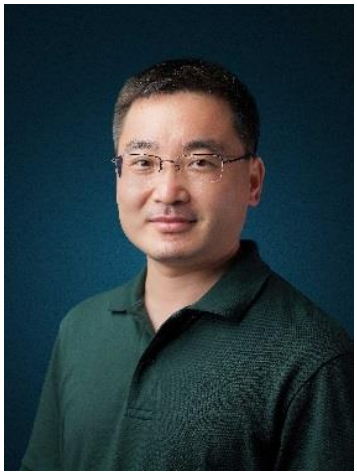


# 刘传玉 博士 研究员 | 博士生导师

海洋环流与波动重点实验室

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研究方向 中小尺度动力学，海洋混合，基于数据同化与人工智能的海洋参数反演

海洋所个人网页：
http://qdio.cas.cn/2019Ver/Teams/researcher/201707/t20170720_5479492.html

研究部招生个人主页：
http://www.qdio.ac.cn/yjs/tutor/bstutor/bswlhyx/202003/t20200311_546368.html


## 个人简介

刘传玉，中国科学院海洋研究所研究员，博士生导师，主要研究方向为海洋中小尺度动力学、海洋混合、海洋数值模拟及海洋数据同化，当前，开展部分人工智能海洋学应用研究。

2015 年 12 月入选中科院引进海外高层次人才计划青年项目，2016 年 11 月入选国家引进海外高层次人才计划青年项目，2017 年 9 月入选崂山实验室（原青岛海洋科学与技术试点国家实验室）“鳌山人才”优秀青年学者；2024 年 5 月作为副总设计师承担中国科学院战略先导性科技专项（A 类）任务；2024 年 8 月获国家自然科学基金委重点项目资助。

取得了若干研究成果：

a)中尺度动力学： 首次给出全球中尺度涡致混合系数和小尺度湍流扩散系数优化值分布特征；揭示了海洋斜压不稳定性不同结构全球分布规律、变异规律及控制机理，给出了不同结构中尺度涡全球分布规律及与不同斜压不稳定性分布规律之间的机制联系；发现了海洋中尺度涡致混合各向异性结构全球分布规律与机理；发现了北赤道潜流区次表层（温跃层之下）中尺度不稳定波。

b）小尺度动力学：系统揭示热带不稳定波对温跃层混合规律的机制影响；发现了次表层热带不稳定波，揭示其对温跃层深层混合的影响；揭示了不同动力模态和时空尺度赤道波动（赤道陷波）对混合的影响机制；发现了热带障碍层混合并揭示其对海表温度影响规律；进而确立了赤道温跃层（次表层）混合的普遍存在性，给出了热量从表层向更深层传输的新机制。

c）海洋内部参数“最优”估计及人工智能反演预报：采用国际先进的伴随敏感性分析及四维变分方法，构建国内首个基于 ECCO 框架的“两洋一海”高分辨率四维变分（伴随）大洋状态估算和参数优化系统 TOOSSE，反演优化全球中尺度涡致混合系数和小尺度湍流扩散系数并描述其基本规律。

在 Nature Communications, Journal of Physical Oceanography, Journal of Geophysical Research-Oceans, Geophysical Research Letters 等本领域高水平期刊发表论文 40 余篇。

## 教育背景

| | | | |
|---|---|---|---|
| 2000.09 - 2004.07 | 中国海洋大学 | 海洋科学 | 理学学士 |
| 2004.09 - 2009.07 | 中国科学院海洋研究所 | 物理海洋学 | 理学博士 |

## 工作经历

| | | |
|---|---|---|
| 2016.10 - 至今 | 中国科学院海洋研究所 | 博士生导师 |
| 2016.04 - 至今 | 中国科学院海洋研究所 | 研究员 |
| 2015.12 - 2016.03 | 中国科学院海洋研究所 | 特聘研究员 |
| 2009.09 - 2015.10 | 德国汉堡大学海洋研究所 | 博士后助理研究员 |

## 招生专业及方向

物理海洋学（物理海洋/数学/物理/计算机等相关专业背景）：

博士招生：大洋环流动力学，中小尺度动力学，海洋混合，海洋数值模拟数据同化，人工智能海洋学

硕士招生：大洋环流动力学，中小尺度动力学，海洋混合，海洋数值模拟数据同化，人工智能海洋学

## 论文著作

1 Weisheng Yang; **Chuanyu Liu***; Armin Köhl; Jin Wang; Xin Wang; Fan Wang; The Adjoint-based Favorable Winds for the Generation of the Central Pacific El Niño, *Journal of Climate*, 2023. https://doi.org/10.1175/JCLI-D-22-0548.1

2 Kai Ma; **Chuanyu Liu***; Junli Xu; Fan Wang; Contrasts of Bimodal Tropical Instability Waves (TIWs)-Induced Wind Stress Perturbations in the Pacific Ocean among Observations, Ocean Models and Coupled Climate Models, *Journal of Oceanology and Limnology*, 2023. https://doi.org/10.1007/s00343-023-2326-z

3 Jingjing Zhang; **Chuanyu Liu ***; Xiang Gong; FanWang; Persistent Mixing Bursts in the Equatorial Pacific Thermocline Induced by Persistent Equatorial Waves, *Journal of Oceanology and Limnology.* 2023. https://doi.org/10.1007/s00343-023-2350-z

4 Rongjie Zhao; Feng Zhao; Ling Feng; James Kar-Hei Fang; **Chuanyu Liu**; Kuidong Xu; A Deep Seamount Effect Enhanced the Vertical Connectivity of the Planktonic Community Across 1000 m Above Summit, *Journal of Geophysical Research: Oceans*, 2023, 128(3)

Junli Xu; Kai Ma; Yuling Nie; **Chuanyu Liu**; Xin Bi; Wenqi Shi; Xianqing Lv; Numerical Study
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**Chuanyu Liu ***; Dan Huo; Zhiyu Liu; Xiaowei Wang; Cong Guan; Jifeng Qi; Fan Wang;
6 Turbulent mixing in the barrier layer of the equatorial Pacific Ocean, *Geophysical Research Letters*, 2022, 49(5)

**Chuanyu Liu ***; Ling Feng; Armin Köhl; Zhiyu Liu; Wave, vortex and wave-vortex dipole
7 (instability wave): three flavors of the intra-seasonal variability of the North Equatorial Undercurrent, *Geophysical Research Letters*, 2022, 49(11)

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8 Wind-Driven Mechanisms for the Variations of the Pacific Equatorial Undercurrent Based on Adjoint Sensitivity Analysis, *Frontiers in marine science*, 2022, 9

9 Ling Feng; **Chuanyu Liu ***; Armin Köhl; Fan Wang; Seasonality of four types of baroclinic instability in the global oceans, *Journal of Geophysical Research: Oceans*, 2022, 127(5)

Jifeng Qi; **Chuanyu Liu**; Jianwei Chi; Delei Li; Le Gao; Baoshu Yin; An Ensemble-Based
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Hao Wang; Huijie Liu; Xiaowei Wang; Junlong Zhang; Boris I. Sirenko; **Chuanyu Liu**; Dong
12 Dong; Xinzheng Li; Stirring the Deep, Disentangling the Complexity: Report on the Third Species of Thermochiton (Mollusca: Polyplacophora) From Haima Cold Seeps, *Frontiers in Marine Science*, 2022, 9

Ling Feng; **Chuanyu Liu***; Armin Köhl; Detlef Stammer; Fan Wang*; Four types of baroclinic
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Xiaohua Li; Xiaowei Wang; **Chuanyu Liu;** Yi Liu; Kefu Yu; Weidong Sun; Traces of the 1997
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16 Yilong Lyu; Yuanlong Li; Jianing Wang; Jing Duan; Xiaohui Tang; **Chuanyu Liu**; Linlin Zhang; Qiang Ma; Fan Wang; Anomalous Upper-Ocean Circulation of the Western Equatorial Pacific following El Niño Events, *Journal of Physical Oceanography*, 2020, 50(11) : 3353-3373

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20 **Chuanyu Liu***; Xiaowei Wang*; Armin Köhl; Fan Wang; Zhiyu Liu; The northeast-southwest oscillating equatorial mode of the tropical instability wave and its impact on equatorial mixing, *Geophysical Research Letters*, 2019, 46(1): 218-225

21 Bowen Sun; **Chuanyu Liu***; Fan Wang*; Global meridional eddy heat transport inferred from Argo and altimetry observations, *Scientific Reports*, 2019, 9

22 Lina Song; Yuanlong Li; **Chuanyu Liu**; Fan Wang*; Jianing Wang; Observed Deep-Reaching Signatures of the Madden-Julian Oscillation in the Ocean Circulation of the Western Tropical Pacific, *Geophysical Research Letters*, 2019, 46(24): 14634-14643

23 Lina Song; Yuanlong Li; Fan Wang; Jianing Wang; **Chuanyu Liu**; Subsurface structure and variability of the zonal currents in the Northwestern Tropical Pacific Ocean, *Deep Sea Research Part I: Oceanographic Research Papers*, 2018, 141: 11-23

24 Qiuping Ren; Yuanlong Li; Fan Wang; Lina Song; **Chuanyu Liu**; Fangguo Zhai; Seasonality of the Mindanao Current/Undercurrent System, *Journal of Geophysical Research: Oceans*, 2018, 123(2): 1105-1122

25 Lina Song; Yuanlong Li; Jianing Wang; Fan Wang*; Shijian Hu; **Chuanyu Liu**; Xinyuan Diao; Cong Guan; Tropical Meridional Overturning Circulation Observed by Subsurface Moorings in the Western Pacific, *Scientific Reports*, 2018, 8

26 Lina Song; Yuanlong Li; **Chuanyu Liu**; Fan Wang; Subthermocline anticyclonic gyre east of Mindanao and its relationship with the Mindanao Undercurrent, *Chinese Journal of Oceanology and Limnology*, 2017, 35(6): 1303-1318

27 Fan Wang*; Lina Song; Yuanlong Li; **Chuanyu Liu**; Jianing Wang; Pengfei Lin; Guang Yang; Jun Zhao; Xinyuan Diao; Dongxiao Zhang; Dunxin Hu; Semiannually alternating exchange of intermediate waters east of the Philippines, *Geophysical Research Letters*, 2016, 43(13): 7059-7065

28 **Chuanyu Liu***; Armin Köhl; Zhiyu Liu; Fan Wang; Detlef Stammer; Deep-reaching thermocline mixing in the equatorial Pacific cold tongue, *Nature Communications*, 2016, 7

29 Ryo Furue; Yanli Jia; Julian P. McCreary; Niklas Schneider; Kelvin J. Richards; Peter Müller; Bruce D. Cornuelle; Nidia Martínez Avellaneda; Detlef Stammer; **Chuanyu Liu**; Armin Köhl; Impacts of regional mixing on the temperature structure of the equatorial Pacific Ocean. Part 1: Vertically uniform vertical diffusion, *Ocean Modelling*, 2015, 91:91-111

30 Shuping Wu; **Chuanyu Liu**; Xinping Chen; Offshore wave energy resource assessment in the East China Sea, *Renewable Energy*, 2015, 76: 628-636

31 **Chuanyu Liu**; Fan Wang*; Xinping Chen; Jinsong von Storch; Interannual variability of the Kuroshio onshore intrusion along the East China Sea shelf break: Effect of the Kuroshio volume transport, *Journal of Geophysical Research: Oceans*, 2014, 119(9): 6190-6209

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## 项目课题

1 国家自然科学基金委重点项目：内部强化型海洋中尺度涡形成与变异机制及其对太平洋热带辐合带（ITCZ）上层海洋温度的影响（2025 年 1 月-2029 年 12 月，经费：230 万），**主持**

2 中国科学院战略先导性科技专项（A 类）项目：关键海洋过程预报技术研究（2023 年 10 月-2026 年 9 月，经费：700 万），**主持**

3 崂山实验室崂山实验室科技创新项目"海洋中小尺度动力过程对气候变化的响应和反馈"课题"气候变化背景下海洋内波和赤道中小尺度波动变异机理及其对湍流混合的影响"（课题编号：LSKJ202202502），2022.10-2025.09，325.50 万，**主持**

4 中国科学院国家重大科技基础设施项目"基于'科学'号的半潜无人船海洋动力环境智能观测系统研制"（项目编号：DSS-WXGZ-2022），2022.01-2024.12，814.15 万，**参与**

5 中国科学院 B 类战略性先导科技专项子课题"'两洋一海'高分辨率大洋状态估算系统发展"（子课题编号：XDB42040102），2020.01-2024.12，88 万，**主持**

6 国家自然科学基金委面上项目“太平洋热带不稳定波双模态、跨赤道、倾斜流态结构变异机制及跨尺度效应研究”（项目编号：41976012），2020.01-2023.12，62 万，**主持**

7 国家自然科学基金委青年基金项目“全球大洋中尺度涡致侧向混合系数各向异性分布规律及大尺度效应研究”（项目编号：41606026），2016.10-2020.12，20 万，**主持**

8 中国科学院前沿科学重点研究项目“赤道中太平洋温跃层混合研究”（项目编号：QYZDB-SSW-DQC030），2016.10-2020.10，250 万，**主持**

## 学术兼职

| | |
|---|---|
| 2016.11 - 至今 | 中国海洋湖沼学会海洋与气候分会理事、秘书长 |
| 2022.10 - 至今 | 中国海洋学会人工智能海洋学专业委员会委员 |
| 2022.11 – 2023.11 | *Deep Sea Research I* 客座编辑 |
| 2024.07 - 至今 | 《海洋学报》《Acta Oceanologica Sinica》两刊青年编委 |