

Wenfan Wu, Ph.D.

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RESEARCH INTERESTS

- Numerical modeling on nearshore biogeochemical cycles
- Interaction of hydrodynamic and biogeochemical processes

WORK

Postdoctoral Research Associate

Aug 2024 – ongoing

Virginia Institute of Marine Science, W&M

PI: Dr. Y Joseph Zhang

EDUCATION

Ph.D. in Physical Oceanography

Sep 2020 – Jun 2024

Ocean Univ. China

Advisor: Dr. Fangguo Zhai & Dr. Kejian Wu

M.S. in Applied Oceanography (bypassed to Ph.D. program)

Sep 2018 – Jun 2020

Ocean Univ. China

Advisor: Dr. Fangguo Zhai

B.S. in Marine Science

Sep 2014 – Jun 2018

Ocean Univ. China

RESEARCH EXPERIENCE

Sep 2018 – Sep 2020

- Evaluation and calibration of the SWAN wave model in Chinese adjacent waters.

Sep 2020 – Jun 2022

- Three-dimensional structure and physical mechanism of summer circulation in the Bohai Sea with SCHISM model.

Jun 2022 to Aug 2024

- Spatial and seasonal variability of nutrient status in the seaward rivers of China.

- Tidal modulation on the spatial distribution of ecological disasters in the Bohai Sea.
- High-frequency dynamics of bottom DO in the Bohai Sea based on in-situ observations.

PROFESSIONAL SKILLS

I have rich experiences in applying numerical ocean models (e.g., SCHISM, and SWAN), and familiar with multiple programming languages (e.g., MATLAB, and Python).

Numerical Model

SCHISM 9/10

SWAN 8/10

ROMS 6/10

FVCOM 6/10

Programming Language

MATLAB 9/10

Fortran 6/10

Python 6/10

Julia 6/10

LANGUAGE SKILLS

English — Limited Business Proficiency

Chinese — Native Speaker

PUBLICATIONS

Published

- [1] Wu, W., Song, C., Chen, Y., Zhai, F., Liu, Z., Liu, C., Gu, Y., & Li, P. (2024). High-frequency dynamics of bottom dissolved oxygen in temperate shelf seas: The joint role of tidal mixing and sediment oxygen demand. *Limnol. Oceanogr.*, <https://doi.org/10.1002/lno.12733>.
- [2] Wu, W., Zhai, F., Liu, Z., Liu, C., Gu, Y., and Li, P. (2023). The spatial and seasonal variability of nutrient status in the coastal rivers of China shaped by the human activities. *Ecol. Indic.*, 157: 111223. <https://doi.org/10.1016/j.ecolind.2023.111223>.
- [3] Wu, W., Zhai, F., Liu, C., Gu, Y., and Li, P. (2023). Three-dimensional structure of summer circulation in the Bohai Sea and its intraseasonal variability. *Ocean Dynam.*, 1-20. <https://doi.org/10.1007/s10236-023-01576-6>.
- [4] Wu, W., Zhai, F., Gu, Y., Liu, Z., and Li, P. (2023). Weak local upwelling elevates the risks of ecological disasters in shallow waters. *Environ. Re. Lett.*, 18: 114031. <https://doi.org/10.1088/1748-9326/ad0256>.
- [5] Wu, W., Liu, Z., Zhai, F., Li, P., Gu, Y., and Wu, K. (2021). A quantitative method to calibrate the SWAN wave model based on the whitecapping dissipation term. *Appl. Ocean Res.*, 114, 102785. <https://doi.org/10.1088/1748-9326/ad0256>.

- [6] Wu, W., Li, P., Zhai, F., Gu, Y., and Liu, Z. (2020). Evaluation of different wind resources in simulating wave height for the Bohai, Yellow, and East China Seas (BYES) with SWAN model. *Cont. Shelf Res.*, 207, 104217.
<https://doi.org/10.1016/j.csr.2020.104217>.
- [7] Lei, Z., Wu, W., Gu, Y., Zhai, F. and Li, P. (2023) A general method to determine the optimal whitecapping dissipation coefficient in the SWAN model. *Front. Mar. Sci.*, 10:1298727. <https://doi.org/10.3389/fmars.2023.1298727>.
- [8] Zhai, F., Wu, W., Gu, Y., Li, P., & Liu, Z. (2021). Dynamics of the seasonal wave height variability in the South China Sea. *Int. J. Climatol.*, 41(2), 934-951.
<https://doi.org/10.1002/joc.6707>.
- [9] Zhai, F., Wu, W., Gu, Y., Li, P., Song, X., Liu, P., ... & He, J. (2021). Interannual-decadal variation in satellite-derived surface chlorophyll-a concentration in the Bohai Sea over the past 16 years. *J. Mar. Syst.*, 215, 103496.
<https://doi.org/10.1016/j.jmarsys.2020.103496>.
- [10] Li, J., Li, P., Bai, P., Zhai, F., Gu, Y., Liu, C., ... & Wu, W. (2022). Abrupt change of a thermal front in a high-biomass coastal zone during early spring. *Front. Mar. Sci.*, 9, 1092984. <https://doi.org/10.3389/fmars.2022.1092984>.
- [11] Zhai, F., Liu, Z., Li, P., Gu, Y., Sun, L., Hu, L., ... & Wu, W. (2021). Physical controls of summer variations in bottom layer oxygen concentrations in the coastal hypoxic region off the northeastern Shandong Peninsula in the Yellow Sea. *J. Geophys. Res. Oceans*, 126(5), e2021JC017299.
<https://doi.org/10.1029/2021JC017299>.
- [12] Song, X., Gu, Y., Zhai, F., Li, P., Liu, P., Liu, Z., Wu, W., ... & He, J. (2021). Climatology and seasonal variability of satellite-derived chlorophyll-a around the Shandong Peninsula. *J. Oceanol. Limnol.*, 39(4), 1222-1244.
<https://doi.org/10.1007/s00343-020-0249-5>.

CONFERENCES

The Tenth National Marine Technology Conference (May 2021; Zhoushan, China)

Session Talk: Physical Controls of Summer Variations in Bottom Layer Oxygen Concentrations in the Coastal Hypoxic Region off the North-eastern Shandong Peninsula in the Yellow Sea (on behalf of Dr. Fangguo Zhai)

HONORS AND AWARDS

Graduate Study Scholarship, Ocean Univ. of China (Ranked in the top 25%)

Graduate Academic Innovation Scholarship, Ocean Univ. of China (2024)

SERVICES AND ACTIVITIES

Teaching Experience

- Teaching assistant (2021–2022 Introduction to Oceanography, for undergraduates, COAS, Ocean Univ. China, Prof. Fangguo Zhai)
- Teaching assistant (2023–2024 Marine data analysis and acquisition, for masters, COAS, Ocean Univ. China, Prof. Fangguo Zhai & Prof. Kejian Wu)

Field Observation

- Annual survey of sea-level changes along the Qingdao coastal area (2018–2023)
- Cruise observations of hypoxia in northern Shandong Peninsula (2019–2021)

SOFTWARE DEVELOPMENT

- A [MATLAB toolbox](#) designed for the SCHISM model.
- A 1-D biogeochemical model established with MATLAB following the CoSiNE frame.

PERSONAL WEBSITES

ResearchGate <https://www.researchgate.net/profile/Wenfan-Wu>

GitHub <https://github.com/wenfanwu>

Personal Homepage <https://wenfanwu.github.io/>