

SO HYUN (SOPHIA) AHN

Postdoctoral Scholar

Biology department

Woods Hole Oceanographic Institution

Woods Hole, MA 02543

Email: so.hyun.ahn@whoi.edu

Tel: +1 (508)-289-3058

Website: <https://sites.google.com/view/sohyun-sophia-ahn>

Education

- 2018 - 2023 Ph.D. Horn Point Laboratory, University of Maryland Center for Environmental Science
Thesis title: Interactions between nitrogen and temperature on the metabolism of the red-tide mixotrophic dinoflagellate *Karenia* spp. in support of predictive models: Implications for bloom dynamics on the West Florida Shelf.
Advisor: Dr. Patricia M. Glibert
- 2015 - 2017 M.S. Department of Oceanography, Pusan National University
Thesis title: Biochemical compositions of phytoplankton in the Laptev Sea and East Siberian Sea during the summer, 2013.
Advisor: Dr. Sang Heon Lee
- 2011 - 2015 B.S. Department of Oceanography, Pusan National University
Thesis title: Vertical distribution on biochemical composition of particulate organic matter in the Laptev Sea.
Advisor: Dr. Sang Heon Lee
-

Professional Experience

- 2024 - present National Ocean Sciences Accelerator Mass Spectrometry Facility
Postdoctoral Scholar in Woods Hole Oceanographic Institution
Project: Tracking mixoplanktonic grazing and carbon flow using natural abundance radiocarbon as source tracer
- 2017 - 2018 Research assistant in Marine Ecology Lab, Pusan National University
-

Awards, Grants and Fellowships

- 2023, Student Travel award for 20th International Conference on Harmful Algae (ICHA) from NOAA's National Centers for Coastal Ocean Science (NCCOS).

2022, Student Travel award for Joint Aquatic Science meeting (JASM) from Association for the Sciences of Limnology and Oceanography (ASLO)

2021, Registration Fee award for 19th ICHA from NCCOS

2021, Paul C. Silva Student grant from International Phycological Society (IPS)

2021, Izaak Walton League of America Scholarship

2021, Ryan Saba Memorial Student Fellowship from Horn Point Laboratory

2019, The Explorers Club Washington Group's Exploration and Field Research Grant

2018, Alumni Faculty council scholarship from Pusan National University

2015, Alumni award from Pusan National University

Field experiences

2022, Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) cruise at Gulf of Mexico, *R/V Weatherbird II*

2020, Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) cruise at Gulf of Mexico, *R/V Weatherbird II*

2016, Construction of Ocean Research Stations and their application studies at Yellow Sea, *R/V Jeodo*

2015, Nansen and Amundsen Observational System (NABOS) cruise at Kara, Laptev and East Siberian Seas, Arctic Ocean. *R/V Akademik Tryoshnikov*

Publications

Ahn, S.H., Mayali, X., Weber, P., Glibert, P.M. Impact of nutritional history, prey quality and quantity on grazing and photophysiological responses in mixoplanktonic dinoflagellate *Karenia brevis*. *Limnology and Oceanography* (submitted)

Fei, C., Booker, A., Klass, S., Vidyarthna, N.K., **Ahn, S.H.**, Mohamed, A.R., Arshad, M., Glibert, P.M., Heil, C.A., Martínez, J.M., Amin, S.A. (2025) Friends and foes: symbiotic and algicidal bacterial influence on *Karenia brevis* blooms. *ISME Communications* 5:ycae164.

Jang, H.K., Kang, J.J., Lee, J.H., Lee, D., Jo, N., Kim, Y., Kim K., Kim, M.J., Park, S., Kim, J., Kim, J., **Ahn, S.H.**, Lee, S.H. (2024) Comparison of annual biosynthetic calorie productions by phytoplankton in different southern Korean bays. *Frontiers in Marine Science* 11:1367137.

Ahn, S.H., Glibert, P.M. (2024) Temperature-dependent mixotrophy in natural populations of the toxic dinoflagellate *Karenia brevis*. *Water* 16:1555.

- Ahn, S.H.**, Glibert, P.M., Heil, C.A. (2023) In hot water: Interactions of temperature, nitrogen form and availability and photosynthetic and nitrogen uptake responses in natural *Karenia brevis* populations. *Harmful Algae* 129:102519.
- Kim, Y., Park, S., Jang, H.K., Choi, H.Y., Lee, J.H., Jung, S.W., Kim, W., Koh, S., Son, M., Kwak, S.N., **Ahn, S.H.** An, S., Lee, S.H. (2023) HPLC-based detection of two distinct red tide Causative species (*Mesodinium rubrum* and *Margalefidinium polykrikoides*) in the South Sea of Korea. *Water* 15(17):3050.
- Kim, S., Kim, K., Jo, N., Jang, H.K., **Ahn, S.H.**, Lee, J., Lee, H., Park, S., Lee, D., Stockwell, D.A., Whitledge, T.E. Lee, S.H. (2023) Primary production in the Kara, Laptev, and East Siberian Seas. *Microorganisms* 11(8):1886.
- Jang, H.K., Youn, S.H., Joo, H., Kang, J.J., Lee, J.H., Lee, D., Jo, N., Kim, Y., Kim, K., Kim, M.J., Park, S., Kim, J., Kim, J., **Ahn, S.H.**, Lee, S.H. (2023) First estimation of the annual biosynthetic calorie production by phytoplankton in the Yellow Sea, South Sea of Korea, East China Sea, and East Sea. *Water* 15(13):2489.
- Vidyarathna, N.K., Glibert, P.M., **Ahn, S.H.** (2023) Thermal niche of the dinoflagellate *Karlodinium veneficum* across different salinity and light levels. *Journal of Plankton Research* 45(4):604-613.
- Kim, J., La, H.S., Kim, J.H., Jo, N., Lee, J., Kim, B.K., Son, W., Kim, K., Jang, H.J., Park, S., Yoo, H., Kim, J., Park, J., **Ahn, S.H.**, Lee, S.H. (2023) Spatio-temporal variations in organic carbon composition driven by two different major phytoplankton communities in the Ross Sea, Antarctica. *Science of total environment* 891(15):164666.
- Lee, S.H., Yun, M.S., Jang, H.J., Kang, J.J., Kim, K., Lee, D., Jo, N., Park, S.H., Lee, J.H., **Ahn, S.H.**, Stockwell, D.A., Whitledge, T.E., Lee, S.H. (2023) Size-differential photosynthetic traits of phytoplankton in the Chukchi Sea. *Continental Shelf Research* 255:104933.
- Ahn, S.H.**, Glibert, P.M., Heil, C.A. Dynamic photo-physiological responses of the dinoflagellate *Karenia brevis* to short-term changes in temperature and nitrogen substrates, In: Band-Schmidt, C.J. and Rodríguez-Gómez, C.F. (Eds.). (2022) *Proceedings of the 19th International Conference on Harmful Algae*, La Paz, B.C.S., Mexico. International Society for the Study of Harmful Algal Blooms, 52 pp. <https://doi.org/10.5281/zenodo.7034896>
- Ahn, S.H.**, Glibert, P.M. (2022) Shining light on photosynthesis in the harmful dinoflagellate *Karenia mikimotoi*—Responses to short-term changes in temperature, nitrogen form, and availability. *Phycology* 2(1):30-44. <https://doi.org/10.3390/phycology2010002>
- Zhang, F., Li, M., Glibert, P.M., **Ahn, S.H.** (2021). A Three-dimensional mechanistic model of *Prorocentrum minimum* blooms in eutrophic Chesapeake Bays. *Science of the total environment* 769:144528.

- Ahn, S.H.**, Kim, K., Jo, N., Kang, J.J., Lee, J.H., Whitledge, T.E., Stockwell, D.A., Lee, H., Lee, S.H. (2020). Fluvial influence on the biochemical compositions of particulate organic matter in the Laptev and East Siberian seas during 2015. *Marine Environmental Research* 155:104873.
- Ahn, S.H.**, Whitledge, T.E., Stockwell, D.A., Lee, J.H., Lee, H., Lee, S.H. (2019). The biochemical compositions of phytoplankton in the Laptev and East Siberian seas during the summer of 2013. *Polar Biology* 42:133-148.
- Bhavya, P.S., Kim, B.K., Jo, N., Kim, K., Kang, J.J., Lee, J.H., Lee, D., Jang, H.S., Joo, H., **Ahn, S.H.**, Kim, Y., Min, J.O., Kang, M.G., Yun, M.S., Kang, C.K., Lee, S.H. (2019) A Review on the macromolecular compositions of phytoplankton and the implications for aquatic biogeochemistry. *Ocean Science Journal* 54:1-14.
- Bhavya, P.S., Lee, J.H., Lee, H.W., Kang, J.J., Lee, J.H., Lee, D., **Ahn, S.H.**, Stockwell, D.A., Whitledge, T.E., Lee, S.H. (2018). First in situ estimations of small phytoplankton carbon and nitrogen uptake rates in the Kara, Laptev, and East Siberian seas. *Biogeoscience* 15(18):5503-5517.
- Jo, N., Kang, J.J., Park, W.G., Lee, B.R., Lee, J.H., Kim, Y., **Ahn, S.H.**, Lee, D., Min, J.O., Kang, C.K., Lee, S.H. (2018) Carbohydrate-dominant phytoplankton and protein-high zooplankton in the northern part of the Southwestern East/Japan Sea in 2015. *Journal of Coastal Research* 85:371-375.
- Jang, H.K., Kang, J.K., Lee, J.H., Kim, M., **Ahn, S.H.**, Jeong, J.Y., Yun, M. S., Han, I.S., Lee, S.H. (2018). Recent primary production and small phytoplankton contribution in the Yellow Sea during the summer in 2016. *Ocean Science Journal* 53:509-519.
- Song, H.J., Kim, K., Lee, J.H., **Ahn, S.H.**, Joo, H.M., Jeong, J.Y., Yang, E.J., Kang, S.H., Yun, M.S., Lee, S.H. (2018). *In-situ* measured carbon and nitrogen uptake rates of melt pond algae in the western Arctic Ocean, 2014. *Ocean Science Journal* 53:107-117.
- Lee, J.H., Lee, D., Kang, J.J., Joo, H.T., Lee, J.H., Lee, H.W., **Ahn, S.H.**, Kang, C.K., Lee, S.H. (2017). The effects of different environmental factors on the biochemical composition of particulate organic matter in Gwangyang Bay, South Korea. *Biogeosciences* 14:1903-1917.
- Jo, N., Kang, J.J., Park, W.G., Lee, B.R., Yun, M.S., Lee, J.H., Kim, S.M., Lee, D., Joo, H.T., Lee, J.H., **Ahn, S.H.**, Lee, S.H. (2017). Seasonal variation in the biochemical compositions of phytoplankton and zooplankton communities in the southwestern East/Japan Sea. *Deep Sea Research Part II: Topical Studies in Oceanography* 143:82-90.
- Song, H.J., Lee, J.H., Kim, G.W., **Ahn, S.H.**, Joo, H.M., Jeong, J.Y., Yang, E.J., Kang, S.H., Lee, S.H. (2016). *In-situ* measured primary productivity of ice algae in Arctic sea ice floes using a new incubation method. *Ocean Science Journal* 51: 387-396.

Dahms, H.U., Joo, H.M., Lee, J.H., Yun, M.S., **Ahn, S.H.**, Lee S.H. (2015). Demersally drifting invertebrates from Kongsfjorden, Svalb rd (ArcticOcean) – a comparison of catches from drift-pump and drift-nets. *Ocean Science Journal* 50:639-648.

Conference presentations

Ahn, S.H., Lang, S.Q., Johnson, M.D. (2024) Tracking mixoplanktonic grazing and carbon flow using natural abundance radiocarbon. *American Geophysical Union*

Ahn, S.H., Glibert, P.M. (2024) Temperature-dependent mixotrophy in toxic dinoflagellate *Karenia brevis*. *Ocean Science Meeting*

Ahn, S.H., Glibert, P.M. (2023) Photo-physiology and mixotrophic grazing by dinoflagellate *Karenia brevis* on *Synechococcus* with different quality. *20th ICHA*

Ahn, S.H., Glibert, P.M., Heil, C. (2022) Dynamic photo-physiological responses of winter and summer *Karenia brevis* populations to short-term changes in temperature and nitrogen substrates during the unusual 2020-2021 bloom. *Joint Aquatic Sciences Meeting*

Ahn, S.H., Glibert, P.M., Heil, C. (2021) Dynamic photo-physiological responses of dinoflagellate *Karenia* to short-term changes in temperature and nitrogen substrates. *19th ICHA*

Ahn, S.H., Glibert, P.M., Flood, S., Heil, C. (2021) Dynamic photophysiological responses of dinoflagellate *Karenia mikimotoi*: effects of different nitrogen forms, amounts, and temperatures. *ASLO Aquatic Sciences meeting* (poster)

Ahn, S.H., Glibert, P.M. (2021) Dynamic photophysiological responses of dinoflagellate *Karenia mikimotoi*: Under interactions between different nitrogen forms, amounts, and temperatures. *10.5 US Symposium on Harmful Algae*

Zhang, F., Li, M., Glibert, P.M., **Ahn, S.H.** (2020) A mechanistic model to predict seasonal timing and spatial distribution of *Prorocentrum minimum* blooms in Chesapeake Bay. *Ocean Science meeting* (poster)

Ahn, S.H., Lee, S.H. (2017) Fluvial influence on the biochemical compositions of particulate organic matter in the Laptev and East Siberian seas, 2015. Fall meeting of *Korean Society of Oceanography* (poster)

Ahn, S.H., Lee, S.H. (2016) Biochemical compositions of phytoplankton in the Laptev Sea and East Siberian Sea during the summer, 2013. Fall meeting of *Korean Society of Oceanography* (poster)

Kim, Y.W., **Ahn, S.H.**, Lee, J.H., Lee, S.H. (2015) Comparison of macromolecular compositions of different size phytoplankton in Gwangyang Bay, Korea. *Annual Meeting of North Pacific Marine Science Organization (PICES)* (poster)

Kim, M.J., **Ahn, S.H.**, Heo, R., Lee, S.H. (2014) Vertical distribution on biochemical composition of particulate organic matter in the Laptev Sea, *The 20th International Symposium on Polar Sciences* (poster)

Community outreach

2022, Horn Point Laboratory director search committee

2022, Guest speaker at Cambridge high school as Society of Women in Marine Science (SWMS) member

2022, Horn Point Laboratory Tour Guide