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海洋环流与波动重点实验室

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研究方向 印太交汇区海洋环流与暖池动力学、人工智能海洋学

ResearchGate 个人主页: <https://www.researchgate.net/profile/Fan-Wang-76>

个人简介

主要从事印太交汇区海洋环流与暖池动力学研究, 主要研究成果为: 1) 取得次表层海洋环流与热盐结构的重要科学发现和理论创新, 系统揭示次表层环流结构, 建立其动力学理论框架。成果先后获“中科院杰出科技成就奖”和“山东省自然科学一等奖”。2) 实现热带西太平洋深海潜标连续实时观测重大突破, 取得次表层-中深层环流变异的新认识, 观测揭示西太平洋次表层-中深层环流季节内变异规律, 提出气候变化信号向中深层传递的新机制。成果获“海洋工程科技奖一等奖”, 入选建国 70 周年大型成就展和中国海洋与湖沼十大科技进展。3) 积极开拓人工智能海洋学等前沿交叉研究领域, 共同发起和成功实施 NPOCE 国际计划, 主导发起“印太交汇区”多圈层相互作用研究, 扎实推进数据产品研发和共享。发表论文 260 余篇, 出版专著 4 部。

教育背景

1992.09 - 1995.07	青岛海洋大学(现中国海洋大学)	物理海洋学	理学博士
1989.09 - 1992.07	青岛海洋大学	物理海洋学	理学硕士
1985.09 - 1989.07	青岛海洋大学	物理海洋学	理学学士

工作经历

2017.03 - 至今	中国科学院海洋研究所	所长
2014.06 - 2017.03	中国科学院海洋研究所	党委书记、副所长
2011.12 - 2012.07	中国科学院海洋研究所	副所长
2007.07 - 2011.12	中国科学院海洋研究所	所长助理
2006.08 - 2012.04	中国科学院海洋环流与波动重点实验室	主任
2004.07 - 2004.10	英国南安普顿海洋科学中心	访问学者

2001.07 - 2006.08	海洋环流与浅海动力过程开放实验室	主任
2000.02 - 2000.07	德州农工大学	访问学者
1999.04 - 至今	中国科学院海洋研究所	研究员
1995.08 - 1998.01	中国科学院海洋研究所	博士后

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：海洋环流与气候环境变化

硕士招生：海洋环流与气候环境效应 / 环境工程

论文著作

- [1] **王凡***, 胡敦欣, 1997: 棉兰老潜流水源的初步研究, 赵九章教授纪念文集, 叶笃正主编, 科学出版社, 北京, 345-352, ISBN: 03006402X.
- [2] Hu, Dunxin, **Fan Wang**, et al, 2011: Northwestern Pacific Ocean Circulation and Climate Experiment (NPOCE) Science/Implementation Plan, China Ocean Press, Beijing, ISBN: 978-7-5027-8164-4.
- [3] 陈永利、赵永平、**王凡**著, 2013: ENSO 与海洋环境和中国气候异常, 科学出版社, 北京, 1-220. ISBN: 9787030370303.
- [4] Li, Xiaofeng, **Fan Wang**, eds., Artificial Intelligence Oceanography, Springer, ISBN: 978-9811963742.
- [5] **Wang, Fan***, & Dunxin Hu, 1998: Dynamic and thermohaline properties of the Mindanao Undercurrent, part I: dynamic structure. Chinese Journal of Oceanology and Limnology, 16(2): 122-127.
- [6] **Wang, Fan***, & Dunxin Hu, 1998: Dynamic and thermohaline properties of the Mindanao Undercurrent, part II: thermohaline structure. Chinese Journal of Oceanology and Limnology, 16(3): 206-213.
- [7] **Wang, Fan***, Dunxin Hu, & Hong Bai, 1998: Western boundary undercurrents east of the Philippines. Proceedings of The 4th Pacific Ocean Remote Sensing Conference (PORSEC), Qingdao, China, July 28-31, 551-556.
- [8] **Wang, Fan***, & Dunxin Hu, 1999: Preliminary study on the formation mechanism of counter western boundary undercurrent below the thermocline: a simple conceptual model. Chinese Journal of Oceanology and Limnology, 17(1): 1-9.

- [9] **Wang, Fan***, Ping Chang, Dunxin Hu, & H. Seidel, 2002: Circulation in the western tropical Pacific Ocean and its seasonal variation. *Chinese Science Bulletin*, 47(7), 591-595.
- [10] **Wang, Fan***, & Yuanlong Li, 2012: Thermohaline finestructure observed near the northern Philippine coast. *Chinese Journal of Oceanology and Limnology*, 30(6):1033-1044.
- [11] **Wang, Fan**, Qingjia Meng*, Xiaohui Tang, & Dunxin Hu, 2013: The long-term variability of sea surface temperature in the seas east of China in the past 40a. *Acta Oceanologica Sinica*, 32(3): 48-53.
- [12] **Wang, Fan**, Yuanlong Li, Yanhui Zhang, & Dunxin Hu, 2013: The subsurface water in the north Pacific tropical gyre, *Deep-Sea Research Part I*, 75:78-92.
- [13] **Wang, Fan**, Nan Zang, Yuanlong Li & Dunxin Hu, 2015: On the subsurface countercurrents in the Philippine Sea. *Journal of Geophysical Research-Oceans*, 120(1): 131-144.
- [14] **Wang, Fan***, Yuanlong Li, & Jianing Wang, 2016: Intraseasonal variability of the surface zonal currents in the western tropical Pacific Ocean: characteristics and mechanisms. *Journal of Physical Oceanography*, 46(12): 3639-3660.
- [15] **Wang, Fan***, Lina Song, Yuanlong Li, Chuanyu Liu, Jianing Wang, Pengfei Lin, Guang Yang, Jun Zhao, Xinyuan Diao, Dongxiao Zhang, & Dunxin Hu, 2016: Semi-annually alternating exchange of intermediate waters east of the Philippines. *Geophysical Research Letters*, 43(13): 7059-7065.
- [16] **Wang, Fan#***, Jianing Wang#, Cong Guan, Qiang Ma, & Dongxiao Zhang, 2016: Mooring observations of equatorial currents in the upper 1000 m of the western Pacific Ocean during 2014. *Journal of Geophysical Research: Oceans*, 121(6): 3730-3740.
- [17] **Wang, Fan***, Jianing Wang, Lijun Xu, Xiangguang Zhang, Shefeng Yan, & Yonghua Chen, 2020: The development of a new real-time subsurface mooring. *Journal of Oceanology and Limnology*, 38(4): 1080-1091.
- [18] Hu, Shijian*, Janet Sprintall, Cong Guan, Michael J. McPhaden, & **Fan Wang***, Dunxin Hu, Wenju Cai, 2020: Deep-reaching acceleration of global mean ocean circulation over the past two decades. *Science Advances*, 6(6): eaax7727.
- [19] Ma, Qiang, Jianing Wang*, **Fan Wang***, Dongxiao Zhang, Zhixiang Zhang, & Yilong Lyu, 2020: Interannual variability of Lower Equatorial Intermediate Current response to ENSO in the western Pacific. *Geophysical Research Letters*, 47(16): e2020GL089311.
- [20] Wang, Jianing#, Qiang Ma#, **Fan Wang***, Youyu Lu, & Larry J. Pratt, 2020: Seasonal variation of the deep limb of the Pacific Meridional Overturning Circulation at Yap-Mariana Junction. *Journal of Geophysical Research: Oceans*, 125(7): e2019JC016017.
- [21] Guan, Cong, **Fan Wang***, & Shijian Hu, 2020: The role of oceanic feedbacks in the 2014–2016 El Niño events as derived from ocean reanalysis data. *Journal of Oceanology and Limnology*, 38(5): 1394-1407.

- [22] Li, Xiaofeng, Bin Liu, Gang Zheng, Yibin Ren, Shuangshang Zhang, Yingjie Liu, Le Gao, Yuhai Liu, Bin Zhang, & **Fan Wang***, 2020: Deep learning-based information mining from ocean remote sensing imagery. *National Science Review*, 7(10): 1584-1605.
- [23] Hu, Dunxin, **Fan Wang***, Janet Sprintall, Lixin Wu, Stephen Riser, Sophie Cravatte, Arnold Gordon, Linlin Zhang*, Dake Chen, Hui Zhou, Kentaro Ando, Jianing Wang, Jae-Hak Lee, Shijian Hu, Jing Wang, Dongxiao Zhang, Junqiao Feng, Lingling Liu, Cesar Villanoy, Chalapan Kaluwin, Tangdong Qu, & Yixin Ma, 2020: Review on observational studies of western tropical Pacific Ocean circulation and climate. *Journal of Oceanology and Limnology*, 38(4), 906-929.
- [24] Sun, Bowen, Chuanyu Liu*, & **Fan Wang***, 2020: Eddy induced SST variation and heat transport in the western North Pacific Ocean. *Journal of Oceanology and Limnology*, 38: 1-15.
- [25] Zhu, Yanan, Yuanlong Li*, Zhixiang Zhang, Bo Qiu, & **Fan Wang***, 2021: The observed Agulhas Retroflection behaviors during 1993-2018. *Journal of Geophysical Research Oceans*, 126, e2021JC017995.
- [26] Wang, Jianing, **Fan Wang***, Youyu Lu, Qiang Ma, Larry J. Pratt, & Zhixiang Zhang, 2021: Pathways, Volume Transport, and Seasonal Variability of the Lower Deep Limb of the Pacific Meridional Overturning Circulation at the Yap-Mariana Junction. *Frontiers in Marine Science*, 8, 672199.
- [27] Wang, Jianing, Qiang Ma, **Fan Wang***, & Dongxiao Zhang, 2021: Linking Seasonal-to-Interannual Variability of Intermediate Currents in the Southwest Tropical Pacific to Wind Forcing and ENSO, *Geophysical Research Letters*, 48(5), e2021GL092440.
- [28] Feng, Ling, Chuanyu Liu*, Armin Köhl, Detlef Stammer, & **Fan Wang**, 2021: Four Types of Baroclinic Instability Waves in the Global Oceans and the Implications for the Vertical Structure of Mesoscale Eddies, *Journal of Geophysical Research: Oceans*, 126(3), e2020JC016966.
- [29] Guan, Cong, Feng Tian, McPhaden, M. J., **Fan Wang**, Shijian Hu, & Ronghua Zhang, 2021: Zonal structure of tropical Pacific surface salinity anomalies affects ENSO intensity and asymmetry, *Geophysical Research Letters*, 49, e2021GL096197.
- [30] Lv, Mingkun, **Fan Wang**, Yuanlong Li, Zhengguang Zhang, & Yanan Zhu, 2022: Structure of Sea Surface Temperature Anomaly Induced by Mesoscale Eddies in the North Pacific Ocean, *Journal of Geophysical Research Oceans*, 127, e2021JC017581, <https://doi.org/10.1029/2021JC017581>
- [31] Zhu, Yanan, Li, Yuanlong, **Fan Wang**, Mingkun Lv, 2022: Weak mesoscale variability in the Optimum Interpolation Sea 2 Surface Temperature (OISST)-version 2-AVHRR-only data before 2007, *Remote Sensing*, 14(2), 409. <https://doi.org/10.3390/rs14020409>

- [32] Liu, Chuanyu, Ling Feng*, Köhl, A., Zhiyu Liu, & **Fan Wang***, 2022: Wave, vortex and wave-vortex dipole (instability wave): three flavors of the intra-seasonal variability of the North Equatorial Undercurrent, *Geophysical Research Letters*, 49(11), e2021GL097239.
- [33] Ma, Qiang, Jianing Wang*, **Fan Wang***, Yilong Lyu, & Zhixiang Zhang, 2022: Interdecadal modulation of ENSO-related anomalous Equatorial Intermediate Currents in the western Pacific by the PDO. *Geophysical Research Letters*, 49(6), e2022GL098409.
- [34] Zhang, Zhixiang, Jianing Wang*, **Fan Wang***, & Qiang Ma, 2022: Intraseasonal, Annual, and Interannual Variabilities of Subsurface Currents at 4.7°N in the Western Pacific Ocean, *Journal of Geophysical Research: Oceans*, 127(4), e2021JC017969.
- [35] Song, Lina, **Fan Wang***, Yuanlong Li, & June-Yi Lee, 2022: Intraseasonal variability of surface circulation in the Indo-Pacific warm pool induced by summer monsoon intraseasonal oscillations. *Journal of Geophysical Research: Oceans*, 127(11), e2022JC018843.
- [36] Feng, Ling, Chuanyu Liu*, Armin Köhl, & **Fan Wang***, 2022: Seasonality of four types of baroclinic instability in the global oceans. *Journal of Geophysical Research: Oceans*, 127(5), e2022JC018572.
- [37] Liu, Chuanyu*, Dan Huo, Zhiyu Liu, Xiaowei Wang, Cong Guan, Jifeng Qi, & **Fan Wang ***, Turbulent mixing in the barrier layer of the equatorial Pacific Ocean, *Geophysical Research Letters*, 49, e2021GL097690.
- [38] He, Ying, Jianing Wang*, **Fan Wang***, & Toshiyuki Hibiya, 2022: Spatial distribution of turbulent diapycnal mixing along the Mindanao current inferred from rapid-sampling Argo floats, *Journal of Oceanography*, 78(1):35-48.
- [39] Li, Xiaofeng, Yuan Zhou, & **Fan Wang**, 2022: Advanced Information Mining from Ocean Remote Sensing Imagery with Deep Learning, *Journal of Remote Sensing*, 9849645.
- [40] Li, Rui, **Fan Wang ***, Yuanlong Li, Qiuping Ren, Yilong Lyu, 2023: Special Sea-Level and Circulation Anomalies in the Philippine Sea During the 2006/2007 and 2009/2010 El Niño Events, *Journal of Geophysical Research: Oceans*, 128, e2022JC019537.
- [41] Ma, Weidong, Jianing Wang*, **Fan Wang***, Zhixiang Zhang, & Qiang Ma, 2023: The vertical structure and intraseasonal variability of the deep currents in the southern Philippine basin, *Deep-Sea Research Part I*, 197, 104043.
- [42] Wang, Jianing*, **Fan Wang***, Youyu Lu, Hang Zhang, Qiang Ma, Larry J. Pratt, & Zhixiang Zhang, 2023: Abyssal circulation from the Yap-Mariana Junction to the Northern Philippine Basin, *Geophysical Research Letters*, 50(6), e2022GL100610.
- [43] Shen, Duhan, Jianing Wang*, Zhiyu Liu, & **Fan Wang***, 2023: Mixing in the upper western equatorial Pacific driven by westerly wind event, *Frontiers in Marine Science*, 9, 907699.

- [44] Du, Yan*, **Fan Wang***, Tianyu Wang, Weiwei Liu, Linlin Liang, Ying Zhang, Yunfan Chen, Jiaxing Liu, Wei Wu, Kefu Yu, & Jing Zhang, 2023: Multi-scale ocean dynamical processes in the Indo-Pacific Convergence Zone and their climatic and ecological effects, *Earth-Science Reviews*, 237, 104313.

项目课题

1. 国家自然科学基金委员会创新研究群体项目“深海界面过程和化能生态系统”（42221005），2023.01-2027.12, **主持**
2. 国家自然科学基金重大项目“印太交汇区物质能量汇聚中心海洋环境与生物过程的耦合作用和生态效应”（42090040），2021.01-2025.12, **主持**
3. 国家自然科学基金重点项目“暖池冷舌交汇区盐度变异机制及气候效应”（41730534），2018.01-2022.12, **主持**
4. 国家重点研发计划项目“海洋环境变化关键参数观测数据处理方法和产品研制”（2017YFA0603200），2017.07-2022.06, **主持**
5. 国家重点基础研究发展计划（973 计划）“热带太平洋海洋环流与暖池的结构特征、变异机理和气候效应”（2012CB417400），2021.01-2016.08, **主持**
6. 中国科学院战略性先导科技专项“印太交汇区海洋物质能量中心形成演化过程与机制”（XDA42000000），2020.01-2024.12, **主持**
7. 中国科学院战略性先导科技专项重点任务 2“西太主流系观测网构建及在海洋环境和气候预报中的应用”（XDA11010200），2015.01-2018.06, **主持**

学术兼职

2022.01 - 至今	国际西北太平洋海洋环流与气候实验计划（NPOCE）计划科学指导委员会，主席
2020.03 - 至今	气候变异与预测计划太平洋区域工作组（CLIVAR/PRP），成员
2022.11 - 至今	中国海洋湖沼学会，理事长
2022.04 - 至今	中国海洋工程咨询协会，副会长
2021.06 - 至今	中国海洋学会，副理事长

荣誉奖励

2022	“太平洋西边界流”项目获山东省科学技术奖一等奖，排名第二
2021	被授予“山东省优秀科技工作者”称号
2020	“西太平洋实时科学观测网的建设运行和数据应用”项目获海洋工程科学技术一等奖，排名第一

2019	“热带西太平洋暖池热盐结构与变异的关键过程和气候效应”项目获山东省科学技术奖一等奖，排名第一
2019	被授予 2019 年度中国科学院“优秀共产党员”
2018	“热带太平洋西边界流研究集体”获得 2017 年度中国科学院杰出成就奖，两名突出贡献者之一
2017	被授予 “泰山学者特聘专家”称号
2014	被授予 “国家高层次人才特殊支持计划领军人才”称号
2013	被授予 “中青年科技创新领军人才”称号
2013	被授予 “全国优秀科技工作者”称号
2003	获得山东青年五四奖章
2002	获得青岛市青年科技奖

承担课程

研究生课程：热带海洋环流、地球流体动力学