 cruise, R/V Kilo Moana, Sep 2009

DCMII in Eastern Pacific Ocean, R/V New Horizon, Jun-Jul 2008 and Jul-Aug 2007

E. SELECTED PRESENTATIONS

Invited talk at the University of Texas at Austin Marine Science Institute, Port Aransas. Dec 2023. Mapping the ‘invisible forest’ and its role in carbon cycling in the Southern Ocean.

Invited talk at NC State University, Raleigh. Apr 2023. Mapping the ‘invisible forest’ and its role in carbon cycling in the Southern Ocean.

Invited talk at Channing Microbiome Seminar (Harvard Medical School), online. Dec 2022. Deep learning for predicting 16S rRNA gene copy number.

Ocean Sciences Meeting, online. March 2022. Decline in plankton diversity and carbon flux with reduced sea ice extent along the Western Antarctic Peninsula.

TARA Pacific Meeting, in Genoscope (Evry), France. May 2019. Net community production variability in the open ocean and around the Pacific Islands.

TARA Pacific Meeting, Nice, France. June 2018. Taking the pulse of the ocean – insight into the metabolic balance of the open ocean and coral reefs.

Ocean Sciences Meeting, Oregon. Feb 2018. From microbial community structure to biological pump: community composition and interactions are good predictors of net community production at the Western Antarctica Peninsula.

Invited talk at Emerging Bioinformatics Approaches in Microbial Ecogenomics (EBAME) workshop, Plouzane, France. Oct 2016. Linking community structure to ecosystem functioning – Specific microbes are good predictors of carbon export in the Southern Ocean.

Invited talk at University of North Carolina at Chapel Hill, Chapel Hill. Sep 2015. Mapping the ‘invisible forest’ and its role in carbon cycling in the Southern Ocean.

New Generation of Polar Researchers (NPGR) Leadership Symposium, Catalina Island. May 2015. Mapping the ‘invisible forest’ and its role in carbon cycling in the Southern Ocean.

Ocean Sciences Meeting, Salt Lake City. Feb 2012. Estimating the growth rate and biogeochemistry of genetically diverse *Prochlorococcus* using rRNA/rDNA ratios.