Yongfei (Felix) Deng

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Education

Doctor of Philosophy (Ph.D.) in Physical Oceanography
Southern University of Science and Technology, Shenzhen, China *2019.09 – 2023.06*
Thesis: "The Interannual Variability and Driving Mechanism of Shelf Circulation and Cross-Shelf Water Exchange in the Northern South China Sea"
Courses: Numerical Simulation of Ocean Circulation; Physical Oceanography; Advanced Numerical Methods; Advanced Continuum Mechanics; Academic Writing and Presentation; Global Hydrology and Frontier of Environmental Science

Master of Science (M.Sc.) in Marine Science
Shanghai Ocean University, Shanghai, China *2016.09 – 2019.06*
Thesis: "The Variabilities, Impacts, and Driving Mechanisms of Bering Strait Throughflow"
Honors: Excellent Thesis

Bachelor of Science (B.Sc.) in Resources, Environment, and Urban-Rural Planning Management
Guangdong University of Finance and Economics, Guangzhou, China *2012.08 – 2016.06*
Thesis: "The Climate Responses to the El Niño Events from 2000 in Guangdong Province, China"
Honors: Outstanding Graduate; Excellent Thesis

Research Experience

Postdoctoral Researcher
North Carolina State University (NCSU), Raleigh, NC, USA *2024.10 – Present*
- Conducting advanced research in physical oceanography with a focus on data assimilation techniques to enhance ocean model accuracy.
- Using numerical model and ML/AI to study eddies in Gulf of Mexico and water mass transformation in Caribbean Sea.

Visiting and Postdoctoral Researcher
University of New South Wales, Canberra, Australia *2022.09 – 2024.09*
- Conducted numerical modeling studies on sediment and physical dynamics under multiple stressors in Batemans Bay, NSW.
- Analyzed the impacts of regional climate change and infrastructure construction on sediment transport and hydrodynamics.
- Identified physical mechanisms governing mass exchange between semi-enclosed bays and adjacent shelves.

Ph.D. Researcher
Southern University of Science and Technology, Shenzhen, China *2019.08 – 2023.06*
- Investigated low-frequency variability of shelf circulation and cross-shelf water exchange in the Northern South China Sea using ROMS modeling and observational data.
- Studied the role of coastally-trapped waves in modulating water exchange in the Taiwan Strait.

Master's Researcher
Shanghai Ocean University, Shanghai, China *2016.04 – 2019.05*
- Explored air-ice-sea dynamics in the Arctic Ocean using in situ data and FVCOM model output.
- Focused on key regions such as the Bering Strait, Chukchi Sea, Beaufort Sea, and Canadian Arctic Archipelago.

Research Interests

- Physical oceanography, focusing on multi-scale ocean dynamics, air-sea-ice interactions, and cross-shelf water exchange.
- Numerical modeling and data assimilation to improve predictions of ocean circulation and climate dynamics.
- Investigating the impacts of climate change on coastal and polar ocean systems.

Peer-Reviewed Publications

1. Deng, Y., H. Wang, X. Zhou, G. Yang, 2025: Estuarine circulation and bay-shelf exchange under river and wave forcing in Batemans Bay, New South Wales, Australia. Journal of Geophysical Research: Oceans. (Under review)
2. Deng, Y., H. Wang, Y. Wang, Z. Li, G. Yang, 2025: Low-frequency water movement in a semi-enclosed embayment. Estuarine, Coastal and Shelf Science. (Under review)
3. Deng, Y., Z. Liu, et al., 2022: Climatic Controls on the Interannual Variability of Shelf Circulation in the Northern South China Sea. Journal of Geophysical Research: Oceans, 127(7).
4. Liu, Z., Y. Deng, et al., 2021: Progress on Circulation Dynamics in the East China Sea and Southern Yellow Sea. Progress in Oceanography, 193, 102553.
5. Liu, Z., Y. Deng, et al., 2021: Progress of studies on circulation dynamics in the East China Sea: The Kuroshio exchanges with the shelf currents. Frontiers in Marine Science, 8, 620910
6. Liu, Z., J. Gan, J. Hu, H. Wu, Z. Cai and Y. Deng, 2021: Advances on coastal and estuarine circulations around the Changjiang Estuary in the recent decades (2000–2020). Frontiers in Marine Science, 8, 615929
7. Zhang, Y., Y. Deng, and C. Chen, 2020: Main Characteristics and Influence Factors of the Pacific Inflow in the Region of Bering Strait: A Review. Chinese Journal of Polar Research, 32(2), 151-163. (In Chinese with English abstract)
8. Deng, Y., Gao, G., Zhang, Y. & Chen, C., 2019: Seasonal and interannual variability of Bering Strait Throughflow from AO-FVCOM and observation. Journal of Ocean University of China, 18(3), 615-625.
9. Deng, Y., Gao, G., Zhang, Y. & Chen, C., 2019: The temporal-spatial variability of Chukchi sea ice area under the influence of Bering Strait Throughflow. Chinese Journal of Polar Research, 31(4), 383-392. (In Chinese with English abstract)

Conferences & Workshops

- 2nd Coastal Resilience Workshop, UNSW Canberra, ACT, April 2024.
- 1st Coastal Resilience Workshop, UNSW Canberra, ACT, November 2023.
- 6th Conference on Earth Science, Tongji University, Shanghai, July 2021 (Poster presentation).
- Second China Polar Youth Forum, University of Science and Technology of China, May 2019

(Poster presentation; First Prize).
- China Symposium on Polar Science, Xiamen University, October 2018 (Poster presentation).

Teaching Experience

Casual Academic
School of Science, UNSW Canberra, Australia *2023.02 – 2024.09*
- Demonstrated lab experiments and graded students' lab reports in two oceanographic courses: *Ocean Circulation and Mixing* and *Australian Waters*.
- Assisted in conducting tasks and surveys during the *Ocean Field School* at Batemans Bay in April 2023 and 2024.
- Designed and demonstrated lab sessions and quizzes for the summer school program, *Introduction to Oceanography*.

Fieldwork Experience

- Sino-Norway Field Measurements, Greenland-Iceland-Norwegian (Nordic) Seas, May-July 2017 (Operation of CTD and Aanderaa Current Meter).
- Ocean Field School, Batemans Bay, Australia, April 2023 (Operation of tide and wave gauges, ADCP).
- Ocean Field School, Batemans Bay, Australia, April 2024 (Operation of tide and wave gauges, ADCP).

Skills

- **Programming**: Python, MATLAB, Fortran, NCL, LaTex
- **Systems**: Linux/Unix, Shell, HPC
- **Modeling**: ROMS, ENKF-c, FVCOM, AI/ML/DL
- **Languages**: English (Fluent), Cantonese (Native), Mandarin (Native)

Referees

1. **Ruoying He, Ph.D.**
Professor, School of Science, North Carolina State University, USA
Email: rhe@ncsu.edu

2. **Xiaohua Wang, Ph.D.**
Professor, School of Science, UNSW Canberra, Australia
Email: x.h.wang@unsw.edu.au

3. **Guoping Gao, Ph.D.**
Professor, College of Marine Ecology and Environment, Shanghai Ocean University, China
Email: gpgao@shou.edu.cn

4. **Qi Quan, Ph.D.**
Associate Professor, State Key Laboratory of Estuarine and Coastal Research, East China Normal University, China
Email: qquan@sklec.ecnu.edu.cn