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RESEARCH
INTERESTS

The Dynamical Oceanography Group (DyOG) of Xiamen University, of which I am the head, seeks to advance dynamical interpretation and prediction of multi-scale oceanic processes and phenomena as revealed by observations and numerical simulations. The researches conducted by DyOG are mostly process-oriented and grounded in fundamental geophysical fluid dynamics. Ocean dynamics at scales around and below the deformation radius (i.e., the oceanic small to meso-scales) is a particular focus of DyOG. Topics with ongoing research efforts include: ocean turbulence & mixing, geophysical instabilities, ocean scale interactions & energy transfers, internal gravity waves, upper ocean dynamics, wave-turbulence/eddy decomposition/interactions, water mass transformation & overturning circulation.

PROFESSIONAL
PREPARATION

Ocean University of China, Qingdao, China
College of Physical and Environmental Oceanography
Department of Oceanography
Physical Oceanography Laboratory

Ph.D., Physical Oceanography, June 2009

- Dissertation Title: Turbulence and Mixing in Tidally Energetic Shelf Seas
- Supervisor: Prof. Hao Wei (now Professor of Tianjin University)

Bangor University, Menai Bridge, UK
College of Natural Sciences
School of Ocean Sciences

Visiting Study (with Prof. Stephen Thorpe FRS), Oct 2007 – April 2009

Arizona State University, Tempe, USA
Center for Environmental Fluid Dynamics

Visiting Study (with Dr Iossif Lozovatsky), Feb 2006 – May 2006

Ocean University of China, Qingdao, China
College of Physical and Environmental Oceanography
Department of Oceanography

B.Sc., Physical Oceanography, June 2004

ACADEMIC
EXPERIENCE

Xiamen University, Xiamen, China
College of Ocean and Earth Sciences
State Key Laboratory of Marine Environmental Science
Department of Physical Oceanography

Professor

Aug 2015 –

Associate Professor

Aug 2010 – July 2015

Assistant Professor

Aug 2009 – July 2010

University of New South Wales, Sydney, Australia
School of Mathematics and Statistics

Vist. Snr. Res. Fellow (with Trevor McDougall FRS)

Sep 2017 – Feb 2018

Université Pierre et Marie Curie, Paris, France
LOCEAN-IPSL

Visiting Scientist (with Marina Lévy)

Dec 2013 – Nov 2014

The Hong Kong University of Science and Technology, Hong Kong, China
Division of Environment & Department of Mathematics

Visiting Professor

Aug 2013 – Sep 2013

PUBLICATIONS

- [72] Tian Y.^{*}, Bai X., Wang C., and **Liu Z.**[†] (2025), Tidal energetics in the eddying South China Sea from a high-resolution numerical simulation, *Progress in Oceanography*, 231, 103418. (^{*} *advised student*, [†] *corresponding author*)
- [71] Yang Y., Huang R. X., Liang X. S., **Liu Z.**, Hu J., Zhao Y., and Fu G. (2024), The causal relation within air–sea interaction as inferred from observations, *Journal of Climate*, 37(24), 6713–6727.
- [70] Tu J., Wu J., Fan D., **Liu Z.**, Zhang Q., and Smyth W. (2024), Shear instability and turbulent mixing by Kuroshio intrusion into the Changjiang river plume, *Geophysical Research Letters*, 51(20), e2024GL110957.
- [69] Cao Z.^{*}, **Liu Z.**[†], Wang D., Wang J., Lin H., and Zhang F. (2024), Scaling the diurnal mixing/mixed layer depth in the tropical ocean: A case study in the South China Sea, *Journal of Geophysical Research: Oceans*, 129(9), e2024JC021296.
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- [65] Liu G., Chen Z., Lu H., **Liu Z.**, He Q., He Y., Xu J., Gong Y., and Cai S. (2023), Energy transfer between mesoscale eddies and near-inertial waves from surface drifter observations, *Geophysical Research Letters*, 50(16), e2023GL104729.
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- [63] Robertson R., Zhao C., Wang W., Xu Z., and **Liu Z.** (2023), A case study off the Tiwi Islands and the Coburg Peninsula: Baroclinic on one side and barotropic on the other, *Progress in Oceanography*, 216, 103057.
- [62] Hu Z.^{*}, Lin H.[†], **Liu Z.**[†], Cao Z., Zhang F., Jiang Z., Zhang Y., Zhou K., and Dai M. (2023), Observations of a filamentous intrusion and vigorous submesoscale turbulence within a cyclonic mesoscale eddy, *Journal of Physical Oceanography*, 53(6), 1615–1627.
- [61] Bai X., Lamb K.G., **Liu Z.**[†], and Hu J.[†] (2023), Intermittent generation of internal solitary-like waves on the northern shelf of the South China Sea, *Geophysical Research Letters*, 50(6), e2022GL102502.

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AFFILIATIONS AND
SERVICE

Dean, China-ASEAN College of Marine Science (CAMS), Xiamen University Malaysia (2024–)

Dean, College of Ocean and Earth Sciences, Xiamen University (2024–)

Associate Dean, College of Ocean and Earth Sciences, Xiamen University (2019–2024)

Associate Director, State Key Laboratory of Marine Environmental Science (2022–)

Acting Dean, Department of Physical Oceanography, Xiamen University (2013–2018)

Editor, *Ocean Dynamics* (2021–)

Editor, *Geoscience Letters* (2021–)

Editor, *Journal of Oceanography* (2017–)

Associate Editor, *Frontiers in Marine Science* (2018–)

Assistant Editor-in-Chief, *Acta Oceanologica Sinica* (2016–)

Member, AOGS Publication Committee (2017–)

Full Member, SCOR WG160: Analysing ocean turbulence observations to quantify mixing (ATOMIX) (2020–)

Guest Editor, *Ocean Dynamics* (2019–2020)

Secretary, AOGS Ocean Sciences Section (2012–2014)