



近海海洋环境科学国家重点实验室 (厦门大学)

State Key Laboratory of Marine Environmental Science
(Xiamen University)



2023

ANNUAL REPORT

年度报告

MEL INTRODUCTION

近海海洋环境科学国家重点实验室（厦门大学）（英文缩写MEL）于2005年3月启动建设，2007年6月通过科技部验收，2010、2015年连续获评优秀国家重点实验室。实验室现有固定科研人员95人，技术人员及研究助理106人，行政人员8人。实验室瞄准全球变化这一国际前沿，面向碳中和、海洋强国、生态文明等国家战略需求，立足基础研究和应用基础研究，以多学科交叉和技术创新为动力，主攻海洋生物地球化学与生态系统动力学。实验室坚持走国际化发展道路，科学研究力求具备全球视野，管理体系参比国际标准，文化建设崇尚自由宽松，努力建设成为具有重要国际影响力的海洋环境科学研究和创新人才聚集基地。



实验室学术委员会

名誉主任：胡敦欣

主任：吴立新

副主任：刘丛强、焦念志

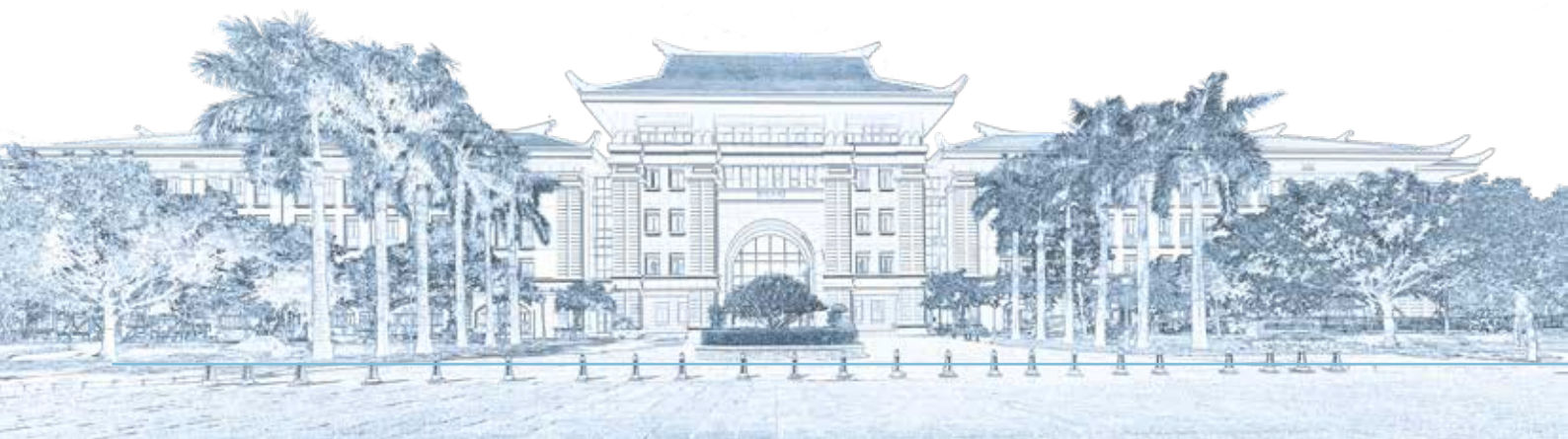
委员：柴扉、傅伯杰、郭正堂、翦知湓、林群声、宋微波、唐启升
王凡、王辉、魏庆琳、张偲、赵美训、朱彤、朱永官

实验室领导班子

名誉主任：洪华生、戴民汉

主任：史大林

副主任：张瑶、刘志宇、曹知勉、马剑、林孟妹



目录

CONTENTS

02 / 序言

04 / 年度焦点

10 / 研究亮点

22 / 科研课题与航次

44 / 人才培养

34 / 交流与合作

50 / 公众教育

54 / 平台设施

62 / 人员情况

68 / 论文专著

追光而行 欣然蜕变

2023 已悄然落幕，2024 正翘首而来。过去的一年，全球在构建人类命运共同体道路上不断努力；可持续发展目标峰会、联合国水大会、全球气候变化大会 COP28 等系列大会的研讨，为新一轮科技革命和产业变革提出了空间、资源与环境等问题的解决方案。于实验室而言，这一年尽管挑战不断，但同时催生着思变和进取。在攻坚克难道路上，MELers 聚光成炬，在队伍建设、科学研究、平台建设、人才培养及合作交流等方面取得重要进展。

人才“聚光”，汇聚创新发展新动力。

曹玲、修鹏、黄毅彬等优秀青年才俊先后加盟实验室。洪海征、沈渊、李姜辉、张增凯等年轻骨干入选国家级人才项目。焦念志荣获 2022 年度“海洋人物”荣誉称号，戴民汉荣获南强杰出贡献奖，王克坚荣获亚太海洋生物技术学会首届“海洋生物技术奖（学术或工业界）”。11 位学者入选爱思唯尔 (Elsevier)“中国高被引学者”榜单，15 位学者入选全球前 2% 顶尖科学家榜单。

成果“高光”，实现原始创新新突破。

实验室成员获批国家重点研发计划项目、国家自然科学基金重大项目、重点项目等纵向科研项目 47 项。继续深耕中国近海与西太平洋，并开拓至印度洋、大西洋和南大洋，参加海水营养盐国际比对航次，分析测试能力比肩顶尖海洋机构。青年学者王为磊关于全球尺度海洋生物碳泵分布格局的研究再登 *Nature*。408 篇论文发表在权威期刊上，探讨近海富营养化与缺氧、海洋生物

碳泵调控与碳氮耦合、副热带流涡区生物地球化学、海洋多尺度动力学、海岸带污染迁移传输等重要科学问题，提出价值链碳足迹核算方法、蓝色食物脆弱性评估方法等新方法体系。多篇论文成为期刊封面或编辑推荐文章。

百家“合光”，贡献海洋治理新视角。

无论是在疫情影响最艰难时期，还是全面放开之后，实验室始终瞄准学术前沿，广传和合之声，与全球伙伴密切“联动、共享、合力”。主办第六届厦门海洋环境开放科学大会，第三届离岸碳捕集、利用与封存论坛，承办亚洲首个数字孪生海洋国际峰会，首次在海外举办南海年会。“海洋负排放 (GLOBAL-ONCE)”国际大科学计划发布系列成果、组织公开教材，“表层海洋 - 低层大气研究 (SOLAS)”国际计划在厦研讨未来十年科学发展战略。

万千“微光”，孕育蓝色海洋新未来。

洪华生海洋与环境科学教育奖鼓励后辈继续传承开拓。国际及地区联合培养项目、优秀博士生奖学金等为创新人才培养提供高水平平台。水环境科学研究高校联盟继续为海峡两岸暨香港青年学子间的交流互动搭建舞台。本科暑期科研奖学金项目学员逐渐成长为海洋环境领域的新蕊。海洋科学开放日时隔四年再次回归线下，超万人走入海洋科普殿堂。科学经典导读、科学艺术展、少年蓝色先锋培养计划及海洋讲师团在加深公众与海洋有机联系的同时，不断探索海洋科普新范式。

序言



“光”之所在，与尔同辉。

硕果累累的背后，离不开每一位 MELer 的共同努力和不懈付出。砥砺前行的路上，有他们逆风扬帆、跨越南北，不惧风雨、不分昼夜，忘我地完成每一个项目执行、每一篇论文产出，做好每一项观测作业、每一步实验分析、每一台仪器运行、每一个活动支撑、每一项服务保障。这份成就感、自豪感属于 MEL 每一个人！

“光”之所向，潜心而往。

大变革时代，进一步推进海洋强国建设是中华民族不变的历史宏愿，更是以中国式现代化推进民族复兴的应有之义。使命在肩，唯有奋斗。当前，实验室正在紧锣密鼓地推进全国重点实验室重组工作。我们将紧密围

绕国家海洋强国与碳中和战略需求，聚焦海洋生物地球化学国际前沿动态，协同攻关重大科技任务，在本领域持续“领跑”！

谨此向一年来奋斗在科研攻坚及支撑保障一线的全体 MEL 成员表示由衷的感谢和崇高的敬意，向一直以来关心实验室成长的海内外同仁及各界伙伴致以新年的美好祝愿！祝愿各位新年快乐，甲辰龙年大吉！

A handwritten signature in black ink, appearing to read '史大林'.

主任：史大林

2023年12月31日

年度焦点

2023 Headlines

答卷

全面发展 不负众望

- ◎ 2月，福建省委书记周祖翼调研实验室。
- ◎ 3月，国家自然科学基金委员会党组书记、主任窦贤康调研实验室。
- ◎ 3月，教育部党组成员、副部长吴岩调研实验室。
- ◎ 7月，教育部党组成员、副部长翁铁慧调研实验室。
- ◎ 10月，国家自然科学基金委员会党组成员、副主任兰玉杰调研实验室。

强基

“雁阵”竞飞 勇攀高峰

- ◎ 3月，陈曦、戴民汉、党宏月、高坤山、高树基、洪华生、纪荣嵘、焦念志、林森杰、吕永龙、王传超入选爱思唯尔（Elsevier）“2022 中国高被引学者”榜单。
- ◎ 4月，戴民汉获厦门大学“南强杰出贡献奖”。
- ◎ 6月，焦念志获自然资源部 2022 年度“海洋人物”荣誉称号。
- ◎ 10月，王克坚研究成果“海洋动物新型抗菌肽的发现与产品创制及其示范应用”获亚太海洋生物技术学会首届“海洋生物技术奖（学术或工业界）”。
- ◎ 10月，柴扉、陈曦、戴民汉、党宏月、段安民、高光、高坤山、纪荣嵘、焦念志、李忠平、吕永龙、马剑、王大志、徐鹏、张瑶入选美国斯坦福大学“2023 年全球前 2% 顶尖科学家”榜单。

检索 | 2023 关键词

硕果

研新究微 积厚成华

- ◎ 1月，高树基团队在 *Nature Geoscience* 发文探究开阔大洋 N_2O 来源；12月在 *Nature Communications* 发文揭示河口水体 N_2O 的复杂过程机理。
- ◎ 5月，陈鹭真团队所编《福建省修复红树林碳汇项目方法学》纳入福建省林业碳汇机制；王克坚团队与厦门金泰生物科技有限公司签署成果转化协议。
- ◎ 6月，曹玲在 *Nature Sustainability* 发文揭示环境变化背景下全球蓝色食物脆弱性的空间格局；张增凯在 *Nature Communications* 发文解析价值链碳足迹核算方法体系；戴民汉领衔主编的《化学海洋学风云人物》出版。
- ◎ 8月，张瑶团队在 *Science Advances* 发文阐述海洋中尺度涡旋动力 - 生物地球化学耦合过程机理。
- ◎ 12月，王为磊团队在 *Nature* 发文揭示海洋生物碳泵的全球分布格局。

重器

智慧升级 行稳致远

- ◎ “海丝一号”“海丝二号”小卫星在“杜苏芮”台风等自然灾害中发挥应急观测作用。
- ◎ 12月，福建台湾海峡海洋生态系统国家野外科学观测研究站召开第一届学术委员会第二次会议。
- ◎ “嘉庚”号本年度共完成9个海上科学调查航次，赴南海北部及中部等海域开展科学考察，累计作业天数209天，总航程近25,423海里。

合音

四海一家 凝聚共识

- ◎ 1月，主办第六届厦门海洋环境开放科学大会。
- ◎ 6月，参加澳大利亚联邦科学与工业研究组织主办的海水营养盐国际比对航次。
- ◎ 7月，主办厦门大学海洋环境科学学科交叉研讨会暨洪华生海洋与环境科学教育奖颁奖活动。
- ◎ 11月，主办第三届离岸碳捕集、利用与封存论坛，承办第十届南海年会、2023年数字孪生海洋国际峰会、中国—东盟海藻合作论坛，共同承办2023海上丝绸之路国际产学研用合作会议海洋科技与工程分会。

灼见

高瞻远瞩 着眼未来

- ◎ 6月，戴民汉出席2023年夏季达沃斯论坛，并就“海洋问题”建言献策。
- ◎ 9月，“表层海洋-低层大气研究(SOLAS)”国际计划项目办公室(中国)牵头在厦研讨未来十年科学发展战略。
- ◎ 11月，海洋负排放国际大科学计划(Global ONCE)召开第二届开放科学大会，发布综合储碳理论与方法路线图等系列成果。

大数据

2023



科研课题

52 项

新增项目

6 项

国家重点研发计划项目

2 项

国家自然科学基金委
重大 / 重点项目

1 项

国家自然科学基金
优青项目

5 项

国家自然科学基金委
联合基金 / 专项基金项目

15 项

国家自然科学基金
面上 / 青年项目

6 项

其他国家级项目

17 项

其他项目



新进人员

3 人

科研人员

2 人

研究员

10 人

杰出博士后

20 人

研究助理



人才培养

411 人

硕士在读

356 人

博士在读

88 人

硕士毕业生

53 人

博士毕业生



航次

80 个

海上科学调查航次

563 人次

参与科考人数

1806 天

累计航次作业天数

研究区域：西太平洋、东印度洋、南海、东海、南大洋等

航次目的：科学考察、海洋环境监测及调查、科学普及

搭载科考船：“嘉庚”号、“调查”号 (R/V Investigator)、 “海洋2”号、“中国海监203”、“东方红3”号、“科学”号、“蓝波1”号、“延平2”号、“向阳红14”号等



合作交流

15 场

组织大型活动

187 人

会议报告人次

22 个

新增学术期刊任职

35.3 %

产出成果国际合作占比

32 人

访问学者人数

21 个

新增学术组织任职

408 篇

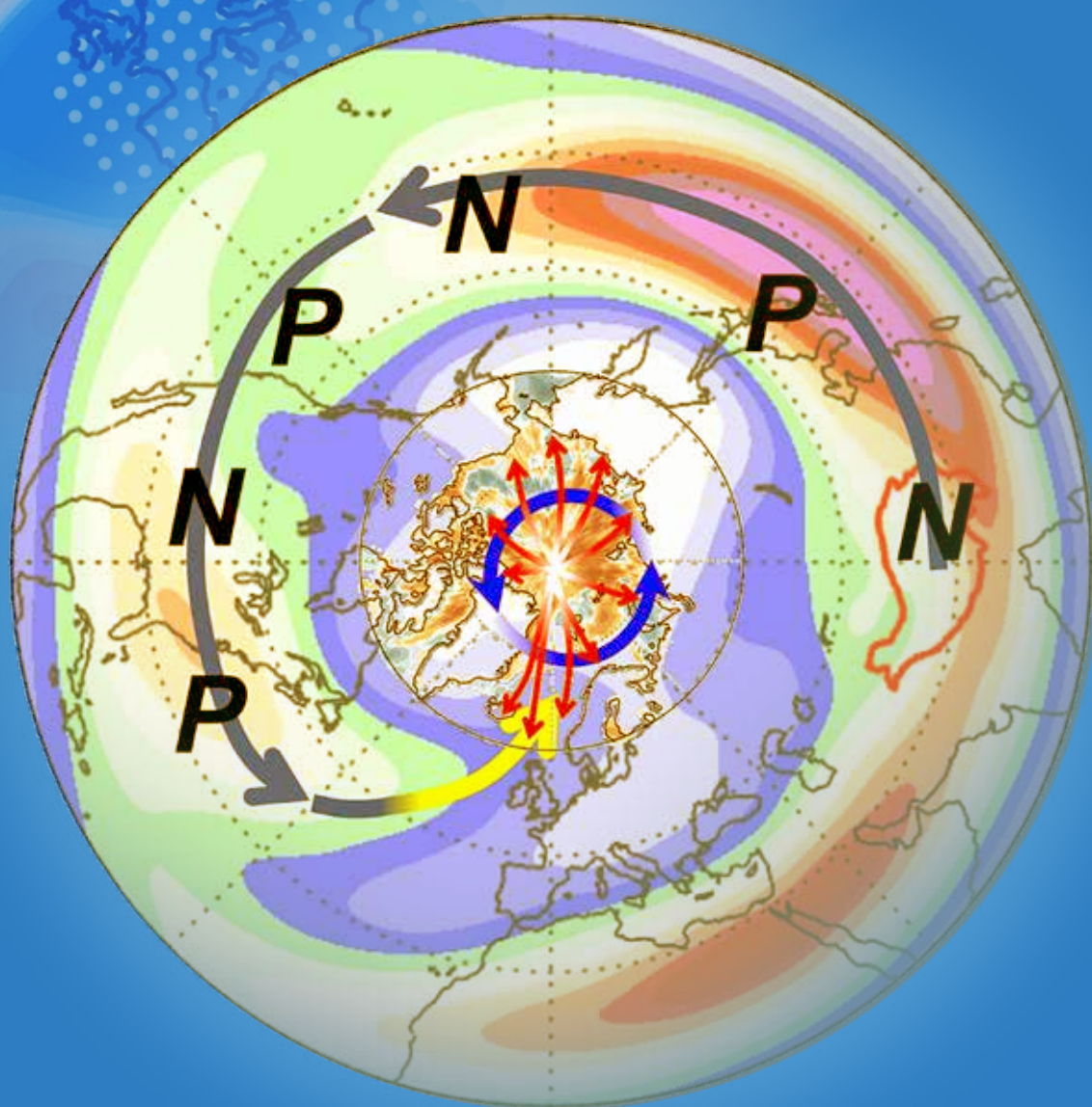
学术论文

39 项

授权专利

10 项

软件登记著作权



研究亮点

Research Highlights

细菌有机质对沉降颗粒物通量的重要贡献

海洋表层的浮游植物通过光合作用将 CO_2 转化为颗粒有机物 (POM)，POM 的输出和再矿化构成了海洋生物泵的主要组成部分。在沉降过程中，POM 不断被细菌降解和转化，其中一部分转化为细菌自身生物量。然而，先前的研究表明，深海沉降的 POM 仍然主要由浮游生物的残余物组成。值得注意的是，早期尝试估算细菌对有机碳库贡献的工作主要集中在悬浮态 POM，并且大部分是基于活体细菌细胞计数的方法。而海洋中绝大多数的有机质以非生命形式存在（例如碎屑），因此以往的研究可能低估了沉降 POM 中所携带的细菌有机质含量。

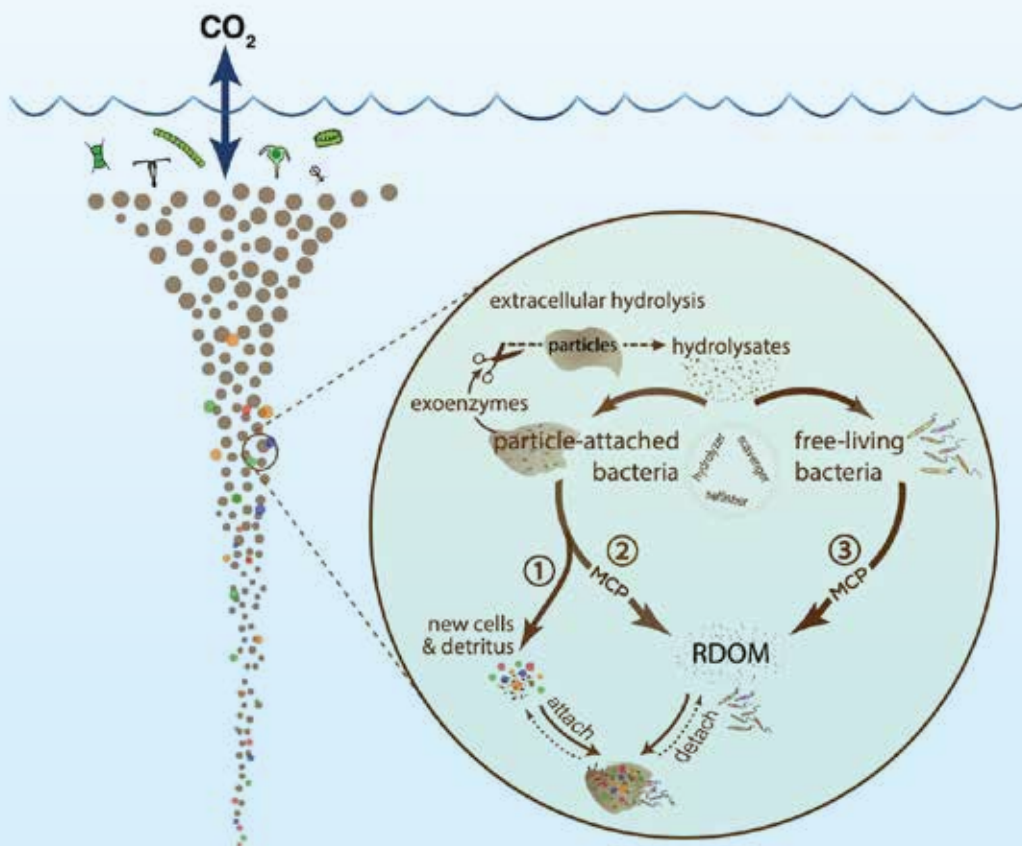
研究结果显示，细菌有机质对沉降颗粒有机碳 (POC) 通量和氮 (PN) 通量的贡献分别可达 $19 \pm 8\%$ 和 $36 \pm 14\%$ ，比以往基于细胞计数方法估计的结果 (1%~4%) 高出一个数量级。研究团队进一步指出，颗粒附着细菌可通过至少 3 个途径促进深海有机碳的转化和封存：(1) 细菌自身生长，将易降解的浮游生物源有机物转化为难降解的细菌细胞成分（例如肽聚糖），并融入沉降 POM 中；(2) 细菌生长过程中，向周围水体释放大量结构复杂的代谢产物，包括难降解溶解有机质（即 RDOM，例如富含羧基的脂环族化合物）；(3) 细菌释放胞外酶，将 POM 水解成小

分子有机质，部分水解产物支撑周围游离态细菌的新陈代谢，促使后者通过微生物碳泵 (MCP) 机制产生 RDOM。

“该工作于 2023 年 6 月发表于 *Geophysical Research Letters* 期刊，沈渊副教授为第一兼通讯作者。

Reference:

Shen, Y*; Guilderson, TP; Chavez, FP; McCarthy, MD. Important contribution of bacterial carbon and nitrogen to sinking particle export. *Geophysical Research Letters*. 2023. 50(11), e2022GL102485

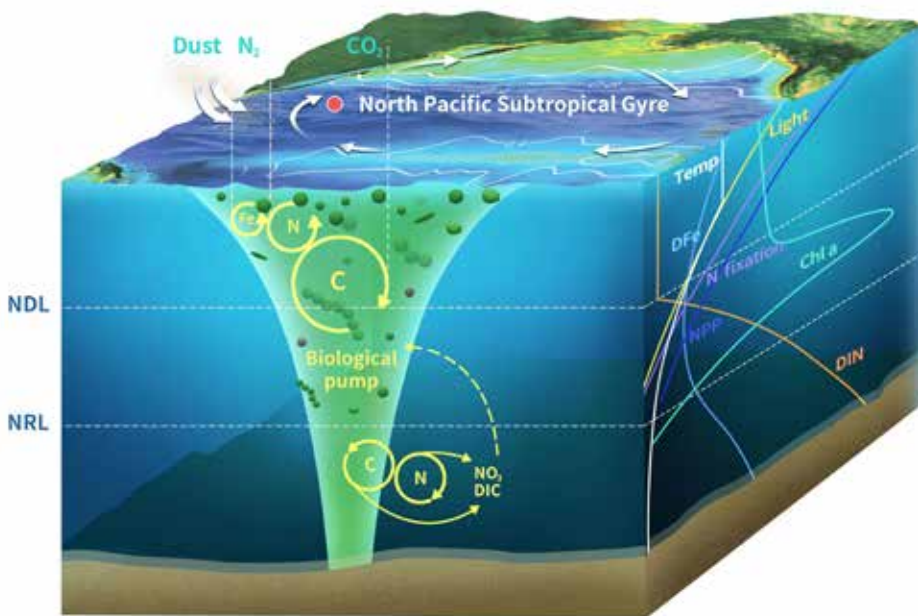


深海细菌介导碳输出和碳封存的途径概念图

北太平洋寡营养盐副热带流涡区上层海洋的生物地球化学特征与过程：从营养源到碳输出

副热带流涡是海盆尺度的反气旋式流场，占据着全球中低纬度海洋表面的广袤海域，具体包括南北太平洋、南北大西洋、印度洋五个副热带流涡区，是全球海洋最大的生态系统。由于反气旋式流场伴随着水体的辐聚下沉，深层营养盐较难输送至真光层，副热带流涡区的物质浓度（包括微量营养盐、痕量金属、生物量）极低，因此被称为“海洋荒漠”。由于采样、分析和现场培养难度大，以往对该区域生物地球化学特征的认知主要来源于时间序列站的观测，基于副热带流涡区的调查数据极其有限。

研究团队收集了北太平洋副热带流涡区（NPSG）历史数据，并整合国家自然科学基金重大项目“海洋荒漠生物泵固碳机理及增汇潜力”（CARBON-FE）在NPSG西部海域开展的大面观测数据，对NPSG的生物地球化学特征和过程进行了系统和深入地分析。研究发现，该区域的营养盐浓度、固氮速率、生物生产等呈现较大的空间变异性，通过时间序列站观测得到的特征和规律，可能并非完全适用于整个NPSG，且对于NPSG的平均生产力极低的判断，仍存在较大疑问。同时，该研究还提出，在NPSG真光层内，上层为营养盐匮乏层（Nutrient-depleted layer, NDL），其中固氮作用可能贡献了主要的氮源；NDL以深为营养盐充足层（Nutrient-replete layer, NRL），其营养盐主要来自于深海的垂直输送。两层结构中，不同的营养盐来源对



寡营养北太平洋副热带海区营养盐和有机碳的垂直分布示意图，简要显示包括生物固氮在内的各种营养盐来源的相互作用，主导着这一广阔海域中碳封存的复杂过程（来源：周红）

有机碳输出的调控机制有待进一步研究。本研究建议开发检出限更低、灵敏度更高的仪器和分析方法，建立包括科考船、时间序列站、自动化平台和卫星等协作观测网络，在真光层双层结构框架下，对副热带流涡区生物地球化学特征和过程通量进行观测和深入解析，有望合理评估副热带流涡区中的碳汇潜力，探索通过增加海洋碳汇以缓解全球变暖的可行途径。

Reference:

Dai, MH*; Luo, YW*; Achterberg, EP; Browning, TJ; Cai, YH; Cao, ZM; Chai, F; Chen, BZ; Church, MJ; Ci, DJ; Du, CJ; Gao, KS; Guo, XH; Hu, ZD; Kao, SJ; Laws, EA; Lee, ZP; Lin, HY; Liu, Q; Liu, X; Luo, WC; Meng, FF; Shang, SL; Shi, DL; Saito, H; Song, LP; Wan, XS; Wang, YT; Wang, WL; Wen, ZZ; Xiu, P; Zhang, J; Zhang, RF; Zhou, KB. Upper ocean biogeochemistry of the oligotrophic North Pacific Subtropical Gyre: From Nutrient Sources to Carbon Export. *Reviews of Geophysics*. 2023, 61(3), e2022RG000800



该工作于2023年7月发表于 *Reviews of Geophysics* 期刊，戴民汉教授和罗亚威教授为共同通讯作者。

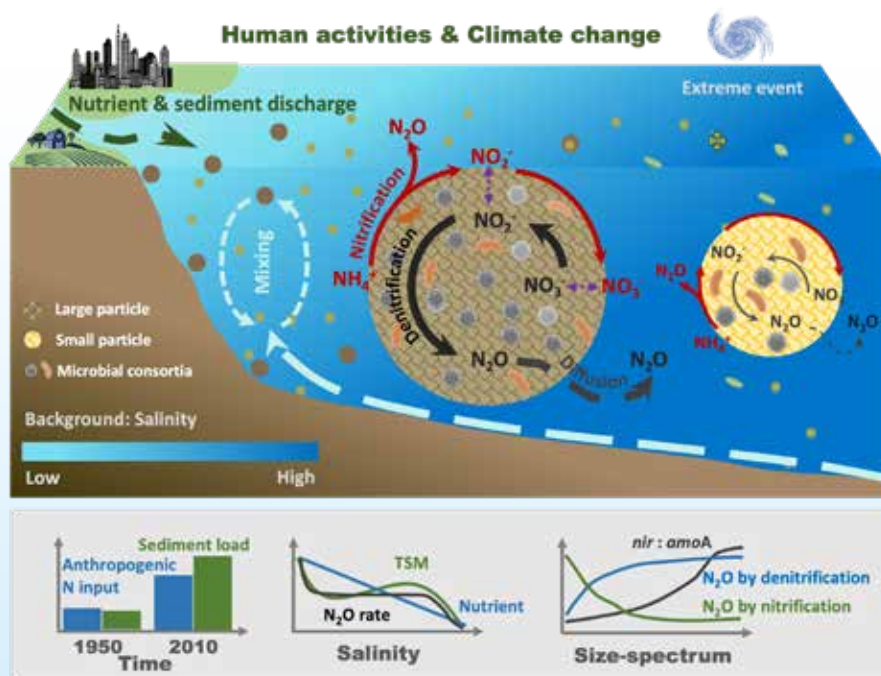
多同位素示踪揭示富氧河口水体 N_2O 产生过程与调控机理

氧化亚氮 (N_2O) 是氮循环过程中产生的一种痕量气体产物, 因其具有极强的温室效应和臭氧层破坏能力而备受关注。然而, 受限於 N_2O 观测数据匮乏, 以及过程机理研究不足, N_2O 的全球通量无法准确评估, 从而掣肘 N_2O 减排计划的科学制定与实施。河口地区是 N_2O 的释放热点区域, 人类活动产生的不同形态含氮营养物和土地利用导致的颗粒物大量排放, 对全球近海海域的生物地球化学和温室气体通量具有深远影响。然而, 关于人为扰动对 N_2O 的产生过程机理与速率的影响, 目前尚缺乏系统研究, 因此也限制了当前对河口 - 海岸带 N_2O 排放以及气候效应的预测能力。

为解决上述问题, 团队系统研究了三个大型河口 (珠江口、九龙江口和长江口) 邻近海岸带水城跨环境梯度的 N_2O 分布、通量和产生速率, 进一步通过多同位素示踪技术和基于粒径谱的颗粒物分粒径培养, 并与分子生物学技术相结合, 解析了多个 N_2O 生产过程和基于粒径谱的硝化和反硝化的生态位分离, 明确了河口和海岸带水体的 N_2O 来源。研究结果显示, 在整个河口 - 海岸的环境梯度中, 多个氮循环过程贡献了 N_2O 的产生, 共同维持了 N_2O 在该区域向大气的高通量排放。结果进一步证明, 在富氧沿岸水体中, 与颗粒物生态位相关的不完全反硝化作用是 N_2O 的主要来源,

而非传统认知认为的氨氧化作用。同时, N_2O 产量随底物浓度和颗粒浓度的增加而增加, 表明含氮营养物和颗粒物相协同在控制 N_2O 的产量上的重要作用。上述现象的发现和机理的揭示有助于理解气候变化、人类活动与河口 - 海岸生态系统之间重要的反馈机制。

“该工作于 2023 年 12 月发表于 *Nature Communications* 期刊, 万显会博士为第一兼通讯作者; 高树基教授为共同通讯作者。



河口富营养、高浊度水体多过程 N_2O 生产过程概念示意图 (河口人类活动导致营养盐的输入和颗粒物输入, 共同调控河口氮动力过程与 N_2O 的释放。颗粒物介导的微环境促成有氧水体的不完全反硝化产生与释放 N_2O , 其贡献超过了氨氧化过程的贡献, 是富氧水体 N_2O 的主要来源)

Reference:

Wan, XS*; Sheng, HX; Liu, L; Shen, H; Tang, WY; Zou, WB; Xu, MN; Zheng, ZZ; Tan, E; Chen, MM; Zhang, Y; Ward, BB & Kao, SJ*. Particle-associated denitrification is the primary source of N_2O in oxic coastal waters. *Nature Communications*. 2023. 14, 8280

新版全球海洋固氮数据库及对全球海洋固氮速率的更准估算

海洋生物固氮是海洋生态系统中主要的新氮来源之一，它支持了很大一部分初级生产和有机碳向深海的输出。全球海洋固氮数据库于2012年由罗亚威与合作者首次发布，并得到业内同行的广泛使用。近十年来，随着海洋固氮研究的不断深入，固氮观测数据日趋丰富，旧版的固氮数据库亟待更新。

近期，研究团队联合国际近百名科学家，发布了第二版全球海洋固氮数据库。新版数据库增加了过去十余年内发表的海洋原位固氮速率和主要固氮类群的丰度（含显微镜计数和固氮基因 *nifH* 计数）数据，

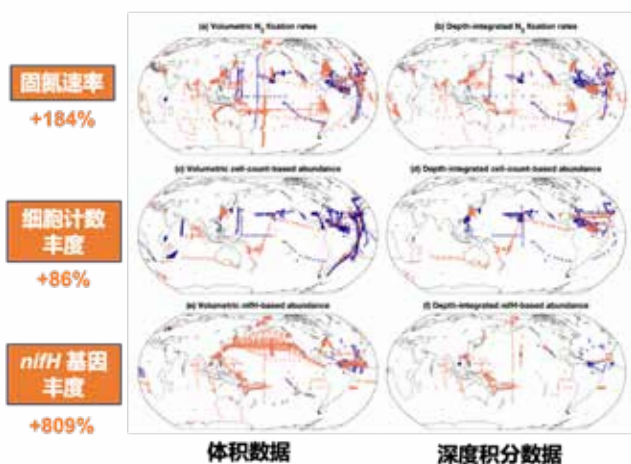
其数据量增至 55000 余个，较旧版数据库增加 350%。

该研究采用严苛的数据筛选标准，包括测量方法、采样深度以及培养时间等，获得全球海洋固氮总速率新的估算值 223 Tg N yr^{-1} （95% 置信区间： $144\text{--}402 \text{ Tg N yr}^{-1}$ ）；该估算值远远高于基于旧版数据库获得的估算值 74 Tg N yr^{-1} （95% 置信区间： $56\text{--}102 \text{ Tg N yr}^{-1}$ ）。进一步分析表明，该估算值的显著增加，主要源自过去十年中固氮数据采集的时空分布范围的扩大，以及更多数据在测量时采用了避免固氮被低估的 $^{15}\text{N}_2$ 溶解法。本研究为全球海洋固氮

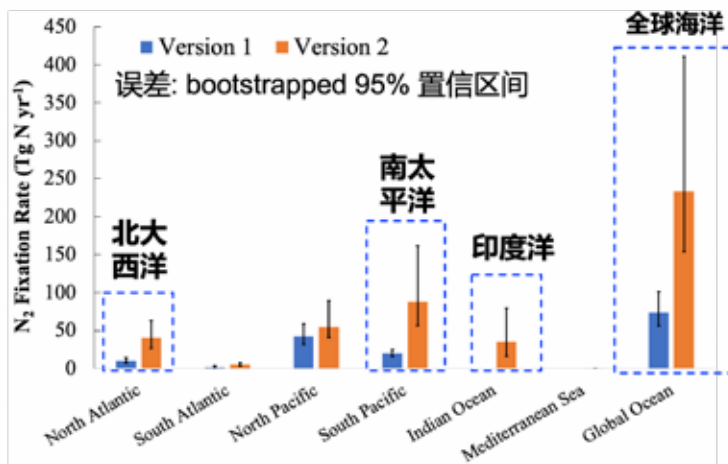
研究提供了更加完整可靠的数据源，并对于合理评估全球海洋固氮的贡献具有重要意义。

“ 该工作于 2023 年 8 月发表于 *Earth System Science Data* 期刊，硕士生邵智博和博士生许阳春为共同第一作者，罗亚威教授为通讯作者。

Reference:
Shao, ZB#; Xu, YC #, et al. Luo, YW*. Global oceanic diazotroph database version 2 and elevated estimate of global oceanic N_2 fixation. *Earth System Science Data*. 2023. 15: 3673-3709



(A) 全球海洋固氮数据库数据的空间分布



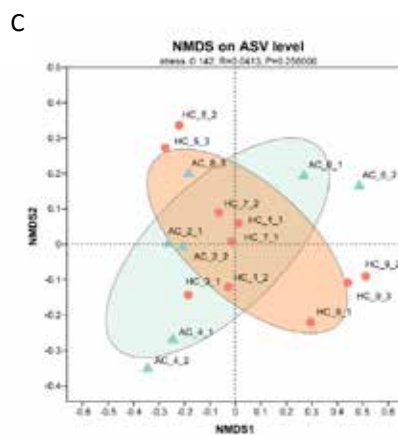
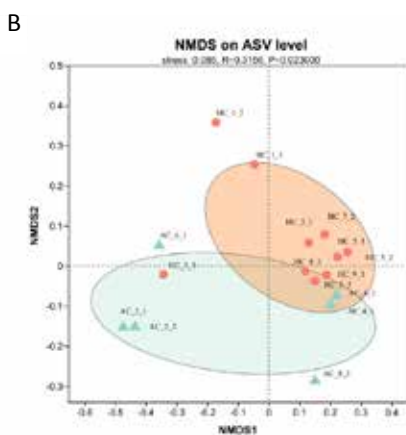
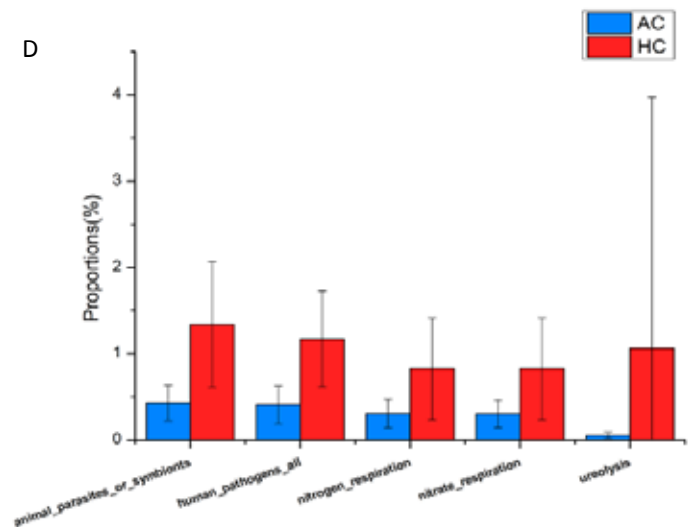
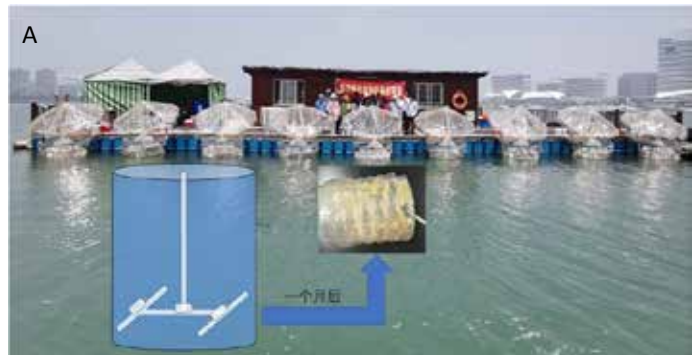
(B) 全球及各海盆固氮速率的估算（蓝色为旧版数据库，橙色为新版数据库）

海洋酸化显著影响塑料表面生物群落的多样性

海洋酸化与塑料垃圾污染都是由人类活动引发的环境问题。塑料垃圾表面是微生物附着的理想基质，吸引各种细菌、真菌、藻类和小型捕食者等附着并形成生物膜，这种新的人造生态系统被称为塑料际。该研究利用“厦门大学海洋酸化影响研究中水量试验平台（FOANIC-XMU）”，探究了海洋酸化对一次性塑料饮料瓶表面生物群落多样性的影响。结果表明，在正常大气 CO₂ 浓度（440 ppm）与高 CO₂（1000 ppm）浓度条件下培养 1 个月，塑料际原核生物群落多样性产生显著差异，某些原生动物种类对高 CO₂ 较为敏感。数据库功能预测结果进一步显示，参与氮和硝酸盐呼吸以及尿素循环的细菌类群相对丰度在高 CO₂ 条件下有所升高，致病菌和动物寄生菌的相对丰度也有所增加。因此，海洋酸化和塑料污染的双重叠加可能导致不可预见的健康风险。

“

该工作于 2023 年 4 月发表于 *Limnology and Oceanography Letters* 期刊，硕士生张旭、张萍为共同第一作者，林昕副教授为通讯作者。



海洋酸化对塑料表面生物群落影响研究中尺度实验平台示意图 (A); 非度量多维尺度分析 (Non-metric multidimensional scaling, NMDS) 展示原核生物 (B) 与真核生物 (C) 群落基于 ASV (Amplicon Sequence Variant, 扩增子序列变体, 区分不同物种) 在高 CO₂ (HC) 和目前大气 CO₂ (AC) 条件下的差异, 其中原核生物 HC 与 AC 样本间的差异程度更加显著; 基于 FAPROTAX 功能预测, 原核生物群落在 HC 和 AC 条件下存在明显差异的功能 (D)

Reference:

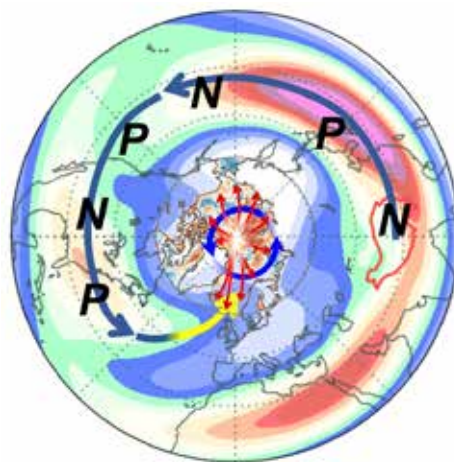
Zhang, X; Zhang, P; Deng, ZC; Huang, RP; Zhang, D; Tian, Y; Wang, N; Li, H; Wang, XY; Jiang, XW; Sun, JZ; Fu, QQ; Yi, XQ; Qu, LM; Zhou, C; Rao, YM; Zeng, XR; Hall-Spencer, JM; Gao, G; Gao, KS; Lin, X*. Ocean acidification has a strong effect on communities living on plastic in mesocosms. *Limnology and Oceanography Letters*, 2023. 8: 675-684

青藏高原 - 贝加尔湖积雪变化 对北大西洋涛动和北极海冰的影响

北大西洋涛动 (NAO) 和北极海冰异常是北半球气候变化的重要影响因子, 已有研究多关注于 NAO 和北极海冰异常对欧洲、北美和欧亚大陆等区域气候的影响。值得注意的是秋季欧亚大陆东部积雪, 尤其是青藏高原 (简称高原) 和贝加尔湖积雪变化作为气候异常变化的敏感区, 可通过反照率效应影响欧洲和北美的天气气候。然而, 欧亚大陆东部积雪异常能否“反作用于”随后季节的 NAO 和北极海冰异常尚不清楚。

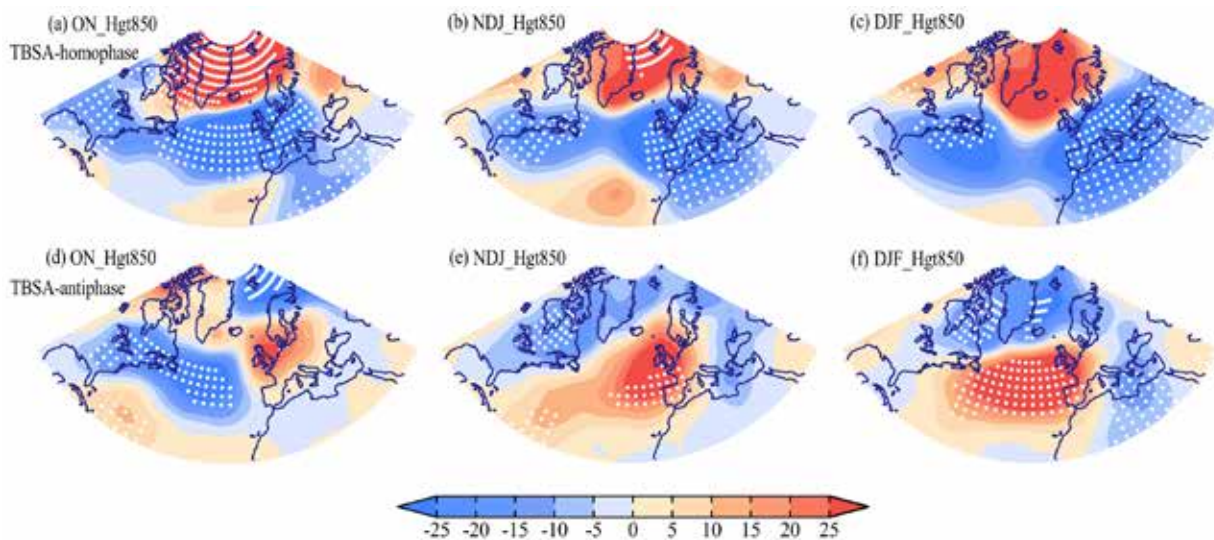
最新研究发现, 在年际时间尺度上, 秋季高原积雪和贝加尔湖积雪出现反相变化时会增强冬季 NAO, 其物理机制为: 秋季积雪异常可持续到冬季, 高原 (贝加尔湖) 上积雪偏多 (偏少), 通过非绝热冷却 (加热) 过程产生异常低压 (高压), 该扰动沿着西风急流形成两支分别

从高原和贝加尔湖向东传播到北大西洋的大气波列, 从而影响冬季的冰岛低压和亚速尔高压异常。由于西风急流的冬季增强, 在北大西洋上空的波动可从基本流中汲取更多的能量, 促进环流异常发展为冬季的 NAO。进一步研究指出, 通过构建秋季高原积雪增量指标, 发现随后春季的北极海冰异常与之有关。新指标可通过更强的绝热冷却和扰动异常形成高原至北极的波列和北极的低压异常, 后者再通过北极海冰漂移等动力过程影响春季北极海冰异常。本研究为北极海冰预测提供理论依据, 并为北极航道安全和极地气候变化研究提供新思路。



高原积雪增量指标对北极海冰异常影响的示意图 (“P” 和 “N” 分别表示高度场正和负异常。填色表示急流和海冰异常变化; 红色箭头表示北极海冰漂移)

“ 该工作于 2023 年 8 月和 11 月分别发表于 *Geophysical Research Letters* 期刊和 *NPI Climate and Atmospheric Science* 期刊, 张超博士为第一作者, 段安民教授为通讯作者。



基于高原 - 贝加尔湖积雪指数合成的北大西洋上空环流的季节演化。(a, d) 10-11月、(b, e) 11-12-1月, 和 (c, f) 12-1-2月的 850hPa 高度场异常场。其中, (a-c) 基于同相变化积雪指数合成, (d-f) 基于反相变化积雪指数合成

References:

Zhang, C; Duan, AM*; Jia, XJ; Hu, J; Liu, SZ. Snow cover on the Tibetan Plateau and Lake Baikal Intensifies the winter North Atlantic Oscillation. *Geophysical Research Letters*. 2023. GRL66338
Zhang, C; Duan, AM*; Jia, XJ; Wang ZB; Pan ZL. A dynamic link between spring Arctic sea ice and the Tibetan Plateau snow increment indicator. *NPI Climate and Atmospheric Science*. 2023. 6, 191

海洋多尺度运动的动力分解理论

海洋是多尺度耦合的复杂系统，不同尺度、不同类型运动的耦合模拟与分解是揭示海洋多尺度耦合机理、发展复杂动力背景下海洋混合参数化方案的关键。目前学界普遍采用的海洋多尺度运动的分解方法本质上均基于时空尺度的分离，都无法准确分离时空尺度相似、但动力属性迥异的不同运动过程。为此，基于不同运动过程的动力属性，刘志宇教授研究组提出了海洋多尺度运动的动力分解理论与方法：一方面，基于大尺度环流、中尺度运动、亚中尺度运动、正压潮、低模态内波、高模态内波等六类典型运动过程的动力属性，建立了海洋多尺度运动物理场的分解方法（图 A）；另一方面，

通过考虑大尺度背景流的平流作用，推广了海洋运动平衡模态（地转运动）与非平衡模态（惯性重力波）的经典理论，阐明了地转运动与惯性重力波在谱空间中的动力学差异（体现在相对涡度与水平散度的相对大小上），并由此提出了地转运动与惯性重力波的动力分解理论，实现了地转运动与惯性重力波物理场及控制方程的准确分解，导出了地转运动与惯性重力波的能量演化方程，从而完整建立了量化多尺度相互作用与能量传递的理论框架（图 B）；在南海、副热带逆流、黑潮延伸体等西北太平洋典型海域的初步应用显示了上述理论和方法的有效性与先进性。

本研究所提出的动力分解理论与传统基于时空尺度分解方法的结合，有望显著推动海洋多尺度耦合与能量传递机理研究。同时，本研究所建立的动力分解方法，可用于高分辨率海洋数值模拟中地转运动与惯性重力波（内波）的在线分离、并分别实时应用于水平涡通量与跨密度面混合的参数化方案中，对于提升海洋多尺度耦合模拟精度具有重要意义。

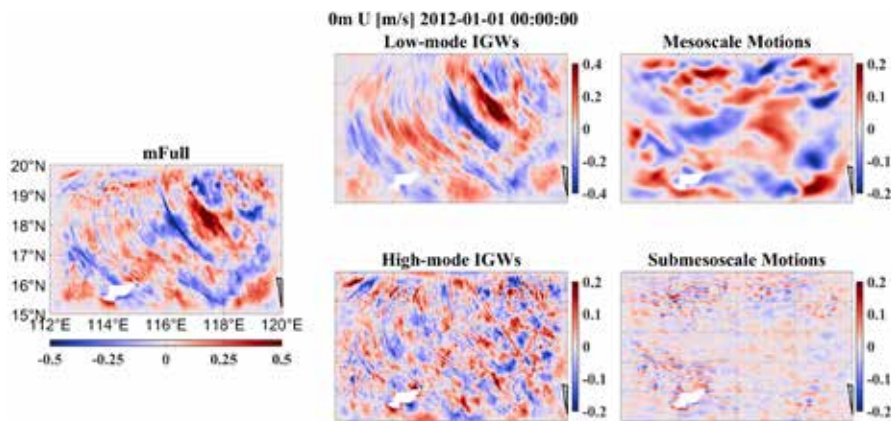
“

该工作于 2023 年 3 月和 5 月分别发表于 *Journal of Advances in Modeling Earth Systems* 期刊和 *Journal of Physical Oceanography* 期刊，2022 届博士生王传印为第一作者，刘志宇教授为通讯作者。

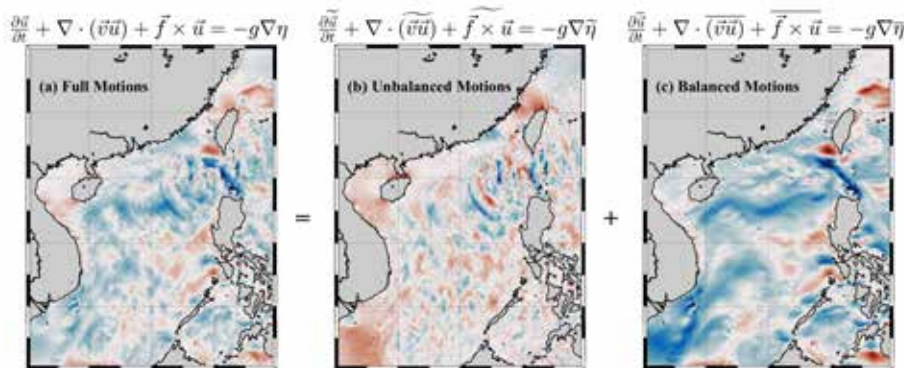
References :

Wang, CY; Liu, ZY*; Lin, HY. On dynamical decomposition of multiscale oceanic motions. *Journal of Advances in Modeling Earth Systems*. 2023. 15(3), e2022MS003556

Wang, CY; Liu, ZY*; Lin, HY. A simple approach for disentangling vortical and wavy motions of oceanic flows. *Journal of Physical Oceanography*. 2023. 53(5), 1237–1249



(A) 六个动力区动力分离方法在南海中部海域的应用示例



(B) 地转运动 - 惯性重力波分离理论在南海的应用示例

高精度海水总碱度原位分析仪的研制与应用

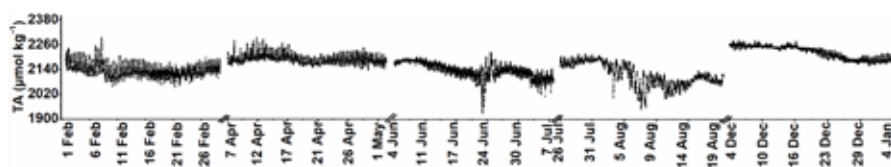
海水总碱度 (Total Alkalinity, TA) 是海水碳酸盐系统的四大参数之一, 高时空分辨率的 TA 数据对于海洋中的物理和生物地球化学过程的研究极为重要。可安装在浮标等固定平台上进行长期观测的 TA 原位分析仪是获取高时间分辨率 TA 数据的最佳手段, 而已报道的 TA 原位分析仪的精密密度、准确度、布放时间等性能鲜少能满足观测要求。

基于此, 研究团队对前期研发的海水 TA 走航分析仪进行结构改进, 消除环境温度影响, 减小仪器漂移, 成功研制海水 TA 原位分析仪。仪器的精密密度为 $0.6\sim 0.8\ \mu\text{mol kg}^{-1}$, 每 7 分钟进行一次测定, 在实际海洋环境中工作 1 个月以上, 可用于获取高时间分辨率的海水 TA 数据。实际应用该仪器观测厦门同安湾和德国 Kiel Fjord 河口 (与亥姆霍兹基尔海

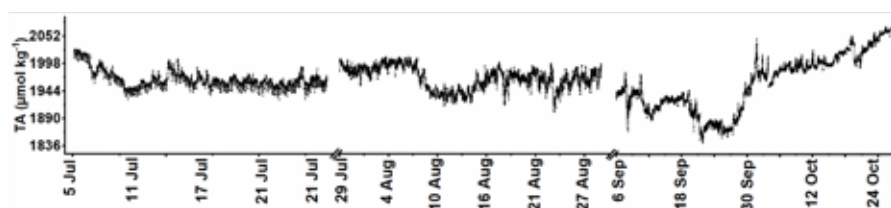
洋研究中心合作) 表层海水 TA 的日变化和季节变化, 揭示了这些变化的影响因素和控制机制。该仪器的研发为海洋碳循环和海洋酸化等研究提供了新的技术手段。



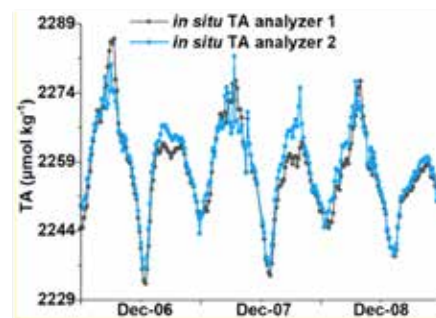
该工作于 2023 年 6 月、10 月和 11 月分别发表于 *ACS Sensors* 期刊、*Science of the Total Environment* 期刊和 *Marine Chemistry* 期刊, 博士生邱丽为第一作者, 李权龙教授和 Eric P. Achterberg 教授为共同通讯作者。



厦门同安湾3个季节近5个月的表层海水总碱度时间序列观测数据



德国Kiel Fjord河口2个季节近4个月的表层海水总碱度时间序列观测数据



海水 TA 原位分析仪及在厦门同安湾和德国 Kiel Fjord 河口观测得到的 TA 数据

References:

- Qiu, L; Li, QL; Yuan, DX; Chen, JS; Xie, JZ; Jiang, KS; Guo, LG; Zhong, GB; Yang, B; Achterberg, EP. High-precision *in Situ* total alkalinity analyzer capable of month-long observations in seawaters. *ACS Sensors*. 2023. 8(7): 2702-2712
- Qiu, L; Jiang, KS; Li, QL*; Yuan, DX; Chen, JS; Yang, B; Achterberg, EP*. Variability of total alkalinity in coastal surface waters determined using an *in-situ* analyzer in conjunction with the application of a neural network-based prediction model. *Science of the Total Environment*. 2024. 908:168271
- Qiu, L; Esposito, M; Martínez-Cabanas, M; Achterberg, EP.*; Li, QL*. Autonomous high-frequency time-series observations of total alkalinity in dynamic estuarine water. *Marine Chemistry*. 2023, 257(20): 104332

环境变化背景下的全球蓝色食物脆弱性

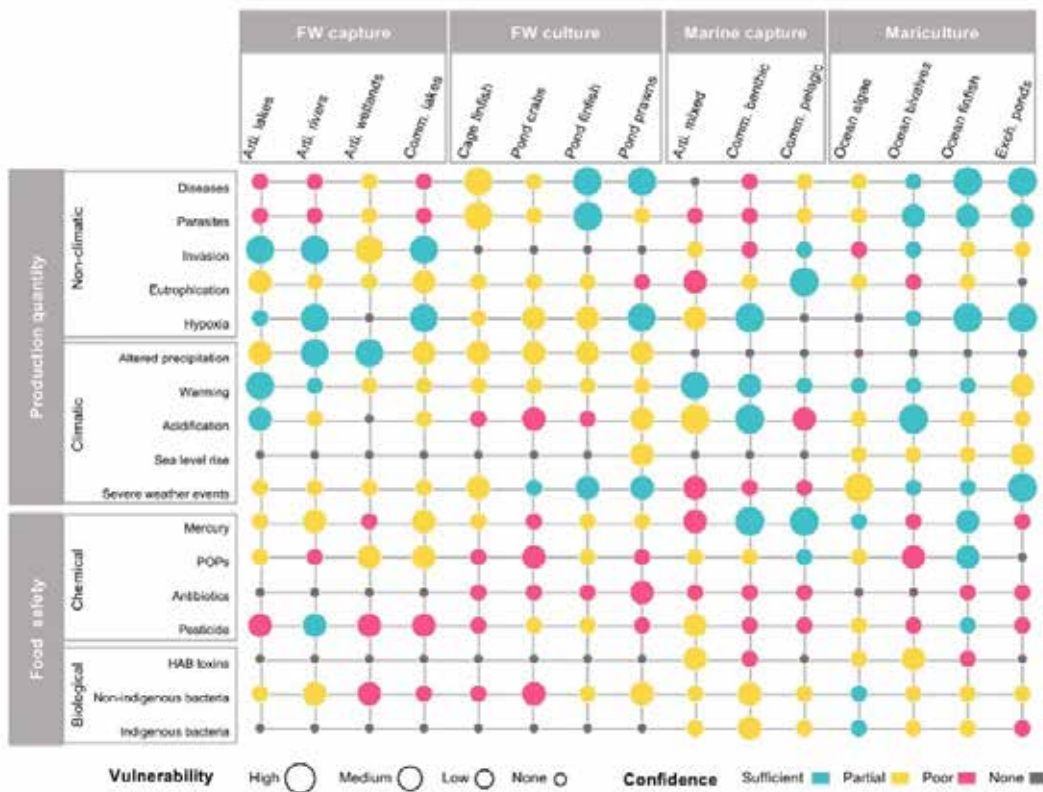
渔业（含野生捕捞和水产养殖）生产出蓝色食物（即水产品），为全球数十亿人的粮食和营养安全提供了有力保障，同时也是许多区域经济增长、生计维持和文化遗产的支柱，因而是可持续发展领域的重点议题。然而，当前关于可持续蓝色食物的研究普遍聚焦于渔业生产过程对环境和资源的影响，却很少关注人为导致的环境改变对蓝色食物产出造成的脆弱性和风险。

本研究构建了一套基于多因素空间分析的蓝色食物脆弱性评估框架。基于系统性文献分析和专家征

询，评估了 15×17 个“蓝色食物生产类别 - 环境压力源”组合的脆弱性等级，通过构建多因素空间模型，量化了全球环境压力对蓝色食物产量和安全性的影响指数，并在国家尺度上描绘了其脆弱性分布格局。结果表明，海洋捕捞渔业更易受暖化、酸化等气候压力源的影响，而水产养殖则对疾病和水体缺氧较为敏感。贡献了全球 90% 以上蓝色食物的主产国所受到的环境变化影响均为中高等级以上，脆弱性较高、应急响应能力较弱的欠发达国家应受到特别关注。

研究指出，当前迫切需要各利益相关方进一步协作，加强对蓝色食物环境脆弱性的认知和监测，促进本土化知识在战略规划及政策管理中的普及，设计并执行切实的治理方案，全面提升全球水产渔业应对环境变化风险的能力。

“该工作于 2023 年 6 月发表于 *Nature Sustainability* 期刊，曹玲教授为第一作者兼通讯作者。



15 种主要蓝色食物生产类别的产量和安全性在环境变化压力下的脆弱性等级

Reference:

Cao, L*; Halpern, BS; Troell, M; Short, R; Zeng, C; Jiang, ZY; Liu, Y; Zou, CX; Liu, CY; Liu, SR; Liu, XW; Cheung, WWL; Cottrell, RS; DeClerck, F; Gelcich, S; Gephart, JA; Godo-Solo, D; Kaul, JI; Micheli, F; Naylor, RL; Payne, HJ; Selig, ER; Sumaila, UR; Tigchelaar, M. Vulnerability of blue foods to human-induced environmental change. *NATURE SUSTAINABILITY*. 2023. 6: 1186-1198

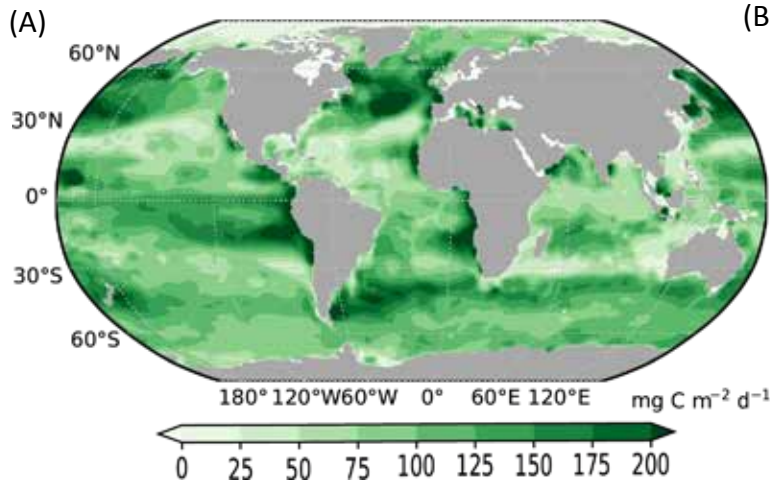
基于长时间水文观测的生物碳泵估算

海洋生物泵通过将有机碳从表层输出到中深层海洋，实现对大气二氧化碳的长时间封存，是海洋碳汇过程的重要组成部分。目前，对海洋生物碳泵的直接观测主要利用沉积物采集器，数据极为稀少，而基于地球系统模式和卫星观测的估算则存在较大分歧（5-12 Pg C yr⁻¹）。因此，对海洋生物碳泵的准确估量是目前气候科学及地球科学研究所面临的重大挑战。

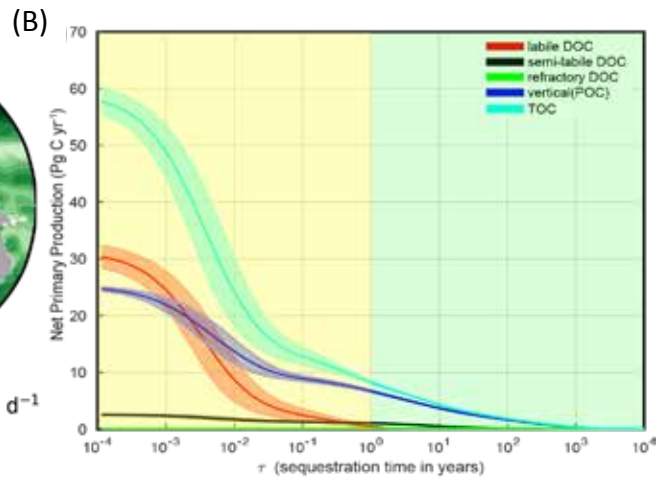
基于此，研究团队利用了几十年的水文观测，自主研发了海洋生物地球化学逆向反演模式，通过将海洋碳、磷和氧元素的循环进行整合，建立了生物碳泵与营养盐等参数的反演关系。主要的创新点在于，由水文参数的分布反推生物泵通量，避免了对海洋生物碳泵具体过程的直接模拟。这是由于当前对生物泵具体过程的认知不足且观测数据少，易造成过度参数化和对同一过程的重复计算。而反推生物碳泵通量的理论支撑为：无论有机碳以何种路径输出，它必然影响水文参数的分布，如果能准确模拟上述水文参数，便可以反推总有机碳通量。

研究发现，在 73.4 m（模式真光层深度）的总有机碳输出为 15.00±1.12 Pg C yr⁻¹，由于上层水柱中有机质的快速再矿化，只有三分之二的有机碳达到 100 m 深度（图 a）。按热光区以下的停留时间 τ 划分，当 $\tau > 3$ 个月和 1 年时，有机碳总产率分别为 11.09±1.02 Pg C yr⁻¹，8.25±0.30 Pg C yr⁻¹，其中 81% 由下沉颗粒和浮游动物垂直迁移引起的非平流 + 扩散通量贡献（图 b）。通过混合和其他流体运输作用导致的溶解和悬浮颗粒物质的输出对满足深海生物的碳需求具有重要的区域意义。此外，从本研究的反演中推断出的垂向有机碳输出效率与温度依赖性关系表明，未来全球变暖可能会加强上层海洋有机质的再循环，潜在地削弱生物泵。

“ 该工作于 2023 年 12 月发表于 *Nature* 期刊，王为磊教授为第一作者兼通讯作者。



(A): 模式真光层总有机碳通量的分布 (mg C m² day⁻¹)



(B): 光合作用生成有机碳的封存时间

References:

Wang, WL*; Fu, WW; Frédéric, A. C. LM; Robert, L; Liu, Y; Tang, JM; François, WP*. Biological carbon pump estimate based on multi-decadal hydrographic data. *Nature*. 2023. 624, 579-585

Primeau, WF*; Wang, WL*. Oceans can capture more carbon dioxide than previously thought. *Nature*. 2023, 10.1038/d41586-023-03662-7

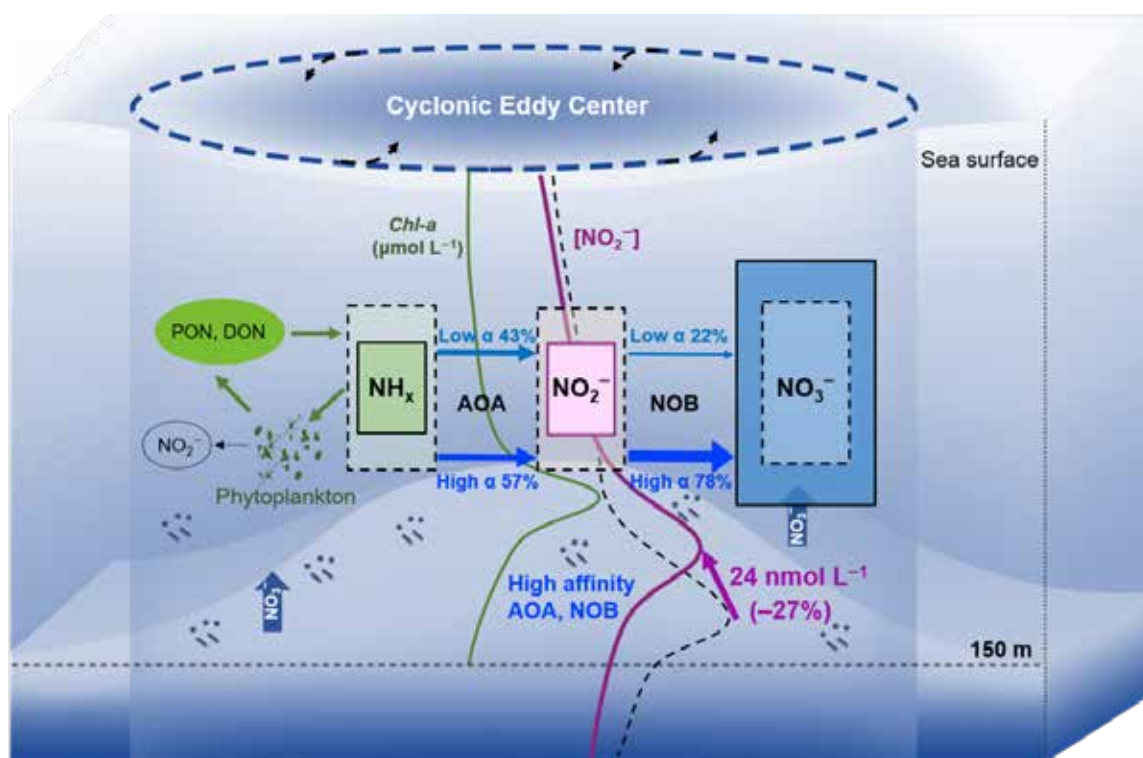
西北太平洋副热带流涡区中尺度气旋涡引发的两步硝化解耦导致亚硝酸盐积累减少并影响生物泵效率估算

全球上层海洋普遍存在一个 NO_2^- 浓度的极大值层 (Primary Nitrite Maximum, PNM)，其被认为主要是由两步硝化过程 (即氨氧化和亚硝酸盐氧化) 的 NO_2^- 累积导致形成。从全球范围来看, PNM 的 NO_2^- 浓度值在高纬度海区和赤道上升流缺氧区最高, 而在副热带流涡区最低, 具有显著的纬向分布格局。然而迄今对该格局的形成尚缺乏完善的解释。

研究团队首次在西北太平洋副热带流涡区的气旋涡系统中, 对氨氧化和亚硝氧化过程的速率、米氏动力学和关键功能基因进行了深入研究。研究发现, 中尺度气旋涡所引起的等密度面抬升等一系列过程增强了两步硝化过程, 并造成了两步硝化的解耦。这一解耦过程加快

了 NO_2^- 的周转, 并降低了 PNM 中 NO_2^- 的浓度, 这为全球海洋 PNM 的纬向分布模式提供了一种可能的形成机制。同时, 这一过程导致更多的还原态氮转化为氧化态氮, 这必然显著影响初级生产力的结构, 从而对涡旋系统中新生产力和碳输出的估算造成高估。上述发现对全面理解海洋动力系统中的生物地球化学循环具有重要意义。

“该工作于 2023 年 8 月发表于 *Science Advances* 期刊, 博士生刘丽为第一作者, 张瑶教授为通讯作者。”



中尺度气旋涡对上层海洋硝化菌的分布和活性、其所驱动的两步硝化过程, 以及由此导致的营养盐浓度分布和 PNM 的影响

Reference:

Liu, L; Chen, MM; Wan, XHS; Du, CJ; Liu, ZY; Hu, ZD; Jiang, ZP; Zhou, KB; Lin, HY; Shen, H; Zhao, D; Yuan, LY; Hou, L; Yang, JYT; Li, XL; Kao, SJ; Zakem, EJ; Qin, W; Dai, MH; Zhang, Y*. Reduced nitrite accumulation at the primary nitrite maximum in the cyclonic eddies in the western North Pacific subtropical gyre. *Science Advances*. 2023. 9. eade2078

科研课题与航次

Research Projects and Cruises

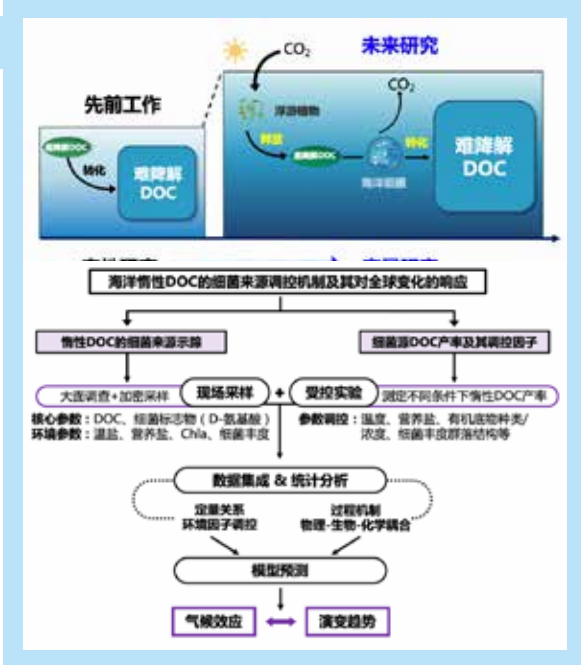
© 陈照章



海洋溶解有机碳循环

国家自然科学基金优秀青年科学基金项目 2024-2026 | 沈渊

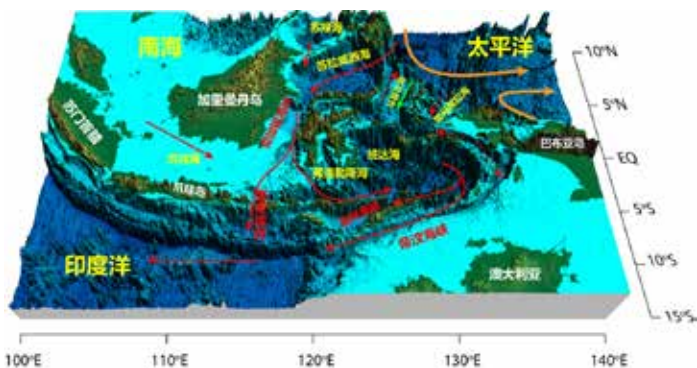
项目针对“海洋惰性有机碳的生产调控机制及其对全球变化的响应”这一核心科学问题，以南海为试验区域，围绕海洋中细菌源惰性溶解有机碳（DOC）的分布与贡献、细菌源惰性DOC的生产效率及其调控机制、全球变化背景下细菌源惰性DOC的生产演变规律等方面开展研究。拟通过技术创新实现细菌生物标志物（D-氨基酸）的痕量分析，将化学组分分析、环境-生物参数调研及模型模拟相结合，定量评估海洋中细菌源有机质时空分布格局、生产效率以及不同CO₂排放情景下的生产演变趋势。本项目的定量工作有望突破过去国际上对海洋惰性DOC来源的定性认识，弥补国际上关于惰性DOC源汇研究的薄弱环节，为评估全球变暖背景下海洋碳库变化特征提供重要科学依据。



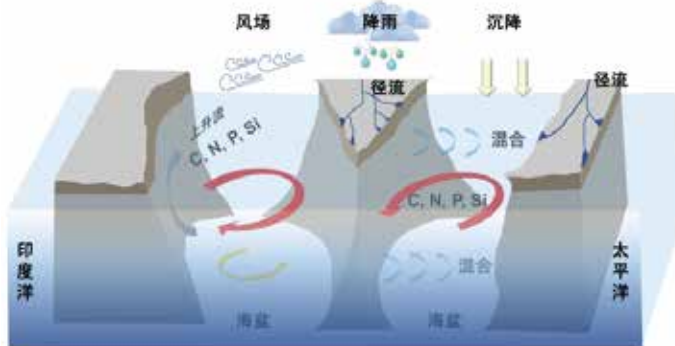
印度尼西亚海环流时空变化及其对生源要素收支的作用

国家自然科学基金重点项目 2024-2028 | 薛惠洁

项目利用横跨西太平洋-印度洋的物理-生态耦合模型，结合有限的观测数据和逆向反演模型计算，刻画印尼海区域环流形态，评估海洋性大陆河流对印尼海环流和水团特性的影响；分析印尼海关键海峡里水、热、盐交换过程及变率，揭示主要海盆环流之间的相干和差异，阐明其局地与遥驱动因子和机制；收集并整理生源要素观测数据，利用逆向反演模型约束生地化过程的关键参数并引入耦合模型；计算通过关键海峡的营养盐通量，量化物理运输、河流输入和大气沉降对生源要素收支的贡献，探究强IOD和ENSO事件对生源要素循环的影响。



印尼贯穿流体系示意图（根据 Sprintall 等（2019）重新绘制，其中红、绿色箭头分别代表上、下层环流，红色虚线表示较大不确定性；添加的数字是 INSTANT 计划中主要关键海峡的平均流量，望加锡海峡的流量为 11.4 Sv，三个出流通道的总流量为 14.7 Sv）

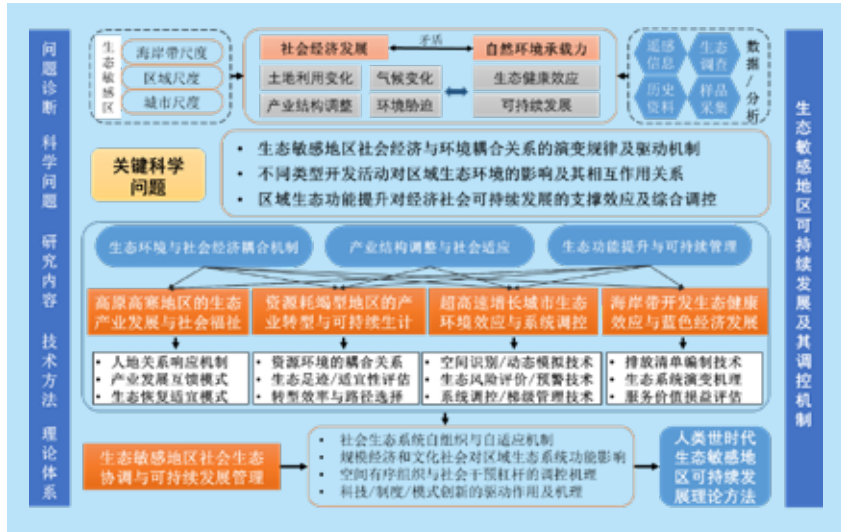


物理运输和外源输入对印尼海生源要素收支作用示意图

生态敏感地区的可持续发展及其调控机制

国家自然科学基金重大项目 2024-2028 | 吕永龙

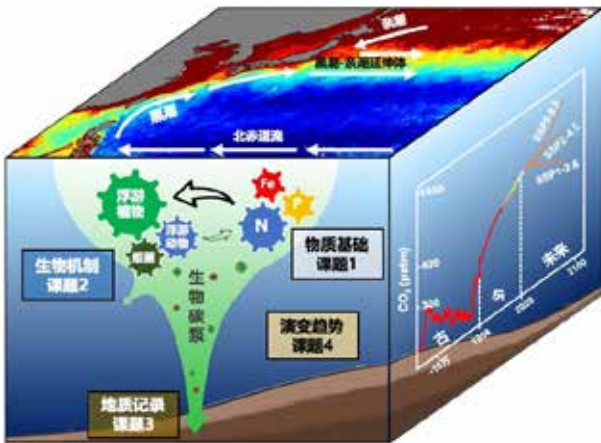
项目针对生态敏感地区社会经济发展与自然环境承载能力之间的突出矛盾，面向国家生态文明建设的重大需求和可持续性科学的国际前沿，将围绕“生态敏感地区的可持续发展与调控机制”这一核心主题，聚焦生态敏感地区社会经济与环境耦合关系的演变规律及驱动机制、不同类型开发活动对区域的生态环境影响及其相互作用关系、区域生态对经济社会可持续发展的支撑效应及其一体化管理模式三大关键科学问题。通过管理科学、生态学、地理科学、环境经济学等学科的交叉融合，创新社会-经济-自然耦合的区域可持续发展理论体系和定性定量研究方法，探索生态敏感地区人与自然相互作用的科学规律，揭示人类开发活动与区域生态的耦合机制，为国家可持续发展议程创新示范区的建设提供重要科技支撑，为全球生态敏感地区的可持续发展模式提供崭新的中国范本。



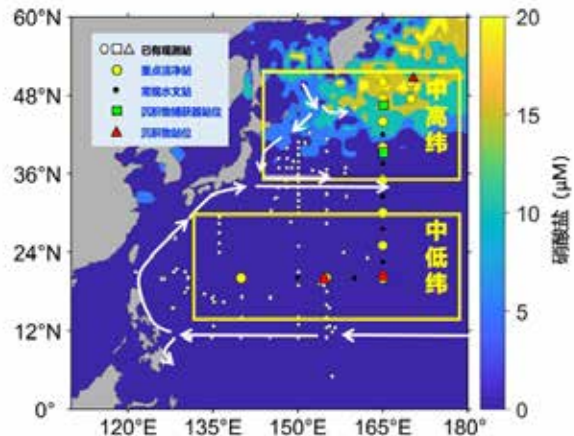
西北太平洋生物碳泵的氮磷铁调控及演变趋势

国家重点研发计划 2023-2028 | 史大林

项目针对西北太平洋生物泵固碳和储碳的氮、磷、铁调控及碳汇演变趋势这一重大科学问题，围绕生物碳泵的“物质基础-生物机制-地质记录-演变趋势”的核心主线，以西北太平洋中低纬寡营养盐和高纬高营养盐海区为研究区域，从现代过程入手，结合地质记录和未来预测，开展全球变化背景下氮、磷、铁等营养元素对生物泵固碳和储碳关键过程的调控及其机制和气候效应研究。通过不同时空尺度的比较研究，揭示氮、磷、铁等元素循环的特征，阐明其对生物泵固碳、储碳关键过程的调控机理；重建古生物泵演变历史，诠释气候变化对其影响，最终评估不同气候场景下西北太平洋碳汇的演变趋势。



(A) 项目框架图

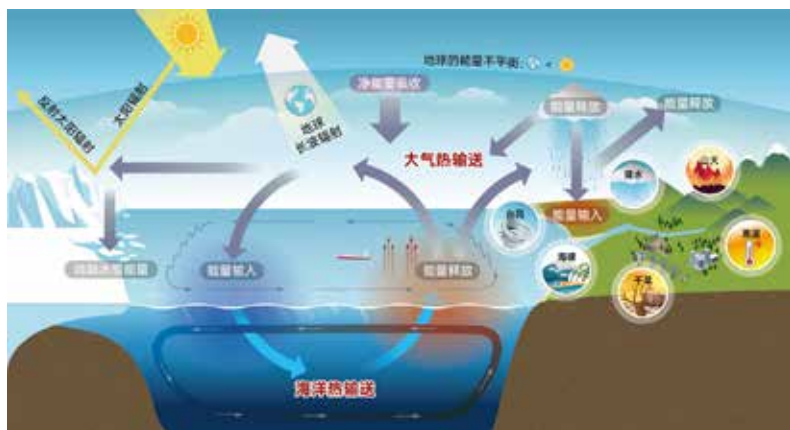


(B) 项目主要研究区域

基于能量过程的年代际气候变化机理和预测

国家重点研发计划青年科学家项目 2023-2028 | 吕柯伟

作为社会经济中长期发展规划的重要依据，面向未来一至数十年的年代际气候预测是当前气候研究领域的前沿问题和重大挑战之一。然而，由于对年代际气候变化的理解和预测能力不足，当前预测水平还不能满足业务化需求。本项目旨在从气候系统能量过程出发，深化对年代际气候变化机理的认识，识别新的年代际可预测性来源，研发年代际气候预测新方法。项目主要研究内容包括：揭示年代际时间尺度上气候系统各主要圈层之间能量循环及其调控气候变率的关键过程；诊断年代际可预测性海洋记忆力来源的关键能量过程和预测因子；研发基于大数据和机器学习，考虑能量过程约束的年代际气候预测新方法。项目最终结果有望显著提升当前年代际气候变化的预测水平，为国家应对气候变化提供强有力的科技支撑。



气候系统多圈层能量循环

基于环境基因组的近海生物多样性解析

国家重点研发计划青年科学家项目 2023-2026 | 郑越

项目针对我国近海生物多样性“精准”和“快速”解析的两大需求，以近海多重环境胁迫为研究背景，以环境胁迫下显著响应的微型生物为研究对象，以生物多样性解析技术创新为突破口，围绕解析“测序前、中、后”的三大环节，通过样品降维处理、序列升级分析、信息整合解析，研发更准和更快的生物多样性解析技术，发展生物多样性评估新指标和构架预判新模型，最终形成“多场景、全链条、一键式”的近海生物多样性解析方案，服务于海洋生态环境保障体系的构建和推广，为近海生态环境可持续发展提供技术支撑。



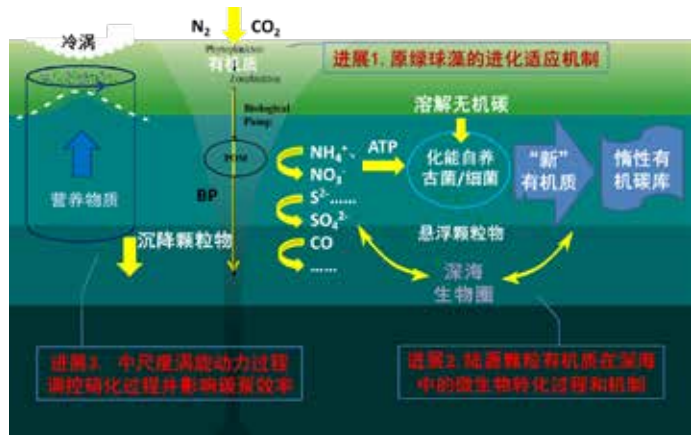
深海微生物物质能量代谢驱动的元素循环

国家自然科学基金杰出青年科学基金项目 2022-2026 | 张瑶

项目聚焦深海，并链接上层水体，深入解析深海微生物群落结构与功能、微生物驱动的碳氮循环关键过程及其耦合关系和机理，以及海洋动力过程对物质能量平衡与微生物代谢的影响。项目开展两年已执行了多个南海和邻近西太平洋现场航次调查，并结合室内模拟等实验，在项目既定的三个研究方面均取得了进展：

1) 针对开放大洋最重要的初级生产者原绿球藻，首次开展了突变累积实验，揭示了其突变速率低、有效种群规模小的特征，证明了遗传漂变在其进化和生态适应中的重要作用；

2) 基于 Aquatron 超大体积海水培养装置实施模拟实验，对陆源颗粒有机质进入深海环境后的命运进行了长时间的跟踪观测，首次系统地阐明了其在能量和物质限制的黑暗海洋中的微生物转化机制，为陆源输入与深海碳埋藏之间的巨大缺口提供了重要的解释；



3) 在西北太平洋气旋涡系统中开展了物理 - 化学 - 生物多学科海洋现场观测，首次揭示了中尺度气旋涡所诱导的两步硝化解耦现象，为全球海洋“上层亚硝浓度极大值”的纬向分布模式提供了一种可能的形成机制。

相关成果发表在 *Nature Ecology & Evolution*、*Science Advances* 等期刊。

海洋碳汇与生物地球化学过程

国家自然科学基金基础科学中心项目 2022-2026 | 焦念志

海洋碳汇与生物地球化学过程基础科学中心于 2022 年启动，围绕海洋碳汇形成过程与调控机制开展深入研究，旨在建立海洋增汇的理论方法与技术方案，为气候变化重大国家需求提供支撑。本年度，中心在海洋碳汇气候效应理论、海洋负排放生态工程范式研发、海洋碳库导致气候转冷机制、海洋养殖碳汇输出、微型生物碳泵效率定量评价、海洋深部病毒生态及对碳汇的影响机制、机器学习解释海洋碳汇组成以及 $p\text{CO}_2$ 长期变化趋势差异等方面取得了重要进展。

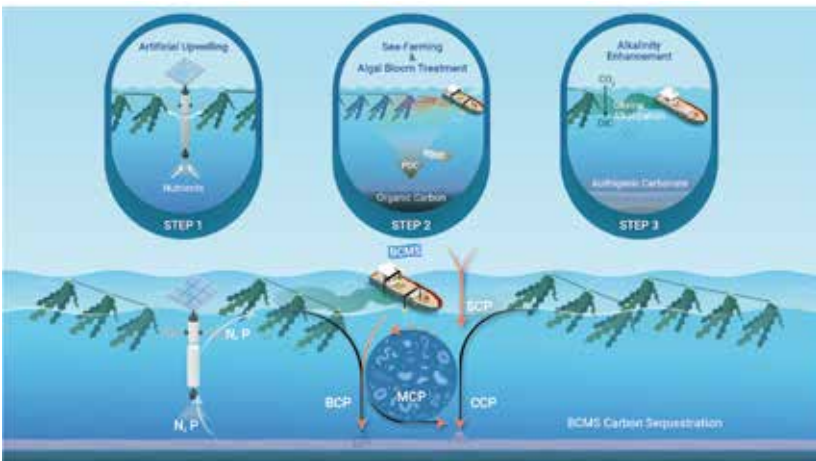


图 海水养殖负排放生态工程路线

研究成果发表在 *Nature Communications*、*National Science Review*、*Earth System Science Data*、*Geophysical Research Letters*、*Environmental Science & Technology* 等国际主流学术期刊，在揭示海洋碳汇理论、开发负排放示范、验证海洋碳汇的生态环境效应和气候效应等方面做出了新进展。此外，中心首席科学家和学术骨干深度主导及参与重要国际活动，在《联合国气候变化框架公约》第 28 次缔约方大会等重要国际活动上推动海洋负排放国际合作。

海洋荒漠生物泵固碳机理及增汇潜力

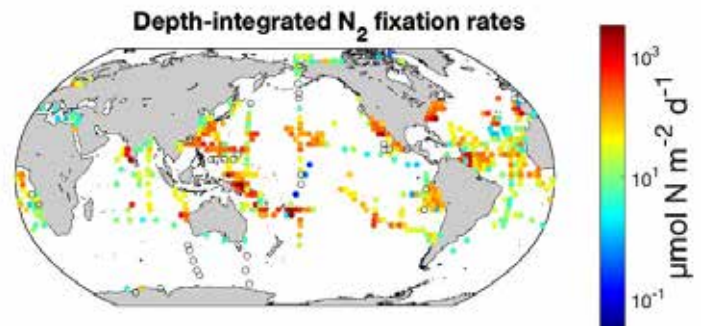
国家自然科学基金重大项目 2019-2023 | 戴民汉

全球表层海洋面积约 30% 为低生物量的寡营养海域，通常称为“海洋荒漠”。尽管单位面积的生产力很低，但“海洋荒漠”面积巨大，故而对全球海洋碳汇具有潜在的重要贡献，具有很大的增汇潜力，是全球海洋碳循环的重要环节，但却也是研究最为匮乏的海域，缺乏理论框架。项目聚焦北太平洋副热带流涡区（NPSG），围绕真光层双层结构下海洋荒漠生物泵的物质基础、结构、时空格局、效率及其固碳和增汇潜力，构架寡营养海域生物泵新理论框架，并为海洋荒漠的增汇途径及其有效性提供科学论证。

项目实施以来，通过现场观测、遥感反演和数值模拟等综合手段，在技术方法、数据产品和科学认识等方面取得了一系列进展和突破。本年度的主要发现和成果如下：

(1) 大气沉降是西北太平洋副热带流涡区西南部上层水体中溶解态铁的最重要输入途径，其输入通量比菲律宾岛屿沉积物贡献高近一个数量级，且比从营养盐充足层向匮乏层垂向运输的铁通量高约 50 倍；

(2) 集成观测数据、全球历史资料及模型预测结果，系统揭示了西北太平洋副热带流涡区生物固氮的时空格局（图 A），首次发现 UCYN-B 是该区域高固氮速率站点的主导固氮生物类群，并阐明其在全球海洋固氮中的重要性；

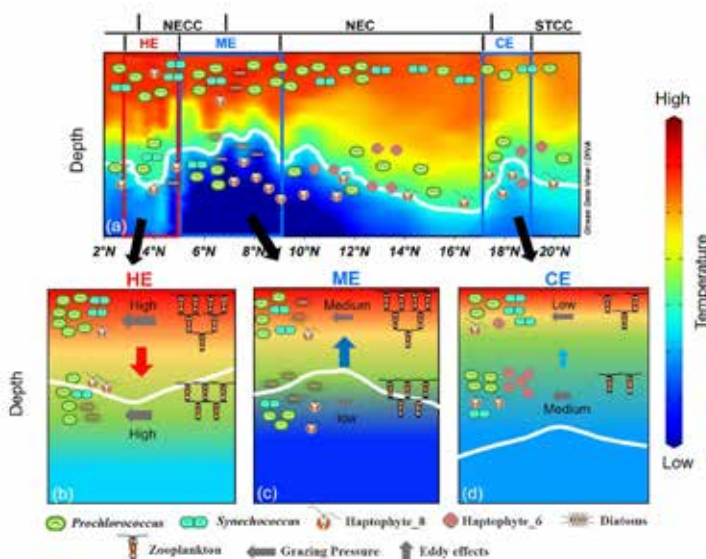


(A) 新版海洋固氮速率 (3 度空间分辨率)

(3) 结合高分辨率现场观测与遥感数值模型，揭示了西太平洋低纬海域不同流系、特征迥异的物理-生物地球化学背景下中尺度涡旋对浮游植物群落空间分布的调控机制及其主要影响因素（图 B）；

(4) 基于 10 台 BGC-Argo 浮标的长期观测数据，提出了光驱动和营养盐驱动的双种群竞争模型，为海洋荒漠寡营养水体中次表层叶绿素极大值深度变化的驱动机制提供了更合理的解释。

利用放射性 ^{234}Th 示踪剂，揭示了西北太平洋副热带流涡区输出生产力的时空格局，该流涡区的输出生产力存在高度的空间变异性：流涡中心输出通量较低，而在受北赤道流影响的边缘区域则输出较高。



(B) 130°E 剖面 (a) 和三个中尺度涡旋 (b-d) 的生物地球化学响应示意图 (An et al., Deep Sea Research Part I: Oceanographic Research Papers, 2023)。

白线表示 22°C 等温线。灰色、蓝色和红色箭头分别代表微型浮游动物摄食压力、气旋涡旋和反气旋涡旋的影响作用。

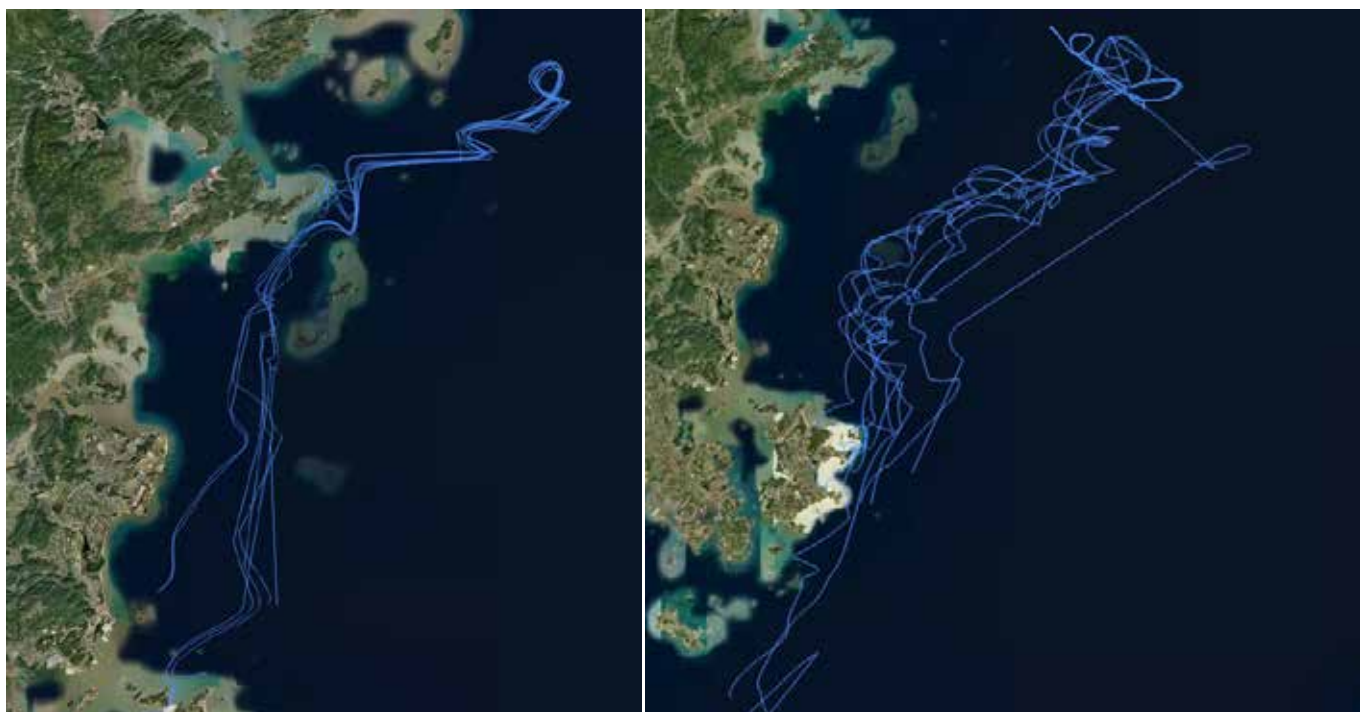
台湾海峡冬季及初春离岸藻华的锋面不稳定机制研究

国家自然科学基金联合基金重点支持项目 2023-2026 | 江毓武

台湾海峡冬季及初春，大陆离岸藻华经常发生，并与沿海峡锋面联系紧密。作为物理海洋学的前沿与热点，锋面亚中尺度不稳定具有与浮游植物生长一致的时间尺度，同时强化垂向物质输运及水体层化，从而显著调控藻华的发生。基于此，本项目采用台湾海峡立体监测长时间序列资料、多年现场航次及遥感数据，结合双船同步走航与漂流浮子阵列实验，通过高分辨率物理生态模型实验、不稳定理论分析等手段，对离岸藻华时空规律和锋面不稳定动力特征及其藻华调控机制进行深入研究。项目成果将为台湾海峡浮游植物生长繁殖提供新的物理动力学依据，并拓展亚中尺度物理生态耦合研究前沿，对海洋渔业发展与有害赤潮的预警有重要意义。

项目开展一年来，已取得若干成果：

- 1) 三种类型的漂流浮子海上实验轨迹具有理想的效果；
- 2) 多年现场航次及遥感数据统计分析表明，离岸藻华发生于东北季风松弛期的锋面区域；
- 3) 台湾海峡高分辨率实际模型诊断结果表明亚中尺度不稳定的再层化作用是促进离岸藻华发生的主因；
- 4) 使用台湾海峡理想模型敏感性实验揭示对称不稳定、中尺度和亚中尺度斜压不稳定对藻华发展的不同贡献；
- 5) 使用理想模型揭示亚中尺度过程对海表高度的影响及其偏度特征。



台湾海峡漂流浮标阵列实验初步结果

我国近海典型海域浮游生态系统演变、临界点与重构

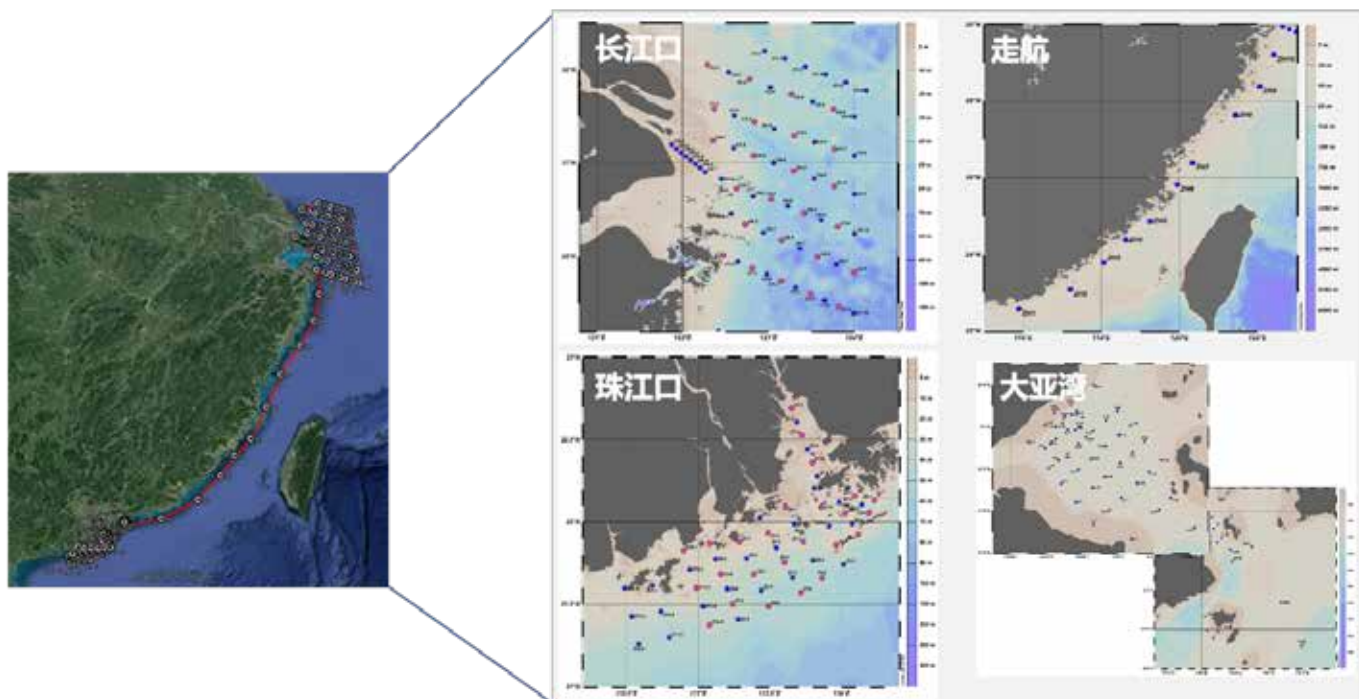
国家重点研发计划 2022-2025 | 王大志

项目针对“人类活动和全球变化双重胁迫下海域浮游生态系统的演变、临界点与重构”这一核心科学问题，以受人类活动和全球变化胁迫显著的长江口、珠江口及邻近海域的浮游生态系统为研究对象，综合浮游生物多样性现存格局、历史数据、沉积记录以及不同胁迫环境和极端事件过程中系统稳态转化的集成分析，建立系统临界点表征量化的理论和方法，评估多重环境胁迫下系统韧性和恢复力，架构系统重建的理论和方法，研发系统演变趋势预测模型并实现智能化、情景化预测应用示范，提出适于我国近海经济、人类健康和生态环境协同发展的管理对策，夯实对浮游生态系统临界点、韧性和恢复力的科学认知，阐明全球变化和人类活动双重胁迫下浮游生态系统的演变历史、现存态势和驱动机制，为制定生物多样性保护和气候变化策略，实施陆海统筹及碳中和等国家战略提供理论与方法支撑。

项目执行一年以来，取得了显著进展：1) 完成我国近海典型海域浮游生态系统春夏季现场调查；2) 收集整理了长江口、珠江口及邻近海域浮游微生物、动植物等近 50 年的历史数据；3) 重建过去百年浮游植物的组成和结构，反演了初级生产力变化特征；4) 揭示大亚湾核电温排水海域浮游植物和浮游细菌群落结构变化的温度临界点；5) 构建长江口和珠江口邻近海域的物理-生态系统耦合模式；6) 完成长江口和珠江口及邻近海域人为源碳氮磷排放清单编制。

春夏季航次主要样品统计

样品类型	春季 样品数/个	夏季 样品数/个
溶解氧	698	1110
DIC/TA	349	555
DIC- ¹³ C	156	360
5项营养盐、尿素	670	852
颗粒物	378	470
氨/硝/尿素吸收速率和米氏参数	282	282
分级叶绿素a	1452	929
网采浮游植物	174	362
水采浮游植物	367	88
扩增子	1334	1200
细菌生产和呼吸	1128	1210
宏组学	136	152



2023 年春夏季航次调查海域及采样统计

“嘉庚”号海洋科学考察船

9 个

调查航次

209 天

累计作业天数

25,423 海里

总航程

© 杨位迪

1 / 国家自然科学基金共享航次计划 2022 年度南海中部科学考察实验研究 (航次编号: NORC2023-06)

第一航段: 地质地球物理航段

第二航段: 水文生化航段

首席科学家: 陈洪梅

沈渊

航程: 2175 海里

4404 海里

航次搭载国家自然科学基金委项目: 39 项

参航人员: 国内 13 家单位的 59 名科考人员

科学目标: 深入了解南海中部海盆海洋地质构造、沉积记录、水动力机制、生物地球化学过程与生态功能、生物多样性及其相互作用

作业内容: CTD 采水、生物拖网、光学包下放、大体积泵作业、重力柱取样、箱式采样、海底热流探针作业、底栖生物拖网、岩石拖网和 Argo 布放



© 陈希荣



2 / “海丝学堂” 本科生实习航次 (航次编号: KK2305)

	第一航段	第二航段	第三航段
首席科学家:	陈洪梅	李非栗	张润
航程:	457 海里	534 海里	871 海里
参航人员:	7 所院校的 99 名科考人员 (其中 76 名是本科生)		
航次内容:	常量营养盐测定、浮游生物拖网、底栖生物采泥、CTD 海水采样、ADCP 流速测定、海洋环境水声通信性能和重力柱采样		
目标:	提升我校海洋本科科研实践能力, 推行中国海洋科学卓越人才培养计划, 锻造享誉海内外的海洋科学综合实践平台		



© “海丝学堂” 参与师生



© “海丝学堂” 参与师生

3/2023 年夏季琼东上升流航次

总天数: 24 天

首席科学家: 周宽波

航程: 约 1900 海里

航次搭载国家自然科学基金委项目:

海洋碳汇与生物地球化学过程基础科学中心

参航人员: 国内 4 家单位的 20 名科考人员

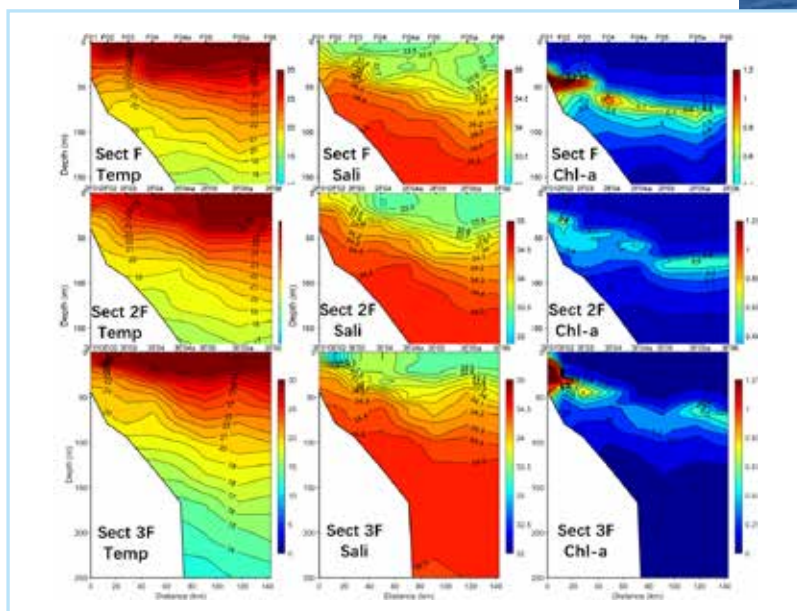
科学目标: 以琼东上升流区为目标试验场，聚焦海洋生物泵和微型生物碳泵对海洋碳汇的贡献。同时，航次将验证海洋生物泵和微型生物碳泵在时间和空间上的协同分异作用，并最终评估双泵对 CO₂ 源汇格局的调控作用

作业内容: CTD 大面观测、走航泵水连续观测、ADCP 走航观测、拖体剖面连续观测、拖网、痕量元素、大体积泵

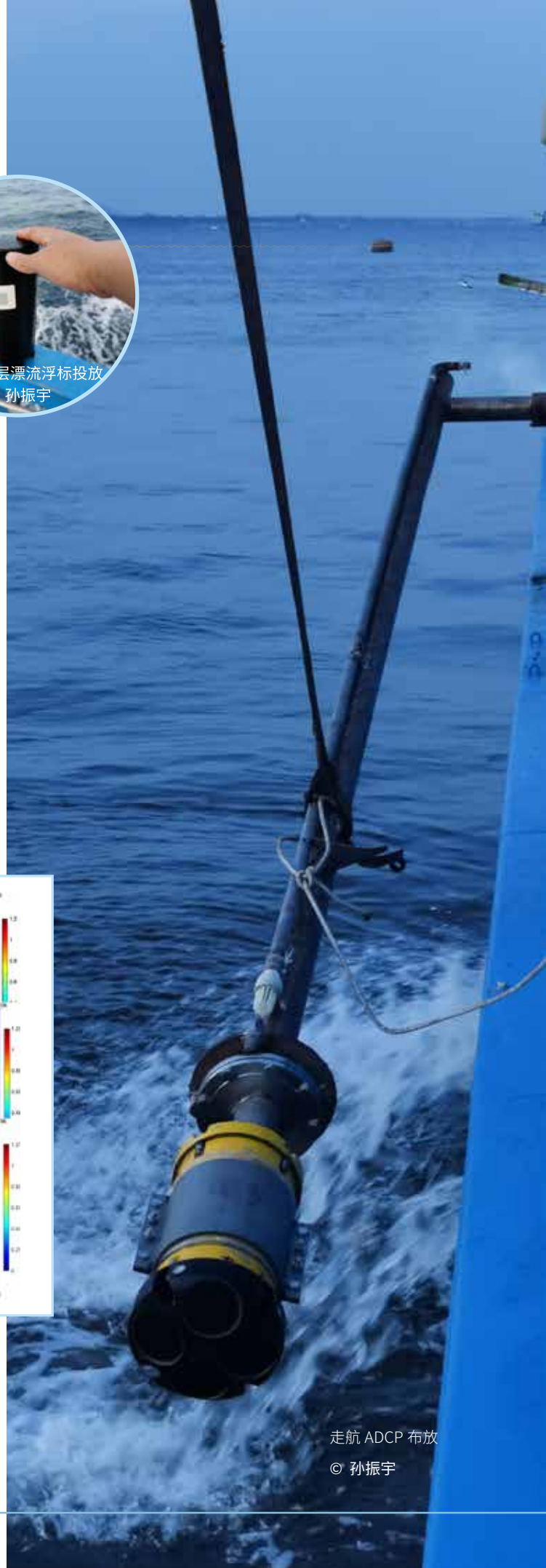
航次成果: 探寻了海洋生物泵和微型生物碳泵对海洋碳汇的贡献，验证了海洋生物泵和微型生物碳泵在时间和空间上的协同分异作用，评估了双泵对 CO₂ 源汇格局的调控作用



近海型表层漂流浮标投放
© 孙振宇



上升流不同阶段重点断面温度、盐度、叶绿素时间序列观测



走航 ADCP 布放
© 孙振宇

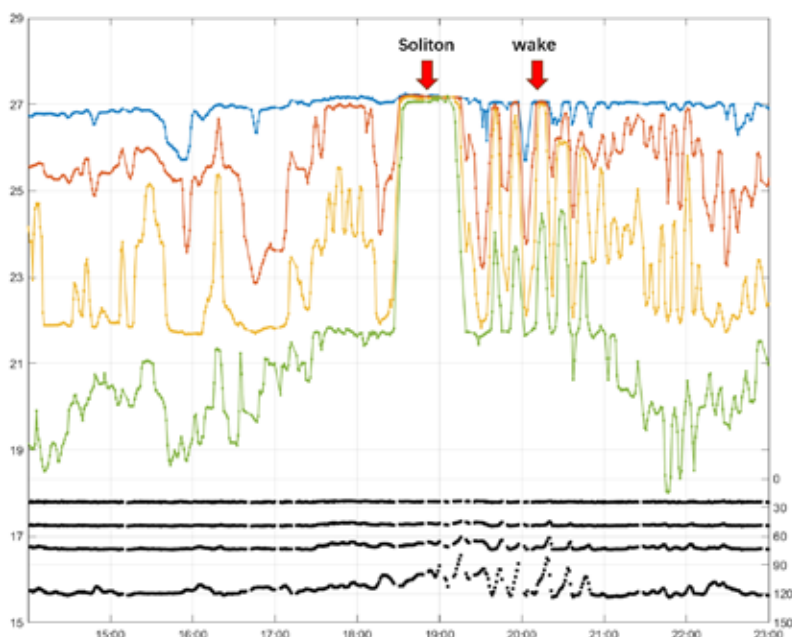
4/2023 年秋季南海内波漂流观测

总天数: 39 天

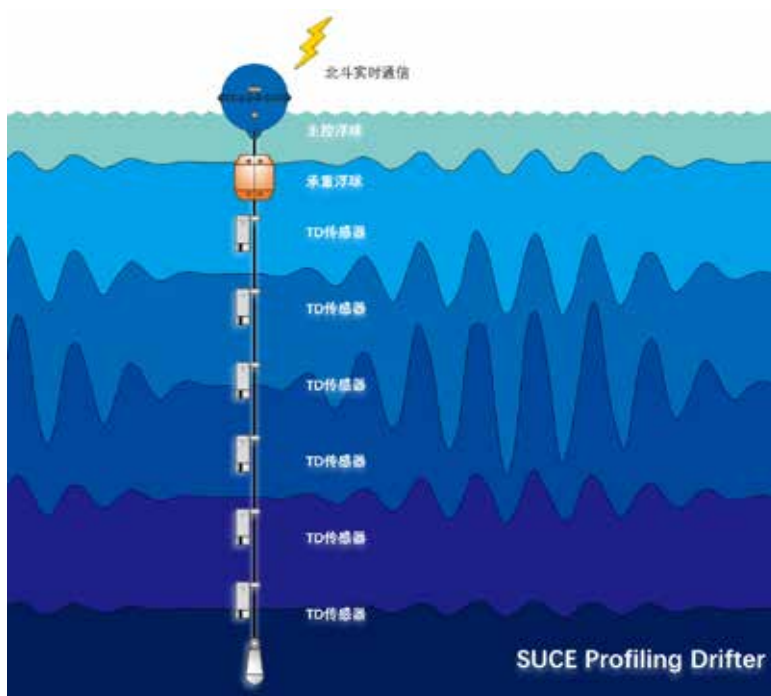
科学目标: 对南海北部东沙群岛海区的海洋内波进行实时监测, 获取该海区内波振荡的强度、周期、传播等动力特征, 为该海区海洋内波的监测和预警保障提供方案验证, 并研究吕宋海峡和东沙群岛复杂海底地形作用下内波动力过程的控制机制。

作业内容: 采用本单位自行研发的漂流式温深链观测系统, 对东沙群岛周边海域上层海水的温度和压力进行长时间的连续的剖面监测

航次成果: 温深链剖面观测捕获到该海区多次高强度的海洋内孤立波事件, 其可将表层海水在短时间内注入到 100 m 以下的深层, 并在余波中反复振荡, 揭示了该海区内孤立波与复杂地形、内潮等相关过程的相互关系



温深链捕获的内孤立波温度变化过程曲线



SUCE 漂流式温深链内波实时观测系统应用概念图

交流与合作

Exchanges and Collaborations



© DITTO

海洋负排放国际大科学计划

海洋负排放国际大科学计划（Global Ocean Negative Carbon Emission, Global ONCE）是“联合国海洋科学促进可持续发展十年（2021-2030）”倡议计划框架（UN Decade）下的大科学计划，希望通过官方渠道把海洋负排放“公共产品”推向国际社会和各国政府，传播知识、促进交流并增强相互信任。

Global ONCE 将致力于海洋储碳机制研究，并在此基础上基于中国国情开展一系列生态地球工程。Global ONCE 的核心目标包括：

- 1) 建立国际化研究设施网络，促进全球范围内的科学合作与资源共享；
- 2) 设计并实施跨学科合作研究项目，整合不同学科的知识和方法，深化对海洋储碳机制的理解；
- 3) 开发评估缓解气候变化和适应策略的综合框架，以支持有效决策；
- 4) 协调能力建设活动，提升研究和实践中的专业水平；
- 5) 促进公平的政策指定、有效的治理体系构建及增强社会对这一领域的理解和支持。

● 海洋负排放国际大科学计划第二届开放科学大会



焦念志院士

会议于 11 月 8 日在厦门举办。联合国秘书长海洋特使 Peter Thomson，国家自然科学基金委员会党组书记、主任窦贤康，以及中国科学技术交流中心、厦门大学、福建省科技厅、厦门市政府、厦门市科技局领导参会。ONCE 计划首席科学家焦念志院士及来自中国、法国、英国、德国等 12 个国家的数十位学者、ONCE 计划国内合作单位和厦门大学师生代表也参加了会议。

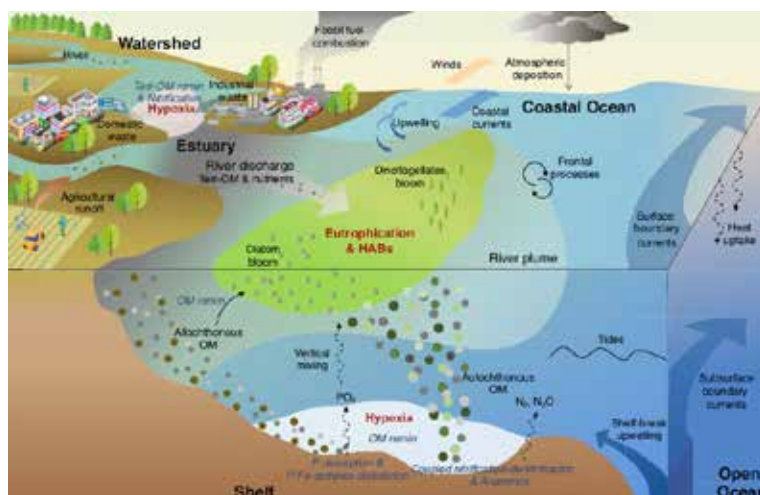
大会举行了 ONCE 计划系列成果发布仪式。窦贤康和 Peter Thomson 作客厦门大学第九期群贤大讲堂为现场专家学者和师生作大会报告，分别介绍了国家自然科学基金委员会和当前存在的海洋健康问题。



“融通科学、管理和社会参与：助力海岸带可持续发展”项目

近海海洋环境科学国家重点实验室携手国内外多家高水平科研单位、龙头企业、非营利性基金会、国际组织共同策划的“融通科学、管理和社会参与：助力海岸带可持续发展”项目（即 COASTAL-SOS 项目），为联合国“海洋十年”项目。COASTAL-SOS 项目拟建立利益相关者之间的新型伙伴关系，通过多学科、跨领域、跨区域的合作、科学创新实践及其成果的有效转化，促进科学、管理和社会参与的切实融合，为海岸带的可持续发展提供解决方案。

2023 年，COASTAL-SOS 项目已经获多个项目资助，各项实施计划正在稳步推进。完成 *Cambridge Prisms: Coastal Futures* 特邀综述《近海持续发生的富营养化与缺氧》，对全球、欧美及东南亚重点区域的富营养化与缺氧问题进行综述，将为相关问题的解决提供新视角。



●在 2023 年世界海洋日之际，与项目合作伙伴共同组织了一系列关于海洋脱氧的互动展览与讲座，共有 1100 多名来自小学、初中、高中和大学的学生参与。



●在“2023 亚洲大洋洲地球科学学会年会”（新加坡）上联合举办“海岸带：支持海洋可持续发展”跨学科专题讨论会，共同促进海洋和沿海地区的健康和可持续发展。



“表层海洋 - 低层大气研究” 计划

“表层海洋 - 低层大气研究”计划（Surface Ocean - Lower Atmosphere Study, SOLAS）于 2004 年正式启动，致力于海洋与大气间的生物地球化学与物理过程和机理研究，旨在揭示海洋 - 大气圈层相互作用对气候和环境变化的影响和反馈。2023 年，SOLAS 国际项目办公室持续为 SOLAS 33 个国家 / 区域科研网络、19 个资助 / 认证科学项目和 4 个海 - 气整合观测站提供宣传渠道和搭建交流合作平台。

22 场
国际会议

21 份
国家地区报告

10 份
活动总结报告

12 期
通讯月刊

50 项
社区公告

250 条
推文



© SOLAS 国际项目办公室

- 2023 年，SOLAS 首次在非洲国家（佛得角共和国）举办暑期学校。启动博士后项目，旨在推动基于海洋的二氧化碳去除技术（mCDR）的研究和模型开发。成立 SOLAS 青年科学家委员会，组织和计划了一系列活动。



- SOLAS 在 *Elementa: Science of the Anthropocene* 杂志上组织特刊 “Boundary Shift: The Air-Sea Interface in a Changing Climate”，将收录海 - 气交换研究方向文章。

- 为增进代表性不足地区的参与度，SOLAS 在东南亚成立地区专家小组，积极协调区域内交流合作。
- 9 月，SOLAS 战略研讨会于厦门召开，召集来自 18 个国家和地区的 40 名专家学者共同讨论和撰写 SOLAS 2026-2035 科学计划和组织方案。

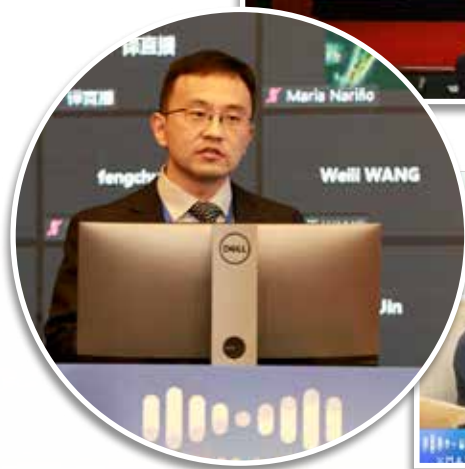


© 杨艳

第六届厦门海洋环境开放科学大会

厦门海洋环境开放科学大会 (XMAS) 于 2014 年由实验室发起和组织, 第六届会议于 2023 年 1 月 9-12 日于厦门召开。戴民汉任学术顾问委员会主席, 曹知勉、李非栗担任组织委员会联合主席。来自美国、加拿大、德国、法国、英国、南非、澳大利亚、日本、韩国、马来西亚、印度尼西亚等 35 个国家和地区约 1200 人线上线下参会。

会议以“多学科融合解决方案服务海洋健康和可持续发展”为主题, 邀请美国伍兹霍尔海洋研究所 Ken Buesseler 资深研究员、斯克里普斯海洋研究所 Lisa Levin 教授、南非开普敦大学 Juliet Hermes 教授、法国索邦大学 Angele Falciaior 研究员、加拿大麦吉尔大学 Eric Galbraith 教授及台湾大学地质科学系任昊佳副教授作 6 场主旨报告, 并设置 34 个专题分会及研讨会、221 个口头报告、193 份墙报展示, 更有女科学家沙龙、期刊编辑分享会、线上海报快闪、“表层海洋-低层大气研究”论坛、生地化模型讲习班、科普交流会等特色活动。东南卫视开设“云端科普”分会场直播, 科技日报、央视网、人民网等 12 家媒体平台对会议进行深度报道。



2023 年数字孪生海洋国际峰会

11月9-12日，2023年数字孪生海洋国际峰会在厦门举办，是该领域在亚洲举办的首场高端国际学术峰会。会议由“数字孪生海洋”（DITTO）国际大科学计划发起主办，福建海洋创新实验室（筹）和近海海洋环境科学国家重点实验室共同承办。柴扉与德国基尔亥姆霍兹海洋研究中心（GEOMAR）Martin Visbeck 教授担任大会共同主席，来自19个国家和地区的450余名海洋领域知名学者及业界代表参会。

会议围绕“感知、模拟、可视”等主题，聚焦海洋建模、海洋观测、海洋数字孪生应用、数据湖、海洋数字孪生架构与互通性等议题，邀请中国科学院、意大利博洛尼亚大学、美国伍兹霍尔海洋研究所、英国国家海洋学中心等机构12位专家作主旨报告，共安排15个平行分会、2个高峰对话，开展产学研用研讨会、“数字化深海典型生境”国际大科学计划启动研讨会、青年海洋科学家论坛以及系列卫星活动（Satellite Events），开展多层次、多元化、跨界别的交流研讨。

依托2023年数字孪生海洋国际峰会，2023海上丝绸之路国际产学研用合作会议海洋科技与工程分会于9日下午召开。会议以“发展数字孪生海洋，赋能战略新兴产业”为主题，旨在探索数字孪生海洋新架构，挖掘潜在应用场景，赋能海洋经济高质量发展。会上举行了海岸带生态环境大数据应用实践教育基地揭牌仪式。



© DITTO



2023 年南海年会



11月3-5日，第十届南海年会于厦门大学马来西亚分校举行。会议由近海海洋环境科学国家重点实验室、海洋与地球学院、厦门大学马来西亚分校中国-东盟海洋学院联合承办，“融通科学、管理和社会参与：助力海岸带可持续发展”国际大科学计划(COASTAL-SOS)协办，以“全球变化背景下的南海海洋动力过程及其生态环境效应”为主题。来自中国、美国、马来西亚、澳大利亚等国家和地区的120余名学者及学生代表参会。在南海年会创办十周年之际，会议首次在海外举办，并首设特别贡献奖“毓海奖”，授予美国马里兰大学郑全安教授与美国伍兹霍尔海洋研究所黄瑞新研究员。

第三届离岸碳捕集、利用与封存论坛

11月12-15日，第三届离岸碳捕集、利用与封存论坛于厦门举办。论坛由近海海洋环境科学国家重点实验室、中国太平洋学会联合主办，旨在探讨离岸CCUS战略定位，促进基础科学发现与工程技术实践互哺，协同推进产业融合与科技创新，服务于我国海洋增汇与陆海资源、生态、产业、空间互动协调发展能力提升。国内外60余所院所的160余位学者和行业代表参会。



其他学术会议



区域海洋数值模拟与数字孪生研讨会
4月25日，厦门



第十三届海峡两岸海洋科学研讨会
9月1-3日，杭州



中国—东盟海藻合作论坛
11月11日，厦门



中国科学院学部“海岸带人海耦合与系统韧性”科学与技术前沿论坛
12月2-3日，厦门

访问学者与开放课题基金

实验室访问学者基金（分为“郑重”杰出/杰出、高级和青年3类）支持国内外知名专家及青年学者到实验室开展1至6个月的学术交流与合作。2023年度共有来自美国、澳大利亚、奥地利、伊朗等7个国家的32名学者获批该项基金。他们与实验室成员开展合作研究，并与师生进行广泛交流。

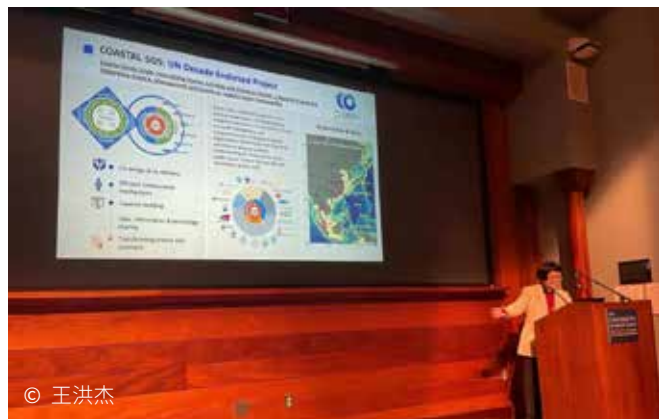
“郑重”杰出访问学者基金获得者
蔡文炬教授带来学术讲座



杰出访问学者基金获得者 Mark Wells 教授
在 MEL 文化沙龙与师生交流

其他交流与合作

本年度，实验室恢复各类线下学术交流，共有国内外 201 人次通过学术报告、讲授课程、合作研究等多种形式来实验室开展合作交流，共举办“周一午餐交流会”33 讲，召集凌峰论坛 11 讲。每月定期开展交流沙龙，为实验室成员提供良好的交流平台。



© 王洪杰
洪华生教授出访美国罗德岛大学海洋学院并作报告



© 陈蕾
美国路易斯安那州立大学 Edward Laws 教授做客 MEL 午餐会



© 陈蕾
香港城市大学梁美仪教授一行访问 MEL，讨论合作事宜



© 70.8 海洋媒体实验室
联合国前副秘书长、联合国环境规划署前执行主任 Erik Solheim 做客厦门大学南强学术大讲堂

学术组织新任职

国际任职

- 林 昕 Group Member / UN Ocean Decade Vision 2030 Working Group 9
- 唐甜甜 Peer Reviewer / PNNL EMSL Proposal Review Panel (Environmental Transformations and Interactions)
- 汪冰冰 Fellow / The Royal Society of Chemistry
- 游伟伟 Vice President / International Abalone Society

国内任职

- 柯才焕 中国水产流通与加工协会鲍鱼分会分会长
- 刘向阳 中国生物材料学会名誉理事
- 吕永龙 中国生态学学会常务理事
- 上官明佳 全国材料与器件科学家智库微电子与光电子材料与器件专家委员会副主任委员
- 史大林 中国高等教育学会科技管理研究分会副理事长

学术期刊新任职

国际任职

- 曹 玲 Editor-in-Chief / *Reviews in Fish Biology and Fisheries*
- 曹知勉 Associate Editor / *Science Bulletin*
- 柴 扉 Editorial Board Member / *Ocean Modelling*
- 焦念志 Associate Editors-in-Chief / *Science China Earth Science*
- 林 昕 Associate Editor / *Frontiers in Marine Science*
- 唐甜甜 Review Editor / *Frontiers in Marine Science*
- 王为磊 Guest Editor / *Frontiers in Marine Science*
- 余凤玲 Special Issue Editor / *Geomorphology*

国内任职

- 刘志宇 编委《海洋科学进展》
- 马 剑 编委《集成技术》
- 上官明佳 青年编委《光学学报》
- 游伟伟 青年编委《水产学报》
- 朱旭东 青年编委《应用生态学报》

代表性国际 / 国内大会报告

- Cheng Wang. LiDAR Visual Localization in Urban Environment. The 12th International Symposium On Mobile Mapping Technology. May 22-28. Padua, Italy. (Keynote Speech)
- Fei Chai. Digital Twin Ocean for China Coastal Seas. 13th International Workshop on Modeling the Ocean. June 27-30. Hamburg, Germany. (Invited talk)
- Guizhi Wang. COASTAL-SOS: Coastal Sciences for Solutions. 2023 East Asia Marine Cooperation Platform Qingdao Forum. July 27-29. Qingdao, China. (Keynote Speech)
- Jianghui Li. Acoustical and Chemical Strategies for Environmental Monitoring of Marine Carbon Storage. The XIV Congress of the International Association for Engineering Geology and the Environment 2023. September 23-25. Chengdu, China. (Invited talk)
- Minhan Dai. A Sustainable Blue Economy Toward Carbon Neutrality. The 2nd China and Portuguese-speaking Countries Ocean Research and Education Symposium. October 11-14. Macao, China. (Invited talk)
- Minhan Dai. Tropical Ocean and Its Climatic and Environmental Effects Observationally constrained nutrient budget reveals a dominate biological consumption term & low pumping efficiency of mesoscale eddies in the oligotrophic ocean. 12th International Workshop on Tropical Marine Environmental Changes. Guangzhou, China. (Invited talk)
- Nianzhi Jiao. Global ONCE - An Innovative, Scientific Ocean-based Solution Provider. North Pacific Marine Science Organization 2023 Annual Meeting. October 23-27. Seattle. the United States. (Plenary talk)
- Nianzhi Jiao. Ocean Negative Carbon Emissions (ONCE) - Potential Best Practice for mCDR. United Nations Climate Change Confernece 28. November 29 - December 14. Duba. The United Arab Emirates. (Invited talk of Session)
- Weiwei You. Genetic improvements progress for Fujian oyster. The 2nd "World is Our Oysters" Symposium. October 27-29. Hong Kong, China. (Invited talk)
- Xiangyang Liu. Mesoscopic Materials Strategies for Development of Cocoon Silk Flexible Meso-Electronic/ Photonics. The 10th IEEE International Conference on Cybernetics and Intelligent Systems. June 9-12. Penang, Malaysia. (Keynote Speech)
- Xiaolin Bai. Internal Solitary Waves on the Northern Shelf of the South China Sea: Observations and Simulations. 2023 International Conference on Frontiers of Ocean Science and Technology. October 13-15. Changsha, China. (Invited talk)
- Yangfan Li. Urban Marine Synergy towards risk-resilience wellbeing nexus towards risk-resilience. 5th International Conference on Canadian, Chinese & African Sustainable Urbanization. December 9-18. Nairobi, Kenya. (Keynote Speech)
- Zhongping Li. Neural Networks for Ocean Color Remote Sensing: A Few Examples and the Question. The 44th Photonics and Electromagnetics Research Symposium. July 1-9. Prague. Czech. (Invited talk)
- 曹知勉. 海洋钒稳定同位素地球化学及其指标作用. 第九届全国稳定同位素生态学学术研讨会暨中国生态学学会稳定同位素生态专业委员会 2023 年学术年会. 2023 年 11 月 25-26 日. 中国厦门. (特邀报告)
- 戴民汉. 基于海洋的碳中和解决方案. 中法碳中和中心启动仪式. 2023 年 11 月 24 日. 中国北京. (特邀报告)
- 刘涛. 藻类育种技术与新品种培育. 第四届中国水产种业博览会暨首届广州(国际)现代化海洋牧场产业大会. 2023 年 11 月 25 日. 中国南沙. (特邀报告)
- 史大林. 西北太平洋生物固氮: 营养盐调控和海洋酸化影响. 第八届青年地学论坛. 2023 年 5 月 3-8 日. 中国武汉. (主旨报告)
- 王克坚. 海洋动物新型抗菌肽的发现及其开发利用. 第二届多肽药物产业创新论坛. 2023 年 4 月 15-16 日. 中国苏州. (特邀报告)
- 王新红. 近海环境新污染物的环境暴露、效应与风险. 第四届中国环境与健康大会. 2023 年 8 月 17-18 日. 中国福州. (特邀报告)
- 张瑶. 海洋硝化过程及其对碳循环的调控. 第四届氮素生物地球化学循环学术论坛. 2023 年 3 月 31 日 -4 月 2 日. 中国北京. (特邀报告)
- 张宇. 万物有声, 生声不息. 第一届全国动物声学科学与应用大会. 2023 年 8 月 13-16 日. 中国成都 (特邀报告)



© BLUE CARE 项目工作组

人才培养

Education



MEL 海洋环境创新型人才 国际合作培养项目

在国家留学基金委创新型人才国际合作培养项目“国家重点实验室专项”支持下，实验室于 2020 年起设立该项目，每年向美国特拉华大学、德国亥姆霍兹基尔海洋研究中心、英国南安普顿大学及法国索邦大学滨海自由城海洋学实验室选派联合培养博士研究生、博士后及访问学者。本年度共 6 人获得资助。



韩郁焯在洁净室准备样品

项目培养博士研究生韩郁焯于 2023 年 3 月赴亥姆霍兹基尔海洋研究中心，在戴民汉教授、Zvi Steiner 研究员的联合指导下，进行“地中海与北太平洋亚热带流涡区中溶解钙和锶的源汇对比：与碳酸钙循环的关系”研究。现已基于前期参与的西太黑潮延伸体航次数据，完成了颗粒无机碳和颗石藻样品分析，量化了西北太平洋海区中颗石藻对碳酸钙生产的贡献，并探究不同环境下颗石藻生产的重要性。

项目联培博士研究生黄雷于 2023 年 6 月完成联合培养学习，在导师严晓海教授的指导下，进行“跨海盆热输送、相互作用以及对全球气候变化的影响”研究，相关成果已于 *Journal of Geophysical Research: Oceans* 期刊上发布。2022 年 2 月，黄雷参加海洋科学大会，做题为“Decadal cooling events in the south Indian Ocean during the Argo Era”的海报展示。



黄雷与导师严晓海

MEL 杰出博士后基金

实验室于2014年设立“杰出博士后基金”，吸引国内外优秀博士毕业生开展博士后研究，以此促进学科交叉，提高人才培养能力。2023年有10人入选，分别是彭玉琢、王茹、孙斌、崔闯、赵奇蕾、陈欣淙、沈雅威、房巍巍、何昌飞、卢焯。

本年度，余小龙、王智、张慕容、张超、王茹、沈雅威、陈欣淙获国家自然科学基金青年科学基金项目资助。张超参加2023年第八届青年地学论坛并作口头报告。王智参与指导“海丝学堂”本科生实习航次和台湾海峡及南海东北部底栖生物相关实习工作。

以同行者为师，以卓越者为鉴，
探海陆之变迁，寻陆海之和谐。
——孙斌

MEL聚集了众多海洋科学领域卓越的专家学者；在与他们交流的过程中，我对理论模型和前沿方法有了新的认识。这些知识和观点不断激发我的研究灵感！
——赵奇蕾

加入MEL以来，不管是科研还是研究项目都有重大进展，感谢我的合作导师薛惠洁教授以及MEL各位老师的帮助与支持。
——王茹

加入MEL后，我有了更多学习交流的机会。
——彭玉琢

MEL严谨求实的学术氛围使我受益匪浅，团队间良好交流的合作氛围让我感触颇深，对新入职人员的人文关怀也让我十分感动。
——崔闯

我相信，在MEL同行的支持和指导下，我能够更深入地理解海洋系统的复杂性，以及人类活动对海洋环境的影响。
——房巍巍

非常感谢MEL为我提供深造的机会。今后我会更加努力创新、踏实科研，为实验室发展添砖加瓦。
——何昌飞



王智博士后于2023.7.19-2023.8.11赴台湾海峡及南海东北部参加“海丝学堂”本科生实习航次



MEL 博士生奖学金

实验室于 2016 年设立“MEL 优秀博士生奖学金”，每年提供 10 个资助名额，旨在吸引国内外优秀生源，培养杰出的博士研究生。2023 年共有 5 名学生入选，已于 9 月入学。

MEL 良好的科研环境是我们思维碰撞的基础。在这里，我们学会了勇敢尝试、努力破题，不断自我肯定。

——丁彦丰，物理海洋学专业



入学以来，我感受到课题组老师及同学们相互关怀的善意。同时，MEL 为研究生打造了极佳的学术交流平台和很好的学术氛围，这将为接下来的研究打下坚实基础。

——陈基琛，海洋生物学专业



入学至今，我发现“拼搏”是身边的人、课题组及 MEL 的关键词。他们在有限时间内充分利用优秀的平台，为提升自我付出大量的精力。

——程小龙，环境科学专业



赖文典参加 NORC2023-4 台海冬季航段



张倩参加 International Conference on Canadian, Chinese and African Sustainable Urbanization 并作口头报告

MEL 研究生学术论坛



7月19-22日，第八届 MEL 研究生学术论坛在福建台湾海峡海洋生态系统国家野外科学观测研究站（东山实验场）召开。论坛以“深蓝无垠，求索无尽”为主题，聚焦海洋生物生理生态与气候变化、海洋地球化学过程与通量、海洋环境变化过程与效应、海洋动力过程及其环境效应、地质海洋与环境变迁、

智慧海洋与海洋资源开发健康海洋与可持续发展等议题，吸引来自香港科技大学、中国科学院海洋研究所、广东海洋大学、汕头大学以及厦门大学等 48 名研究生参与。MEL 研究生学术论坛全程由研究生主导，形式包括口头报告、海报展示、专题研讨会、学术沙龙、海洋科普等。论坛特设“苏峰专题”，为依托东山实验场开展的科研项目及其成果提供分享平台，同时邀请东山二中的 50 名中学生参与科普活动。



水环境科学高校联盟研讨会



10月23-27日，第十五届水环境科学研究高校联盟研讨会在香港大学召开，厦门大学地学部与香港大学理学院联合培养博士研究生张一弛担任会议组委会主要成员。研讨会以“改变世界，或改变自身 (Change our planet or change ourselves)”为主题，涉及海洋生态与生物多样性、生物地球化学、生态毒理学、环境风险评估及治理、水产养殖等领域，包含专家主旨报告、个人口头报告、讲习班等多种形式。来自厦门大学、台湾海洋大学、台湾中山大学、香港大学的 50 余名研究生参会，实现了海峡两岸暨香港师生的疫情开放后的首次线下交流。



“十五年来，水环境科学研究高校联盟致力于追踪水环境领域最新动态，并不断对全球环境面临的挑战做出思考与探索。未来，我们的青年将在相互了解、互相学习中持续探索、努力创新。”

——香港大学海洋研究所主任 Gray Williams 教授

实验室自 2004 年启动“MEL 海洋环境科学本科生暑期科研奖学金”，鼓励本科生开展科研训练，培养学生创新能力和学术精神。2023 年录取了来自英国剑桥大学、美国杜克大学、中山大学、中国海洋大学、厦门大学马来西亚分校等 17 所大学的 31 名本科生，在导师的指导下开展实验研究各类能力提升活动。



陈洪梅副教授参与指导项目科考航次

十年 · 我与 URF 的故事

人物介绍:

刘俊，北京师范大学自然科学高等研究院水科学研究中心副研究员，2014 年首届本科生暑期科研奖学金项目学员，研究方向为水环境修复材料、水环境原位在线监测传感技术及光解水制氢技术。2023 年获批国家重点研发青年科学家项目。



2014 年，我来到 MEL 参加第一届 URF 项目，在马剑老师的指导下开展“水浴加热过硫酸钠法测定海水溶解态总磷的研究”。这段时间里，我打下了良好的科研基础，开拓了对环境、海洋和生态学科相互融合、交叉发展的认知，并在马老师与袁东星老师的带领下对产学研一体有了初步的了解。在厦大的时间不长，我和来自五湖四海的朋友互帮互助，共同进步，同时也有幸融入了厦大环境化学研究组（Spring）团结友爱的大家庭中。

于我而言，厦大是第二母校，对我意义重大、影响深远。今年，我牵头的国家重点研发青年科学家项目“地下水卤代烃原位监测传感仪器研发”获批，这离不开厦门大学潘峰老师、马剑老师和李权龙老师团队的鼎力支持。

本科生科研的初步接触和集中锻炼是难得的机会，我鼓励和建议同学们积极参与，并在项目执行过程中认真对待，把握这样难得的机会和 MEL 的平台资源优势。



公众教育 Outreach



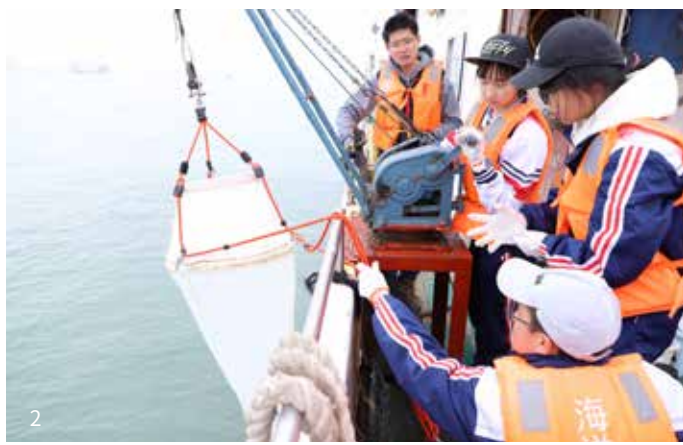


图 1：中国科学院海洋研究所研究员张鑫在海洋演说大会作分享

图 2：为厦门市槟榔中学组织九龙江口近岸科普实践航次

图 3：印度尼西亚国家研究与创新局、海洋研究中心初级研究员 Faisal Hamzah 在“海洋科学家职业生涯”沙龙上作分享

图 4：唐甜甜副教授在厦门市音乐学校带领学生进行趣味实验

72 篇推文

58 则
科普类视频

59,2000
单篇内容最高阅读量



2023 年，实验室依托中国海洋卓越教育伙伴计划（COSEE China）和 70.8 海洋媒体实验室，致力于成为海洋科学的优质传播者，搭建海洋与社会各界的桥梁。

与新媒体深度融合，与艺术创作有机结合

充分利用微信公众号、视频号、微博等平台，全年累计发布科普类推文 72 篇、科普类视频 58 则，单篇内容阅读量最高达 59.2 万。举办海洋演说大会暨舞剧《海上夫人》艺术分享会与“海洋传感器——海洋主题科普艺术展”，实现了“科技与艺术”、“科普与美育”融合的尝试。



图 5-6：戴民汉院士导读《盖娅：地球生命的新视野》

图 7：戴民汉院士参加《海洋公开课》

图 8-10：第十二届厦门大学海洋科学开放日的互动实验和科普展示

图 11：厦门华锐莱普顿学校学生洪婧涵在“海洋青年说”讲述自己的海洋故事

100+

链接科学家

50+

合作单位

300+

培养科普人才

连接更广阔的大众

时隔四年，第十二届海洋科学开放日再次回归线下，实验室开放、科学集市、展览游戏等形式丰富多彩，吸引超 1 万名公众参加。

联合福建省广播影视集团，协助制作全国首档海洋文化类知识交互节目《海洋公开课》，呼吁民众持续关心海洋。

拓展第六届厦门海洋环境开放科学大会及 2023 年数字孪生海洋国际峰会传播形式，实现会议“云端科普”。



12



13



14



15



16

关注海洋的未来

少年蓝色先锋培养计划在全球招募特色高中生，以科学导师专项培训海洋开发与保护解决方案及长期人才跟踪机制引领精英青少年走向海洋，培养未来海洋领袖。水生科学暑期生态营延续立体海洋教育模式，加深学员对全球变化下海洋环境问题的思考。“海洋科普星”计划优选全国各地优秀高校生，孵化以高校学生创新力、领导力发展为核心的科普人才培训机制。

海洋青年说聚集 8 名高中生代表，讲述新生代与海洋的故事，旨在提升下一代对全球变化下海洋环境问题的理解与思辨。

图 12：“少年蓝色先锋培养计划”高中生学员探索漳江口红树林生态系统

图 13：张雅棉工程师指导少蓝学生处理底栖生物实验样本

图 14：史大林教授在厦门一中与学生们探讨海洋对全球气候变化的影响

图 15：张慕容助理教授在五缘第二实验学校作台风知识科普讲座

图 16：赵秧秧博士在厦门市后田学校作海洋脱氧知识科普讲座

平台设施

Facilities



大型仪器与技术服务平台

“大型仪器与技术服务中心”（简称 COMET）于 2008 年成立，以“推动大型科研仪器的资源共享、提高仪器使用效率”为宗旨，为培养高层次人才，开展高水平科研项目提供高效率、高水准服务。COMET 致力于全面规范化管理实验室安全、仪器设备以及技术人员培训和考核，成功建立了大型仪器网上预约共享系统，真正实行仪器公开透明化管理。



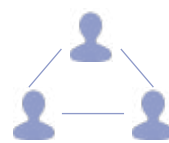
大型预约共享设备



注册会员



预约次数



用户数

2013年 **100+**

900+

10000+

400+

2023年 **210+**

3100+

14000+

1100+

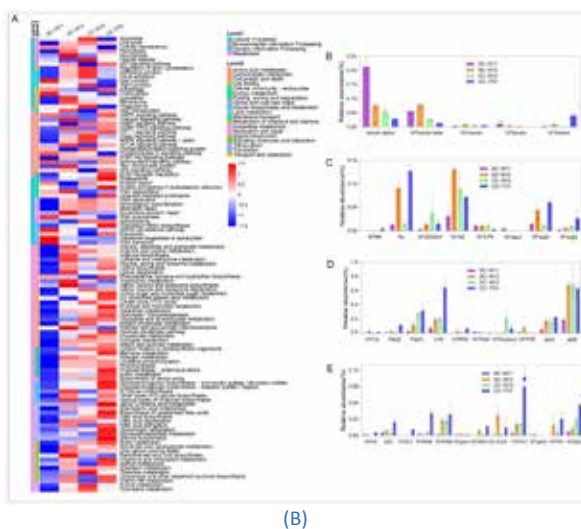
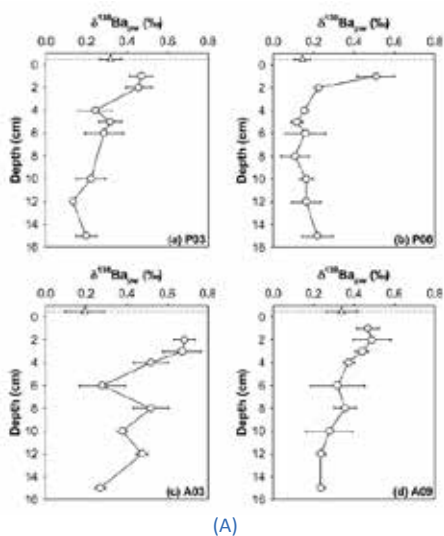
● 试剂智能化管理系统

COMET 于 2023 年 7 月完成实验室试剂智能化管理系统二期建设，并与第一期系统在软硬件上融合互通，形成了一套由智能试剂柜（以 RFID 技术为核心）、称重控制平台和试剂管理系统组成的高效管理方案：从试剂的“申购-入库-领用-储存-归还-报废”进行全生命周期的管理，确保全流程的完整性和可追溯性，构建智能化、储存安全化、业务标准化的管理模式，全面提升实验室在安全、成本和效率上的管理水平。



● 质谱中心

质谱中心于2009年成立，以“提高设备利用效率，发挥仪器多元功能，促进高端资源共享”为宗旨，面向海洋科学、环境科学、生态学等学科，以痕量元素及其同位素的分析测试、各类有机化合物的分离鉴定为主要工作内容，实时追踪国际前沿质谱技术，着力发展新的质谱分析方法，为来自国内外院校、研究所的科研人员提供高效率、高水平的服务。中心面积350 m²，配有12台质谱仪器和1间千级洁净实验室，总值近5000万元。截至2023年，支撑各级科研基金项目超150项，支撑发表论文超170篇，累计开办仪器培训课程160多次，指导培训师用户800多人。2023年，中心提供技术支撑取得的主要成果有：使用多接收电感耦合等离子体质谱仪精确测定河口沉积物的孔隙水中Ba的同位素比值（Cao et al., 2023, 图A），利用超高分辨率液相色谱-三合一质谱联用仪进行球形棕囊藻的宏蛋白质组分析（Cheng et al., 2023, 图B）等。

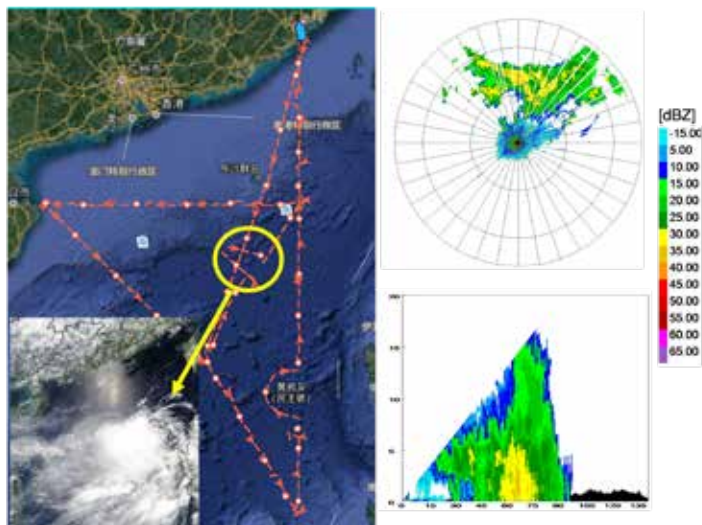


仪器名称及型号

- 电感耦合等离子体质谱仪，ICP-MS
- 多接收电感耦合等离子体质谱仪，MC-ICP-MS
- 液相色谱-基质辅助激光解吸电离飞行时间质谱仪，LC-MALDI-TOF/TOF
- 超高效液相色谱-串联四极杆质谱联用仪，HPLC-MS/MS
- 全二维气相色谱-飞行时间质谱仪，GC×GC-TOFMS
- 高分辨率扇形磁场电感耦合等离子质谱仪，HR-SF-ICP-MS
- 超高效液相色谱-四极杆串联飞行时间质谱仪，UPLC-Q/TOF
- 超高分辨率液相色谱-三合一质谱联用仪，UPLC-tribrid MS
- 续流式稳定同位素比值质谱仪，IRMS
- 高分辨率多接收器电感耦合等离子质谱仪，HR-MC-ICP-MS
- 四极杆电感耦合等离子质谱仪，ICP-MS
- 续流式稳定同位素比值质谱仪，IRMS

● 多普勒天气雷达助力海洋 - 大气交叉学科研究

天气雷达是科考船海上航行及海洋与大气科考作业的神兵利器之一。“嘉庚”号科考船主雷达为桅杆顶端的船载 C 波段双偏振多普勒天气雷达，是国家财政部仪器专项购置项目。该天气雷达是中小尺度天气过程的主要探测工具之一，能够获取科考船为中心 150 km 半径及海面上空 20 km 范围内的云、雨等天气目标的雷达回波、强度信息，实现位置的实时监测等，同时精确获取降水区中风场分布，准确提供流场分布信息和动态结构，以及降水率、冰雹含量、冰雹和雨滴大小及降水相态等信息，有助于科学家更深入地了解海上的降水机制和天气系统发展演变。该系统获取的数据资料有望用于改善气候模型和天气预报。



在南海季风综合调查航次中，借助多普勒天气雷达，“嘉庚”号在季风爆发前观测到较多的对流单体，在季风爆发后观测到台风外围雨带、组织化对流数次。这是多普勒天气雷达首次在科考航次中同其他海洋、气体观测科考设备综合联用，表明“嘉庚”号已完全具备对大气和海洋联合、实时的观测能力。

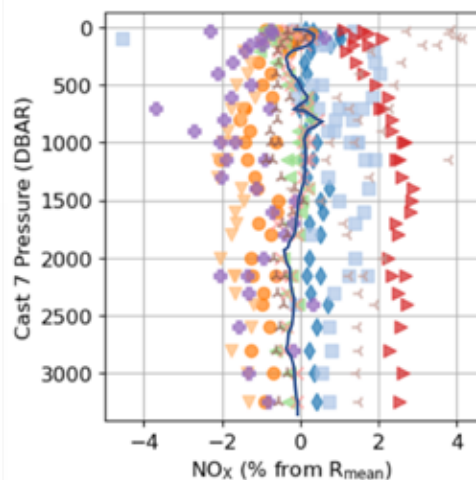
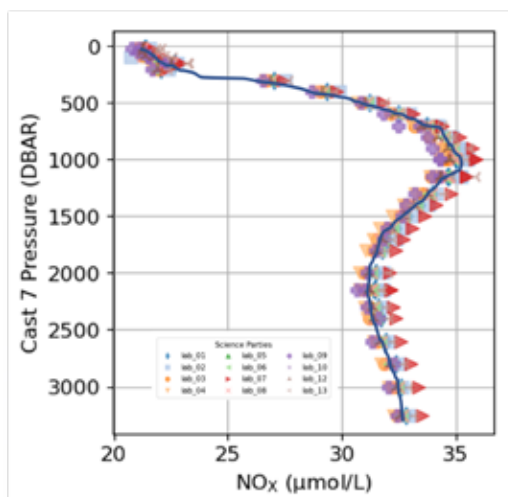


● 实验室团队参加 2023 年海水营养盐国际比对航次

海水营养盐的准确测定是深入探究海洋生态与生物地球化学的重要前提之一，对了解目前气候变化下的海洋健康至关重要。澳大利亚联邦科学与工业研究组织（CSIRO）依托“调查”号科考船（R/V Investigator），于 2023 年 6 月组织了 2023 海水营养盐国际比对航次（INIV_2023），旨在通过航次现场采集、比测不同站位的营养盐剖面样品，评估不同船载测量方法的潜在差异，减少国际实验室间的误差。INIV_2023 是目前国际海洋化学界首次大规模比对航次，综合反映了不同国家各个实验室从样品的采集、存储、预处理到测定等一系列复杂操作影响下的测量能力，突破了以往仅限于实验室间盲样比测的局限性。



为加强与其他全球海洋化学实验室的营养盐数据之可比性，提升自身海洋观测数据的国际权威性，实验室团队参与了本次国际比对航次，是我国首个参与现场大规模海水营养盐国际比对航次的单位。实验室团队顺利完成 CISRO 设计所有站位的比测任务，取得了良好的比测结果，与参与航次其它国际顶级化学海洋学机构，如美国加州大学斯克利普斯海洋研究所（UCSD-SIO）、英国班戈大学（Bangor University）、日本海洋-地球科技研究所（JAMSTEC）、荷兰皇家海洋研究所（NIOZ）、法国海洋开发研究院（IFRMER）、澳大利亚联邦科学与工业研究组织（CSIRO）等，具有高度可比性。本次国际比对航次增强了实验室海水营养盐测量能力在国际上的权威性；参与团队为提升全球海洋营养盐的测量手段与全球营养盐数据的质量与可比性做出了卓越贡献。



以所有实验室测定结果最佳的 SR03-27(Cast7) 站点 NO_x 剖面分布图为例，MEL 剖面分布曲线 (Lab8) 与各个实验室总体集中的分布曲线吻合，同时深层基本处于最中间的位置。从与稳健平均值的偏差分布图上也可以看出，所有站点 MEL 的测定结果基本靠近了 0% 的直线。

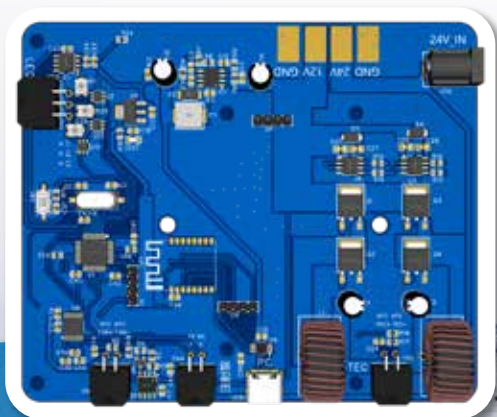
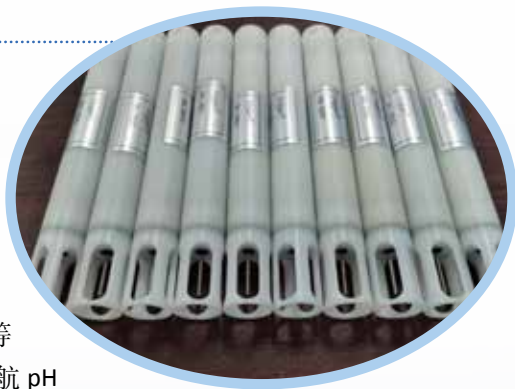


© CSIRO

● 仪器研制与改造

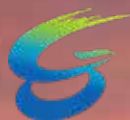
2023年海洋观测技术与数据中心研发一款自容式海洋现场海水温度记录仪。该温度记录仪具有高精度、小体积、易操作、成本低等优点，作为海洋观测中最常用的测量仪器，能够广泛的应用于海洋浮标、潜标、海床基等观测平台，长时间连续观测海洋现场水温分布和变化，可平行替代目前现有的该类型进口仪器。

海洋仪器研发中心提供机械设计、嵌入式软硬件开发和系统集成等技术服务，2023年已实现近岸/养殖区轻便型浮标系统集成、原位和走航pH的系统集成、走航营养盐硬件改造和海洋激光雷达的机械设计和嵌入式硬件设计。

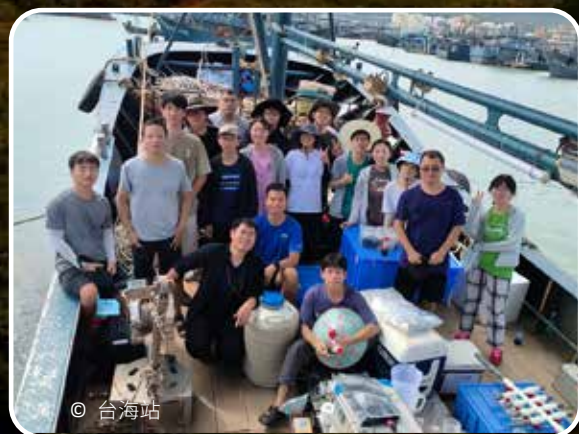


为满足近岸养殖区域、河口和河口交汇区域定点碳循环监测的需要，研发中心自研设计了一款高使用容积的超小型浮标系统，可同时实现 $p\text{CO}_2$ 、CTD、DO、叶绿素、硝酸盐、pH和气象等传感器的数据采集。该浮标系统具有便携运输安装和布放、大使用空间和长续航等优点。





2023年，福建台湾海峡海洋生态系统国家野外科学观测研究站（简称台海站）组织开展台湾海峡上升流、东山湾、漳江口三个观测区冬、春、夏、秋季度航次观测，同时开展了东山湾上升流专项航次观测。完成漳江口红树林和盐沼样方观测各1次，滨海湿地鸟类、鱼类和底栖动物观测各2次。东山实验场新增一套阳光紫外辐射观测系统，长期连续观测共获取观测数据约30 GB；海底有缆珊瑚在线观测系统获取东山造礁珊瑚视频超2500小时。



© 台海站

东山湾上升流航次



© 台海站

厦门大学环境与生态学院、海洋与地球学院、生命科学学院的本科生在站内开展生产实习活动达517人·天

台海站示范服务和科普传播成效显著。毛勇团队建立了一整套对虾表型精准智能测评技术，王文卿团队开展福建罗源红树林科普及全国红树林生态养殖培训，东山实验场技术团队通过潜水调查、海底珊瑚观测系统助力东山海域珊瑚保护。



© 杨位迪

© 程文志

对虾育种实验工作

台海站数据库建设、数据管理与数据应用服务：

- 厦门大学海洋云暨台海站数据中心门户网站
- 生态环境数据共享服务平台
- 海岸带遥感数据库系统
- 三沙湾大黄鱼养殖数字孪生系统
- 厦门湾数字孪生系统



© 杨志峰

人员情况

Personnel

人才计划、晋升及奖项

- 洪海征获聘“长江学者”特聘教授
- 李姜辉入选国家青年高层次人才计划（海外）
- 沈渊获批国家自然科学基金优秀青年科学基金项目
- 张增凯获批“万人计划”青年拔尖人才
- 陈鹭真入选厦门大学南强重点岗位教授
- 耿旭朴晋升为教授级高级工程师
- 郭香会晋升为厦门大学教授
- 罗亚威晋升为厦门大学教授
- 王克坚科研成果“海洋动物新型抗菌肽的发现与产品创制及其示范应用”获亚太海洋生物技术学会首届“海洋生物技术奖（学术或工业界）”
- 戴民汉获厦门大学“南强杰出贡献奖”
- 焦念志获自然资源部 2022 年度“海洋人物”荣誉称号
- 焦念志、张瑶团队参与合作的科研成果“海洋人工上升流技术及应用”获浙江省技术发明奖一等奖
- 王程团队科研成果“面向智能网联汽车的三维环境感知关键技术及产业化”获 2022 福建省科技进步二等奖
- 王克坚团队科研成果“海洋动物新型抗菌肽的研究与利用”获第二十五届中国国际高新技术成果交易会优秀产品奖
- 江毓武参与合作的研究成果“潮间带贝类地理分布格局及适应机制研究”获 2022 年海洋科学技术奖一等奖
- 李忠平参与合作的研究成果“海洋激光遥感的关键技术与应用”获 2022 年度海洋科学技术奖特等奖
- 刘涛参与合作的研究成果“南黄海绿潮发生机制与源头防控技术体系”与“中国南海常见大型海藻资源研究的理论与实践”分别获 2022 年度自然资源部科学技术奖科技进步奖一等奖、2022 年度海南省自然科学奖二等奖



科研人员



曹玲 博士
教授

2012 年获得美国密西根大学博士学位，先后在美国密西根大学、斯坦福大学从事博士后研究（2012-2016），曾任美国斯坦福大学副研究员（2016-2017）、上海交通大学特别研究员（2017-2023），于 2023 年 3 月入职厦门大学。研究领域涉及可持续渔业系统和海洋生态综合管理等前沿社会与科学问题。以第一或通讯作者身份在国际顶级综合期刊 *Nature* 及子刊、*Science* 和 *PNAS* 发表文章。



修鹏 博士
南强重点岗位教授

2008 年获得中国海洋大学博士学位，先后在美国缅因大学（2008-2009），美国国家大气研究中心（2009-2010）从事博士后相关工作，担任美国缅因大学研究科学家（2010-2014），广东省海洋遥感重点实验室主任（2022-2023），于 2023 年 7 月获聘厦门大学南强重点岗位教授，主要从事海洋生态系统动力学，碳循环与气候变化，海洋动力 - 生态 - 生物地球化学耦合模拟的研究与教学工作。



黄毅彬 博士
副教授

2020 年获得厦门大学博士学位后，赴美国杜克大学进行联合培养（2018-2020 年），毕业后前往美国加利福尼亚大学圣克鲁斯分校、美国国家海洋与大气管理局、美国夏威夷大学从事博士后研究（2020-2023 年），于 2023 年 10 月入职厦门大学。黄毅彬博士研究聚焦于海洋生物泵关键固碳过程速率的调控机制、演变趋势以及相关生物地球化学过程效应。

MEL 杰出博士后



孙斌

可持续生态学、海岸带生物多样性的
保护与可持续利用



王茹

物理海洋学、海洋动力学、海洋多尺度动
力过程及其相互作用



赵奇蕾

休闲渔业、海洋可持续发展



彭玉琢

北极海冰减少对气候系统的影响



崔闯

甲壳动物免疫学、水生生物病毒学



沈雅威

海洋贝类环境胁迫响应与遗传育种



陈欣淙

滨海湿地生态学、入侵生态学



房巍巍

生态系统对台风的响应、海洋数值模拟，
海洋生态模型



何昌飞

海洋微生物生态学、海洋碳循环、
基因组、宏基因组学



卢焯

海洋微生物生态学、微生物基因组学

研究员



陈奇 博士
助理研究员

微生物转化活性溶解有机碳的分子机制研究



高霄龙 博士
研究员

海洋贝类行为生态学



袁忠伟 博士
助理研究员

营养盐的生物地球化学

研究助理



白雪



陈露瑶



邓章涵



高睿希



洪筱



刘咏琪



罗辉



孙静月



孙亚飞

研究助理



吴林妮



肖诗子



徐路



徐明



薛博文



杨宇童



余锦萍



余镒琦



岳新利



张鸿艺



钟文静

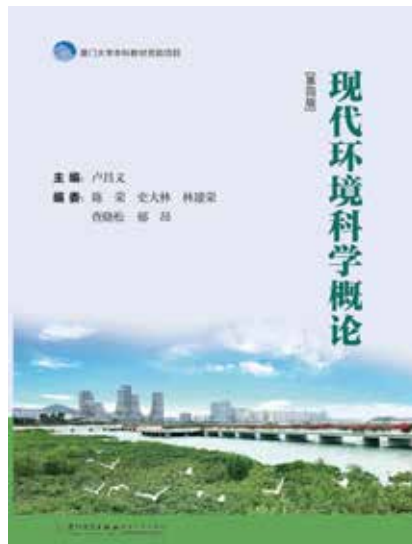
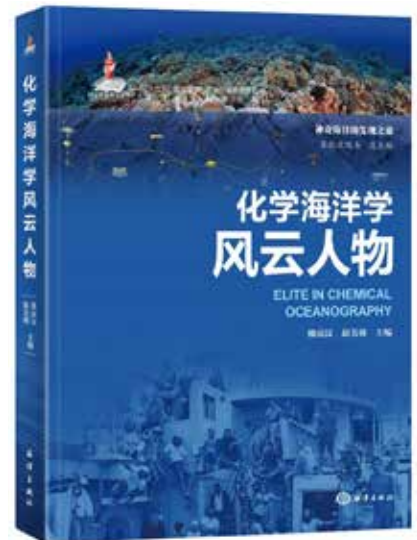
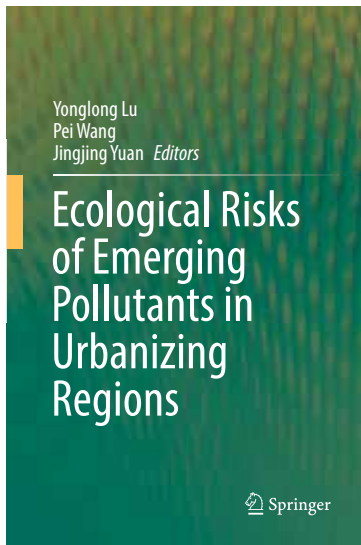


朱劲



论文专著

Publications



- Yonglong Lu, Pei Wang, Jingjing Yuan (Editors). 2023. Ecological Risks of Emerging Pollutants in Urbanizing Regions. Springer
- 中国学科及前沿领域发展战略研究（2021—2035）项目组. 2023. 中国海洋科学 2035 发展战略. 科学出版社
专家组、工作组及编写组：焦念志，戴民汉，刘志宇，王大志，史大林，黄邦钦，修鹏等
- 戴民汉；赵美训（著）. 2023. 化学海洋学风云人物. 海洋出版社
- 袁东星；李炎；洪华生（著）. 2023. 春潺入海——厦门大学环境科学的成长. 厦门大学出版社
- 卢昌义. 2023. 现代环境科学概论（第四版）. 厦门大学出版社
编委：陈荣，史大林，林建荣，查晓松，郁昂
- 姜玉环；张继伟；薛雄志；潘新春（著）. 2023. 海洋生物多样性全球治理与区域实践研究. 海洋出版社

期刊论文

An, XP; Lei, HJ; Lu, YL*; Xie, XW; Wang, P; Liao, JM; Liang, Z; Sun, B; Wu, ZY. Per- and polyfluoroalkyl substances (PFASs) in water and sediment from a temperate watershed in China: Occurrence, sources, and ecological risks. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 890, 164207

An, Z; Chen, FY; Hao, H; Xiong, M; Peng, H; Sun, H; Wang, KJ*. Growth-promoting effect of antimicrobial peptide Scy-hepc on mariculture large yellow croaker *Larimichthys crocea* and the underlying mechanism. **FISH & SHELLFISH IMMUNOLOGY**. 2023, 134, 108649

Aslanian, D*; Pellen, R; Rabineau, M; Moulin, M; Leroux, E; Delaunay, A; Baby, G; Courgeon, S; Linol, B; Suc, JP; Popescu, S; Fauquette, S; Mazza, PPA; Couette, S; Delpero, M; Huck, T; Penven, P; Le Hir, T; Zhang, YR; Génin, F; Masters, J. The postulation of intermittent land bridges as an explanation for reiterated colonization events of Madagascar by African vertebrates: An in-depth review and novel insights in honour of the late Judith Masters and Fabien Genin. **EARTH-SCIENCE REVIEWS**. 2023, 246, 104585

Bai, XL; Lamb, KG; Liu, ZY*; Hu, JY*. Intermittent generation of internal solitary-like waves on the northern shelf of the South China Sea. **GEOPHYSICAL RESEARCH LETTERS**. 2023, 50, e2022GL102502

Bai, YL; Chen, XT; Qu, A; Liu, Y; Zhao, J; Ke, QZ; Pu, F; Wu, LN; Chi, HS; Gong, H; Zhou, T; Xu, P*. Identification and expression analysis of lncRNAs reveal the immune mechanism of visceral white-nodules disease resistance in large yellow croaker. **MARINE BIOTECHNOLOGY**. 2023, 25: 57-69

Bai, YL; Liu, Y; Qu, A; Wang, JY; Zhao, J; Ke, QZ; Chen, XT; Pu, F; Wu, LN; Xu, P; Zhou, T*. Dual RNA-seq reveals a host-pathogen interaction transcriptional regulation pattern between *Cryptocaryon irritans* and large yellow croaker (*Larimichthys crocea*). **AQUACULTURE**. 2023, 565, 739104

Bao, HY*; Niggemann, J; Du, MG; Zhao, WQ; Huang, DK; Yi, YB; Yang, JYT; Dittmar, T; Kao, SJ. Deciphering sources and processing of dissolved black carbon in coastal seas. **LIMNOLOGY AND OCEANOGRAPHY**. 2023, 68: 2562-2575

Bao, HY*; Wu, Y*; Zhan, XQ; Wang, XN; Spencer, RGM; Hernes, PJ; Feng, XJ; Lee, LC; Huang, JC; Zhang, JJ; Zhao, HW; Kao, SJ; Zhang, J. Global riverine export of dissolved lignin constrained by hydrology, geomorphology, and land-cover. **GLOBAL BIOGEOCHEMICAL CYCLES**. 2023, 37, e2022GB007607

Bermejo, R*; Green-Gavrielidis, L; Gao, G. Editorial: Macroalgal blooms in a global change context. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1204117

Bijun, L; Lin, C; Mengzhen, Y; Zhou, J; Yaguo, X; Peng, X*. Integrative transcriptomics and metabolomics analysis of body color formation in the common carp. **AQUACULTURE**. 2024, 579, 740143

Bo, GY; Fang, TY; Chen, LD; Gong, ZB; Ma, J*. Shipboard determination of arsenite and total dissolved inorganic arsenic in estuarine and coastal waters with an automated on-site-applicable atomic fluorescence spectrometer. **TALANTA**. 2024, 266, 125082

Cai, LL; Chen, Y; Xiao, SW; Liu, RY; He, MQ; Zhang, R; Zeng, QL*. Abundant and cosmopolitan lineage of cyanopodoviruses lacking a DNA polymerase gene. **ISME JOURNAL**. 2023, 17: 252-262

Cai, LL; Tian, Y; Li, ZQ; Yang, YL; Ai, CX*; Zhang, R*. A broad-host-range lytic phage vB_VhaS-R18L as a candidate against vibriosis. **FRONTIERS IN MICROBIOLOGY**. 2023, 14, 1191157

Cai, LL; Weinbauer, MG; Xie, L; Zhang, R*. The smallest in the deepest: the enigmatic role of viruses in the deep biosphere. **NATIONAL SCIENCE REVIEW**. 2023, 10, nwad009

Cai, LL; Xu, B; Li, HF; Xu, YL; Wei, W; Zhang, R*. Spatiotemporal shift of T4-like phage community structure in the three largest estuaries of China. **MICROBIOLOGY SPECTRUM**. 2023, 11, e05203-22

Cai, RH*; Jiao, NZ*. Recalcitrant dissolved organic matter and its major production and removal processes in the ocean. **DEEP-SEA RESEARCH PART I-OCEANOGRAPHIC RESEARCH PAPERS**. 2023, 191, 103922

Cao, L*; Halpern, BS; Troell, M; Short, R; Zeng, C; Jiang, ZY; Liu, Y; Zou, CX; Liu, CY; Liu, SR; Liu, XW; Cheung, WWL; Cottrell, RS;

DeClerck, F; Gelcich, S; Gephart, JA; Godo-Solo, D; Kaull, JI; Micheli, F; Naylor, RL; Payne, HJ; Selig, ER; Sumaila, UR. Vulnerability of blue foods to human-induced environmental change. **NATURE SUSTAINABILITY**. 2023, 6: 1186-1198

Cao, LX; Bi, DQ; Fan, W; Xu, JT; Beardall, J; Gao, KS; Wu, YP*. Warming exacerbates the impacts of ultraviolet radiation in temperate diatoms but alleviates the effect on polar species. **PHOTOCHEMISTRY AND PHOTOBIOLOGY**. 2023, DOI: 10.1111/php.13844

Cao, X; Yu, ZX; Xie, MW; Pan, K; Tan, QG*. Higher risks of copper toxicity in turbid waters: Quantifying the bioavailability of particle-bound metals to set site-specific water quality criteria. **ENVIRONMENTAL SCIENCE & TECHNOLOGY**. 2023, 57: 1060-1070

Cao, X; Zhong, GB; Pan, K; Qian, J; Xie, MW; Chen, R; Liao, YY; Tan, QG*. Interspecies calibration for biomonitoring metal contamination in coastal waters using oysters and mussels. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 883, 163703

Cao, ZM*; Rao, XT; Li, YT; Hong, QQ; Wei, L; Yu, Y; Ehlert, C; Liu, B; Siebert, C; Hathorne, EC; Zhang, ZL; Scholz, F; Kasten, S; Frank, M. Stable barium isotope fractionation in pore waters of estuarine sediments. **GEOCHEMISTRY GEOPHYSICS GEOSYSTEMS**. 2023, 24, e2023GC010907

Chen, BH; Bai, YL; Wang, JY; Ke, QZ; Zhou, ZX; Zhou, T; Pan, Y; Wu, RX; Wu, XF; Zheng, WQ; Xu, P*. Population structure and genome-wide evolutionary signatures reveal putative climate-driven habitat change and local adaptation in the large yellow croaker. **MARINE LIFE SCIENCE & TECHNOLOGY**. 2023, 5: 141-154

Chen, BH; Zhang, HC; Lin, D; Ye, JN; Tang, K*. *Thermobacterium salinum* gen. nov., sp. nov., a novel member of the family *Flavobacteriaceae* isolated from a hydrothermal zone. **INTERNATIONAL JOURNAL OF SYSTEMATIC AND EVOLUTIONARY MICROBIOLOGY**. 2023, 73, DOI: 10.1099/ijsem.0.006166

Chen, CP*; Hu, X; Gao, YH*; Liang, JR; Sun, L. Ion fluxes involved in the adaptation of the estuarine diatom *Coscinodiscus centralis* ehrenberg to salinity stress. **INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES**. 2023, 24, 13683

Chen, HH; Wang, YT*; Xiu, P*; Yu, Y; Ma, WT; Chai, F. Combined oceanic and atmospheric forcing of the 2013/14 marine heatwave in the northeast Pacific. **NPJ CLIMATE AND ATMOSPHERIC SCIENCE**. 2023, 6, 3

Chen, HL; Zhang, R; Liu, F; Shao, CW; Liu, FF; Li, WD; Ren, JD; Niu, BL; Liu, HP*; Lou, B*. The chromosome-level genome of *Cherax quadricarinatus*. **SCIENTIFIC DATA**. 2023, 10, 313

Chen, HL; Zhang, R; Liu, F; Shao, CW; Liu, FF; Li, WD; Ren, JD; Niu, BL; Liu, HP*; Lou, B*. The chromosome-level genome of *Cherax quadricarinatus*. **SCIENTIFIC DATA**. 2023, 10, 215

Chen, JC; Rashid, A; Wang, SQ; Liu, XJ*; Gao, G*. Metabolisms and multiple functions of laminaran in marine algae: A critical review. **CARBOHYDRATE POLYMERS**. 2024, 327, 121652

Chen, JW; Zhang, H; Yang, MQ; Wang, R; Zhang, HL; Ren, Z; Wang, QY; Liu, YB; Chen, J; Ji, JiY; Zhao, J; He, GL; Guo, JX; Zhu, KY; Yang, XM; Ma, H; Wang, CC*;Huang, J*. Genomic formation of Tibeto-Burman speaking populations in Guizhou, Southwest China. **BMC GENOMICS**. 2023, 24, 672

Chen, LD; Lin, QL; Yuan, DX; Gong, ZB*. Simultaneous measurement of trace levels of Hg, As, Sb, and Bi in coastal seawater with a multichannel chemical vapor generation atomic fluorescence spectrometer. **ANALYTICAL CHEMISTRY**. 2023, 95: 15621-15627

Chen, ML; Boyle, EA; Jiang, S; Liu, Q; Zhang, J; Wang, XF; Zhou, KB*. Dissolved lead (Pb) concentrations and Pb isotope ratios along the East China Sea and Kuroshio transect-evidence for isopycnal transport and particle exchange. **JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS**. 2023, 128, e2022JC019423

Chen, MM, Li, YF; Tang, K; Hu, AY; Fan, W; Wang, DL; Arthur, CT; Zhang, Y*. Highly diverse diazotrophs drive high N₂ fixation rates in a shallow submarine hydrothermal system. **FUNDAMENTAL RESEARCH**. 2023, DOI: 10.1016/j.fmr.2023.07.009

Chen, P; Chen, HR; Chen, K; Ke, HW; Cai, MG*. Quantitative assessment of the response of seawater environmental quality to marine protection policies under regional economic development --A case study of Xiamen Bay, China. **MARINE ENVIRONMENTAL RESEARCH**. 2023, 186, 105934

Chen, Q; He, BW; Lin, TH*; Jiao, NZ; Zheng, Q. *Shimia ponticola* sp. nov., an aerobic anoxygenic photoheterotrophic bacterium, isolated from surface seawater in the South China Sea.

INTERNATIONAL JOURNAL OF SYSTEMATIC AND EVOLUTIONARY MICROBIOLOGY. 2023, 73, 5859

Chen, SG*; Gan, SM; Hu, LB; Bi, R; Gao, Y. Effects of typical marine environmental factors on the bioluminescence intensity of individual *Noctiluca scintillans*. **OPTICS EXPRESS.** 2023, 31: 12114-12127

Chen, XH; Yang, MK; Li, YY; Xie, ZX; Zhang, SF; Töpel, M; Amin, SA; Lin, L; Ge, F*; Wang, DZ*. Improving the genome and proteome annotations of the marine model diatom *Thalassiosira pseudonana* using a proteogenomics strategy. **MARINE LIFE SCIENCE & TECHNOLOGY.** 2023, 5: 102-115

Chen, XW; Hu, C; Wei, W; Yang, YL; Weinbauer, MG; Li, HB; Ren, SY; Ma, RJ; Huang, YB; Luo, TW; Jiao, NZ*; Zhang, R*. Virus-host interactions drive contrasting bacterial diel dynamics in the ocean. **RESEARCH.** 2023, 6, 213

Chen, XX; Cai, RH*; Zhuo, XC; Chen, QR; He, C; Sun, J; Zhang, Y; Zheng, Q; Shi, Q; Jiao, NZ*. Niche differentiation of microbial community shapes vertical distribution of recalcitrant dissolved organic matter in deep-sea sediments. **ENVIRONMENT INTERNATIONAL.** 2023, 178, 108080

Chen, YC; Qiu, WL; Zhang, WB; Zhang, JR; Chen, RS; Chen, FY*; Wang, KJ*. A novel antimicrobial peptide Sp-LECI_n with broad-spectrum antimicrobial activity and anti-*Pseudomonas aeruginosa* infection in zebrafish. **INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.** 2023, 24, 267

Chen, YN; Chen, LZ; Zhang, ZY; Cai, TL*. Tidal creeks mediate micro-climate within artificial mangroves at their northmost boundary in China. **ECOLOGICAL ENGINEERING.** 2023, 192, 106970

Chen, ZN; Zhang, ZK*; Feng, T*; Liu, DY. What drives the temporal dynamics and spatial differences of urban and rural household emissions in China. **ENERGY ECONOMICS.** 2023, 125, 106849

Cheng, HM; Zhang, SF; Ning, XL; Peng, JX; Li, DX; Zhang, H; Zhang, K; Lin, L; Liu, SQ; Smith, WO; Wang, DZ*. Elucidating

colony bloom formation mechanism of a harmful alga *Phaeocystis globosa* (Prymnesiophyceae) using metaproteomics. **SCIENCE OF THE TOTAL ENVIRONMENT.** 2023, 869, 161846

Cheng, P*. Lateral circulation in an elongated curved tidal channel. **JOURNAL OF PHYSICAL OCEANOGRAPHY.** 2023, 53: 1183-1198

Cruz-Silva, E*; Harrison, SP; Prentice, IC; Marinova, E; Bartlein, PJ; Renssen, H; Zhang, YR. Pollen-based reconstructions of Holocene climate trends in the eastern Mediterranean region. **CLIMATE OF THE PAST.** 2023, 19: 2093-2108

Cui, HT; Lu, YL*; Zhou, YQ; He, GZ; Song, S; Yang, SJ; Wang, R; Wang, SY; Han, GX; Yi, XJ; Du, D; Stenseth, NC; Hessen, DO; Chen, DL; Cheng, YY. Carbon flow through continental-scale ground logistics transportation. **ISCIENCE.** 2023, 26, 105792

Dai, GY; Wang, GZ*; Li, Q; Jiang, WZ; Zhang, F. Optimization of enrichment and pretreatment of low-activity radium isotopes in the open ocean. **ACTA OCEANOLOGICA SINICA.** 2023, 42: 171-177

Dai, HJ; Yin, MM; Zhang, SM; Wei, J; Jiao, TH; Chen, QM; Chen, QS; Chen, X; Oyama, M; Chen, XM*. A paper-based photoelectrochemical aptsensor using near-infrared light-responsive AgBiS₂ nanoflowers as probes for the detection of *Staphylococcus aureus* in pork. **TALANTA.** 2024, 266, 125128

Dai, MH*; Luo, YW*; Achterberg, EP; Browning, TJ; Cai, YH; Cao, ZM; Chai, F; Chen, BZ; Church, MJ; Ci, DJ; Du, CJ; Gao, KS; Guo, XH; Hu, ZD; Kao, SJ; Laws, EA; Lee, ZP; Lin, HY; Liu, Q; Liu, X; Luo, WC; Meng, FF; Shang, SL; Shi, DL; Saito, H; Song, LP; Wa. Upper ocean biogeochemistry of the oligotrophic North Pacific subtropical gyre: from nutrient sources to carbon export. **REVIEWS OF GEOPHYSICS.** 2023, 61, e2022RG000800

Dai, MH*; Zhao, YY*; Chai, F; Chen, MR; Chen, NW; Chen, YM; Cheng, DY; Gan, JP; Guan, DB; Hong, YY; Huang, JL; Lee, YT; Leung, KMY; Lim, PE; Lin, SJ; Lin, X; Liu, X; Liu, ZQ; Luo, YW; Meng, FF; Sangmanee, C; Shen, Y; Uthaiapan, K; Talaat, WIAW; Wan, XHS; W. Persistent eutrophication and hypoxia in the the coastal ocean. **CAMBRIDGE PRISMS: COASTAL FUTURES.** 2023, 1: 1-28

Deng, WC*; Zhao, ZH; Li, YF; Cao, RG; Chen, MM; Tang, K; Wang,

- DL; Fan, W; Hu, AY; Chen, GC; Chen, CTA; Zhang, Y*. Strategies of chemolithoautotrophs adapting to high temperature and extremely acidic conditions in a shallow hydrothermal ecosystem. *MICROBIOME*. 2023, 11, 270
- Ding, S; Wang, FF; Yue, H; Peng, SY; Ruan, QZ; Lin, JL; Cao, WZ*. Downward trends in streamflow and sediment yield associated with soil and water conservation in the Tingjiang River Watershed, Southeast China. *WATER*. 2023, 15, 212
- Du, D; Lu, YL*; Li, QF; Zhou, YQ; Cao, TZ; Cui, HT; Han, GX. Estimating industrial process emission and assessing carbon dioxide equivalent of perfluorooctanoic acid (PFOA) and its salts in China. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 867, 161507
- Fan, JL; Li, FT; Hu, SY; Gao, KS; Xu, JT*. Larger diatoms are more sensitive to temperature changes and prone to succumb to warming stress. *LIMNOLOGY AND OCEANOGRAPHY*. 2023, 68: 2512-2528
- Fang, ZM; Zhang, K; Yang, WF*; Chen, M; Stubbins, A*; Hu, HN. Top-down control over dissolved organic carbon in the bottom water of the Weddell Sea and its implication for the continental shelf pump. *PROGRESS IN OCEANOGRAPHY*. 2023, 219, 103145
- Feng, Y; Xiong, YL; Hall-Spencer, JM; Liu, KL; Beardall, J; Gao, KS; Ge, JK; Xu, JT; Gao, G*. Shift in algal blooms from micro- to macroalgae around China with increasing eutrophication and climate change. *GLOBAL CHANGE BIOLOGY*. 2023, 30, e17018
- Fu, HJ; Jian, X*; Pan, HQ. Bias in sediment chemical weathering intensity evaluation: A numerical simulation study. *EARTH-SCIENCE REVIEWS*. 2023, 246, 104574
- Fu, Y*; Lozier, MS*; Biló, TC; Bower, AS; Cunningham, SA; Cyr, F; de Jong, MF; deYoung, B; Drysdale, L; Fraser, N; Fried, N; Furey, HH; Han, GQ; Handmann, P; Holliday, NP; Holte, J; Inall, ME; Johns, WE; Jones, S; Karstensen, J; Li, FL; Pacini, A; Pickart. Seasonality of the meridional overturning circulation in the subpolar North Atlantic. *COMMUNICATIONS EARTH & ENVIRONMENT*. 2023, 4, 181
- Gan, Y; Wang, Y; Yu, F; Xiao, QZ; Luo, X; Han, ZF; Ke, JW; You, WW*; Ke, CH*. Genotype by environment interactions for productive traits of purebred and crossbred abalone strains under different rearing modes. *AQUACULTURE*. 2023, 563, DOI: 10.1016/j.aquaculture.2022.738966
- Gao, KL; Tang, YH; Chen, DL*; Wang, J; Duan, AM. Influence of Arctic sea ice and Interdecadal Pacific Oscillation on the recent increase of winter extreme snowfall in Northeast China. *ATMOSPHERIC RESEARCH*. 2023, 295, 107030
- Gao, KL; Wang, J; Chen, DL; Hu, WT; Zhang, YJ*; Duan, AM; Zhang, XX. Synoptic climate settings and moisture supply for the extreme heavy snowfall in northern China during 6-8 November 2021. *JOURNAL OF METEOROLOGICAL RESEARCH*. 2023, 37: 75-89
- Gao, XL; Lyu, MX; Zhang, M; Lin, SH; Ke, CH*. Structural characteristics of orexin receptor type 2 in Pacific abalone and its diurnal expression pattern after fasting and re-feeding. *INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES*. 2023, 229: 873-884
- Gao, XL; Zhang, M; Lin, SH; Lyu, M; Luo, X; You, WW; Ke, CH*. Reproduction strategy of nocturnal marine molluscs: Running for love. *INTEGRATIVE ZOOLOGY*. 2023, 18: 906-923
- Gao, Y; Schmitt, FG; Hu, JY; Huang, YX*. Probability-based wind-wave relation. *FRONTIERS IN MARINE SCIENCE*. 2023, 9, 1085340
- Geng, XC; Jia, XL; Liu, LQ; Ma, SP; Liu, HB*; Liu, T*. Gametophyte phase of commercial kelps, the potential food supplements for essential fatty acids and n-3 polyunsaturated fatty acids. *JOURNAL OF FOOD SCIENCE*. 2023, 88: 2411-2424
- Gong, HB; Hu, WY; Huang, QT; Wang, WL; Pu, SH; Xie, Y; Liu, GK*; Tian, ZQ*. Highly sensitive qualitative analysis of electronegative molecules based on surface-enhanced Raman spectroscopy. *CHINESE JOURNAL OF ANALYTICAL CHEMISTRY*. 2023, 51: 1213-1221
- Goudsmit-Harzevoort, B*; Lansu, A; Baatsen, MLJ; von der Heydt, AS; de Winter, NJ; Zhang, YR; Abe-Ouchi, A; de Boer, A; Chan, WL; Donnadiou, Y; Hutchinson, DK; Knorr, G; Ladant, JB; Morozova, P; Niezgodzki, I; Steinig, S; Tripathi, A; Zhang, ZS; Zhu, J; Zi. The relationship between the global mean deep-sea and surface temperature during the early Eocene. *PALEOCEANOGRAPHY AND PALEOCLIMATOLOGY*. 2023, 38,

e2022PA004532

Gu, JT; Zhang, Y; Tuo, P; Hu, ZY; Chen, SL*; Hu, JY. Surface floating objects moving from the Pearl River Estuary to Hainan Island: An observational and model study. **JOURNAL OF MARINE SYSTEMS**. 2024, 241, 103917

Gu, LD; Zhang, HX; Ding, YZ; Zhang, Y; Wang, DL*; Liu, JW*. Capture-SELEX for a short aptamer for label-free detection of salicylic acid. **SMART MOLECULES**. 2023, 1, e20230007

Gu, LD; Zheng, JJ; Zhang, Y; Wang, DL*; Liu, JW*. Capture-SELEX of DNA aptamers for sulforhodamine B and fluorescein. **CHEMISTRY-A EUROPEAN JOURNAL**. 2023, 29, e202302616

Gu, XX; Qiao, PY; Krauss, KW; Lovelock, CE; Adams, JB; Chapman, SK; Jennerjahn, TC; Lin, QL; Chen, LZ*. Changes in mangrove blue carbon under elevated atmospheric CO₂. **ECOSYSTEM HEALTH AND SUSTAINABILITY**. 2023, 9, 33

Gu, Y*; Tang, S; Yi, J; Luo, SH; Li, CY; Liu, GK; Yan, JW; Li, JF; Mao, BW; Tian, ZQ*. Nanostructure-based plasmon-enhanced Raman spectroscopic strategies for characterization of the solid-electrolyte interphase: Opportunities and challenges. **JOURNAL OF PHYSICAL CHEMISTRY C**. 2023, 127: 13466-13477

Gu, Y; You, EM; Lin, JD; Wang, JH; Luo, SH; Zhou, RY; Zhang, CJ; Yao, JL; Li, HY; Li, G; Wang, WW; Qiao, Y; Yan, JW; Wu, DY; Liu, GK; Zhang, L; Li, JF; Xu, R; Tian, ZQ*; Cui, Y*; Mao, BW*. Resolving nanostructure and chemistry of solid-electrolyte interphase on lithium anodes by depth-sensitive plasmon-enhanced Raman spectroscopy. **NATURE COMMUNICATIONS**. 2023, 14, 3536

Gu, ZD*; Jian, X; Liu, GX. A new age, provenance and tectono-sedimentary setting of the middle Dengying Formation of the terminal Ediacaran in the western Yangtze Block, South China. **MARINE AND PETROLEUM GEOLOGY**. 2023, 157, 106509

Gu, ZD*; Jian, X; Watts, AB; Zhai, XF; Liu, GX; Jiang, H. Formation and evolution of an Early Cambrian foreland basin in the NW Yangtze Block, South China. **JOURNAL OF THE GEOLOGICAL SOCIETY**. 2023, 180, jgs2022127

Gu, ZD; Jian, X*; Liu, GX; Shen, XT; Fu, HJ; Zhai, XF; Jiang, H. Age, provenance and tectonic setting of the Tonian–Cryogenian

clastic successions in the northwest Bikou terrane, NW Yangtze Block, Central China. **PRECAMBRIAN RESEARCH**. 2023, 397, 107197

Guo, CT; Li, L; Lin, SJ*; Lin, X*. Species-dependent effects of seawater acidification on alkaline phosphatase activity in dinoflagellates. **JOURNAL OF PHYCOLOGY**. 2023, 59: 1347-1352

Guo, JQ; Achterberg, EP; Shen, Y; Yuan, HM*; Song, JM*; Liu, J; Li, XG; Duan, LQ. Stable carbon isotopic composition of amino sugars in heterotrophic bacteria and phytoplankton: Implications for assessment of marine organic matter degradation. **LIMNOLOGY AND OCEANOGRAPHY**. 2023, 68: 2814-2825

Guo, JQ; Shen, Y; Yuan, HM*; Song, JM*; Li, XG; Duan, LQ; Li, N. Bacterial reworking of particulate organic matter in a dynamic marginal sea: Implications for carbon sequestration. **ORGANIC GEOCHEMISTRY**. 2023, 179, 104583

Guo, XH*; Su, JZ; Guo, LG; Liu, ZQ; Yang, W; Li, Y; Yao, ZT; Wang, LF; Dai, MH. Coupling of carbon and oxygen in the Pearl River Plume in summer: Upwelling, hypoxia, reoxygenation and enhanced acidification. **JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS**. 2023, 128, e2022JC019326

Guo, YS; Tang, J; Zhuo, ZX; Huang, JR; Fu, ZL; Song, JH; Liu, M; Dong, ZD; Wang, ZD*. The first high-quality chromosome-level genome of *Eretmochelys imbricata* using HiFi and Hi-C data. **SCIENTIFIC DATA**. 2023, 10, 604

Guo, ZL; Liu, JC*; Zeng, HL; Xiao, XL; Liu, M; Hong, HL; Lu, HL; Yan, CL. Variation of glomalin-metal binding capacity in 1 m soil profiles from mangrove forests to mudflat and affected factor analysis. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 863, 160890

Guo, ZY; Zhang, C; Chen, LM; Zeng, MH; Yao, QH; Ye, TX; Luo, HZ; Chen, X*M; Chen, X*. Design of competition nanoreactor with shell-isolated colloidal plasmonic nanomaterials for quantitative sensor platform. **TALANTA**. 2023, 265, 124861

Guo, ZY; Zhang, C; He, TX; Xiao, HY; Jin, JW; Yao, QH; Ye, TX; Chen, X*. Virus-like magnetic heterostructure: An outstanding metal-complex active platform enables high-efficiency separation and catalysis. **SMALL**. 2023, 19, 2303765

- Häder, DP*; Gao, KS. Aquatic productivity under multiple stressors. *WATER*. 2023, 15, 817
- Halili, B; Yang, XM*; Wang, R; Zhu, KY; Hai, XJ*; Wang, CC*. Inferring the population history of Kyrgyz in Xinjiang, Northwest China from genome-wide array genotyping. *AMERICAN JOURNAL OF BIOLOGICAL ANTHROPOLOGY*. 2023, 181: 611-625
- Han, AQ*; Yang, JYT; Chen, ML; Zheng, ZZ; Yin, XJ; Lin, H*; Xu, MN; Kao, SJ. Hydrological connectivity controls on the dynamics of particulate organic matter in a semi-enclosed mariculture bay. *AQUACULTURE*. 2024, 578, 740109
- Han, LL; Wang, HL; Ge, LH; Xu, MN; Tang, JM; Luo, L; Li, P*; Kao, SJ*. Transition of source/sink processes and fate of ammonium in groundwater along with redox gradients. *WATER RESEARCH*. 2023, 231, 119600
- He, WL; Ke, X; Li, TC*; Wu, YM; Tang, XM; Chen, WZ; Liu, T; Du, H*. Comparison and improvement of RNA extraction methods in *Sargassum* (Phaeophyta). *JOURNAL OF PHYCOLOGY*. 2023, 59: 822-834
- He, YJ; Lin, D; Chen, BH; Liu, XZ; Ye, JN; Sun, J; Tang, K*. *Paracoccus albiceus* sp. nov., isolated from the shallow-sea hydrothermal system off Kueishantao Island. *INTERNATIONAL JOURNAL OF SYSTEMATIC AND EVOLUTIONARY MICROBIOLOGY*. 2023, 73, DOI: 10.1099/ijsem.0.005998
- Hong, HL; Qian, L; Wu, SJ; Ruan, LY; Li, HY; Su, ML; Zhang, BH; Liu, JC; Yan, CL; Lu, HL*. Centennial-scale source shift in potentially toxic metal(loid)s in Yangtze River. *JOURNAL OF HAZARDOUS MATERIALS*. 2024, 461, 132526
- Hossain, KB; Lin, Y; Chen, K; Zhang, MY; Liu, MY; Zhao, WL; Ke, HW; Liu, FJ; Wang, CH; Cai, MG*. Policy impact on microplastic reduction in China: Observation and prediction using statistical model in an intensive mariculture bay. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 858, 160075
- Hu, WT*; Duan, AM; Wu, GX; Mao, JY; He, B. Quasi-biweekly oscillation of surface sensible heating over the central-eastern Tibetan Plateau and its relationship with spring rainfall in China. *JOURNAL OF CLIMATE*. 2023, 36: 6917-6936
- Hu, ZD; Lin, HY*; Liu, ZY*; Cao, ZY; Zhang, FT; Jiang, ZP; Zhang, Y; Zhou, KB; Dai, MH. Observations of a filamentous intrusion and vigorous submesoscale turbulence within a cyclonic mesoscale eddy. *JOURNAL OF PHYSICAL OCEANOGRAPHY*. 2023, 53: 1615-1627
- Huang, JF; Zhou, MC; You, WW; Luo, X*; Ke, CH*. Molecular characterization and function of bone morphogenetic protein 7 (BMP7) in the Pacific abalone, *Haliotis discus hannai*. *GENES*. 2023, 14, 1128
- Huang, JP*; Zhou, XJ; Wu, GX*; Xu, XD; Zhao, QY; Liu, YM; Duan, AM; Xie, YK; Ma, YM; Zhao, P; Yang, S; Yang, K; Yang, HJ; Bian, JC; Fu, YF; Ge, JM; Liu, YZ; Wu, QG; Yu, HP; Wang, BB; Bao, Q; Qie, K. Global Climate impacts of land-surface and atmospheric processes over the Tibetan Plateau. *REVIEWS OF GEOPHYSICS*. 2023, 61, e2022RG000771
- Huang, L; Zhuang, W*; Lu, WF; Zhang, Y; Edwing, D; Yan, XH. Rapid sea level rise in the tropical Southwest Indian Ocean in the recent two decades. *GEOPHYSICAL RESEARCH LETTERS*. 2023, 51, e2023GL106011
- Huang, L; Zhuang, W*; Wu, ZL; Zhang, Y; Meng, LS; Edwing, D; Yan, XH. Quasi-decadal temperature variability in the intermediate layer of subtropical South Indian Ocean during the Argo period. *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*. 2023, 128, e2023JC019775
- Huang, X; He, Q; Zhang, ZK; Zhu, KF*. Two sides of the same coin: The economic and environmental effects of China's international trade from a global value chain perspective. *CHINA ECONOMIC REVIEW*. 2023, 79, 101952
- Huang, Y; Sun, H; Wei, SZ; Cai, LL; Liu, LQ; Jiang, YA; Xin, JB; Chen, ZQ; Que, YQ; Kong, ZB; Li, TT; Yu, H; Zhang, J; Gu, Y; Zheng, QB*; Li, SW*; Zhang, R*; Xia, NS*. Structure and proposed DNA delivery mechanism of a marine roseophage. *NATURE COMMUNICATIONS*. 2023, 14, 3609
- Huang, ZQ; Yu, FL*. InSAR-derived surface deformation of Chaoshan Plain, China: Exploring the role of human activities in the evolution of coastal landscapes. *GEOMORPHOLOGY*. 2023, 426, 108606
- Jian, ZM*; Yu, JM; Wang, Y*; Dang, HW; Dai, MH; Li, C; Ji, X; Wang, XX; Chen, Y. Equatorial Pacific sea-Air CO₂ exchange

modulated by upper ocean circulation during the last deglaciation. **GEOPHYSICAL RESEARCH LETTERS**. 2023, 50, e2023GL105169

Jiang, HB*; Hutchins, DA*; Ma, WT; Zhang, RF; Wells, M; Jiao, NZ; Wang, YT*; Chai, F. Natural ocean iron fertilization and climate variability over geological periods. **GLOBAL CHANGE BIOLOGY**. 2023, 29: 6856-6866

Jiang, K; Wei, K; Chen, SX*; Huang, J. Cytoarchitecture of mudskipper (*Boleophthalmus pectinirostris*) brain. **BRAIN BEHAVIOR AND EVOLUTION**. 2023, 98: 124-147

Jiang, LW; Ren, BH*; Wang, C; Zhang, C. Impact of the Eurasian wave train on the interannual variability of autumn precipitation in the central region of China. **JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES**. 2023, 128, e2022JD038024

Jiang, P; Chen, HM; Liu, ZF; Li, XL*. Comparing the isotopic and molecular composition of dissolved organic carbon between the oligotrophic South China Sea and the adjacent North Pacific Ocean: Signals of biodegradation, conservative mixing, and terrestrial input. **MARINE CHEMISTRY**. 2023, 257, 104331

Jiang, Y; Wang, Y*; Tian, X; Lin, S; Chen, S; Yu, J; Chai, F. Upper ocean structure determines the contrasting typhoon-induced chlorophyll-a responses in the Northwest Pacific. **GEOPHYSICAL RESEARCH LETTERS**. 2023, 50, e2023GL102930

Jiao, NZ*. Removal of competing bacteria in coral microbiome through trojan virus: A newly discovered mechanism of coral pathogenicity. **SCIENCE CHINA-EARTH SCIENCES**. 2023, 66: 1906-1908

Jin, WY; Chen, XW; Tan, JZ; Lin, X*; Ou, LJ*. Variation in intracellular polyphosphate and associated gene expression in response to different phosphorus conditions in the dinoflagellate *Karenia mikimotoi*. **HARMFUL ALGAE**. 2023, 129, 102532

Kim, MH; Kim, DW; Kim, D; Li, FL; Jo, YH*. Estimation of deep-water formation intensity using multi-satellite measurements in the East Sea (Japan sea). **DEEP-SEA RESEARCH PART I-OCEANOGRAPHIC RESEARCH PAPERS**. 2023, 194, 103969

King, MA*; Lyu, KW; Zhang, XB. Climate variability a key driver of

recent Antarctic ice-mass change. **NATURE GEOSCIENCE**. 2023, 16: 1128-1135

Kong, HJ; Yang, EJ; Jiao, NZ; Lee, Y; Jung, J; Cho, KH; Moon, JK; Kim, JH; Xu, DP*. RNA outperforms DNA-based metabarcoding in assessing the diversity and response of microeukaryotes to environmental variables in the Arctic Ocean. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 876, 162608

Kong, LQ; Zeng, ZC; Min, GZ; Meng, ZH; Meng, GQ; Guo, XX; Lin, NB*; Liu, XY*. Bioinspired design of integral molded Janus silk fibroin-MXene evaporator for efficient solar vapor generation. **NANO RESEARCH**. 2023, DOI: 10.1007/s12274-023-6192-y

Lai, XL; Xiao, QZ; Ji, HJ; Huang, ZK; Huang, HY; You, WW; Luo, X*; Ke, CH*. Comparative analysis of the growth and biochemical composition of backcrosses and their parents in abalone. **AQUACULTURE**. 2023, 570, 739445

Lee, ZP*; Zhao, LT; Hu, CM; Wang, DS; Lin, JF; Shang, SL. Absorption coefficient and chlorophyll concentration of oceanic waters estimated from band difference of satellite-measured remote sensing reflectance. **JOURNAL OF REMOTE SENSING**. 2023, 3, 63

Li, BJ; Chen, L; Yan, MZ; Zou, XQ; Xue, YG; Jiang, Z; Chen, BH; Li, CY; He, Q; Feng, JX; Zhou, T; Xu, P*. Intercross population study reveals that co-mutation of *mitfa* genes in two subgenomes induces red skin color in common carp (*Cyprinus carpio wuyuanensis*). **ZOOLOGICAL RESEARCH**. 2023, 44: 276-286

Li, C; Song, WY*; Sun, ZJ; Hu, G; Yuan, XJ; Kao, SJ*. Controls on critical metal enrichments in ferromanganese nodules from the Philippine Sea, at water depths of 4400-6000 m. **MINERALS**. 2023, 13, 522

Li, C; Song, WY*; Sun, ZJ; Huang, W; Hu, G; Yuan, XJ; Kao, SJ*. High-resolution analysis of Fe-Mn oxyhydroxide in ferromanganese nodules from the Northwestern Pacific Ocean and insights on element mobility. **MINERALS**. 2023, 13, 415

Li, CR; Liu, XD; Li, Y; Jiang, Y; Guo, XH; Hutchins, DA; Ma, J; Lin, X*; Dai, MH. The interactions between olivine dissolution and phytoplankton in seawater: Potential implications for ocean alkalization. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 912, 168571

Li, DY; Zheng, MF; Qiu, YS; Lai, LM; Chen, NW; Jing, HM; Zhang, R*; Chen, M. Comparative assessment of nitrogen fixation rate by ¹⁵N₂ tracer assays in the South China Sea. **ACTA OCEANOLOGICA SINICA**. 2023, 42: 75-82

Li, H; Beardall, J; Gao, KS*. Photoinhibition of the picophytoplankter *Synechococcus* is exacerbated by ocean acidification. **WATER**. 2023, 15, 1228

Li, H; Gao, KS*. Deoxygenation enhances photosynthetic performance and increases N₂ fixation in the marine cyanobacterium *Trichodesmium* under elevated pCO₂. **FRONTIERS IN MICROBIOLOGY**. 2023, 14, 1102909

Li, HM; Feng, XT; Xiong, TQ; He, C; Wu, WC; Shi, Q; Jiao, NZ; Zhang, YY*. Green tides significantly alter the molecular composition and properties of coastal DOC and perform dissolved carbon sequestration. **ENVIRONMENTAL SCIENCE & TECHNOLOGY**. 2023, 57: 770-779

Li, HQ; Song, ZC; Hui, Jg; Su, YN; Fu, WJ; Zhang, SF; Yan, L; Yan, KQ; Huang, HH*; Zhang, Y*. Vocalization behavior of Chinese Bahaba (*Bahaba taipingensis*) during the reproduction season. **JOURNAL OF MARINE SCIENCE AND ENGINEERING**. 2023, 11, 712

Li, HQ; Zheng, SL; Tan, QG; Zhan, LY; Martz, TR; Ma, J*. Toward citizen science-based ocean acidification observations using smartphone devices. **ANALYTICAL CHEMISTRY**. 2023, 95: 15409-15417

Li, JQ*; Yu, ZY; Warren, A; Lin, XF*. Predation risk affects the ecotoxicity evaluation of antibiotics: Population growth and antioxidase activity in the ciliate *Paramecium jenningsi*. **ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY**. 2023, 251, 114536

Li, JS; Zhang, KD*; Li, L; Wang, YJ; Lin, SJ*. Phosphorus nutrition strategies in a Symbiodiniacean species: Implications in coral-alga symbiosis facing increasing phosphorus deficiency in future warmer oceans. **GLOBAL CHANGE BIOLOGY**. 2023, 29: 6558-6571

Li, JS; Zhang, KD; Li, L; Wang, YJ; Wang, C; Lin, SJ*. Two-sided effects of the organic phosphorus phytate on a globally important marine coccolithophorid phytoplankton.

MICROBIOLOGY SPECTRUM. 2023, e0125523

Li, JT; Xu, MD; Lin, JW; Jiang, YW*. The strategies preventing particle transportation into the inlets of nuclear power plants: Mechanisms of physical oceanography. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1100000

Li, L*; Ren, YH; Ye, TY; Wang, XH; Hu, JY; Xia, YZ*. Positive feedback between the tidal flat variations and sediment dynamics: An example study in the macro-tidal turbid Hangzhou Bay. **JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS**. 2023, 128, e2022JC019414

Li, MY; Sheng, HX; Dai, MY; Kao, SJ*. Understanding nitrogen dynamics in coral holobionts: comprehensive review of processes, advancements, gaps, and future directions. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1203399

Li, NN*; Yu, FL*; Chambers, FM; Huang, ZQ; Lin, WM; Zhu, ZL; Yang, HJ; Lin, JQ. A humification-based method toward refining Holocene radiocarbon chronologies: Wetland records from southeastern China. **HOLOCENE**. 2023, 33: 605-615

Li, RL*; Wang, JM; Deng, J; Peng, G; Wang, YJ; Li, TZ; Liu, BB; Zhang, Y*. Selective enrichments for color microplastics loading of marine lipophilic phycotoxins. **JOURNAL OF HAZARDOUS MATERIALS**. 2023, 459, 132137

Li, S; Li, WF; Chen, FY; Zhu, XW; Chen, HY; Hao, H; Wang, KJ*. Metabolomic and transcriptomic analysis reveals immune and hormone modulation at the molting stage of juvenile mud crabs challenged with *Staphylococcus aureus* and *Vibrio alginolyticus*. **AQUACULTURE**. 2023, 575, 739775

Li, XL; Yang, DY; Qiu, JW; Liu, PL; Meng, DH; Zhu, HM; Guo, LM; Luo, S; Wang, Z*; Ke, CH*. Mitochondrial genome of *Leocrates chinensis* Kinberg, 1866 (Annelida: Hesionidae). **MITOCHONDRIAL DNA PART B-RESOURCES**. 2023, 8: 172-176

Li, XX*; Zhao, X; Dang, HY*; Zhang, CL; Fernández-Urruzola, I; Liu, ZQ; Wenzhöfer, F; Glud, RN. High variability in organic carbon sources and microbial activities in the hadopelagic waters. **LIMNOLOGY AND OCEANOGRAPHY**. 2023, 68: 704-1718

Li, YT; Zhang, XY; Wang, DN; Liu, X; Zhou, KB; Huang, BQ; Dai, MH; Cao, ZM*. Spatial and seasonal dynamics of biogenic silica

in a eutrophic marginal sea, the East China Sea. **FUNDAMENTAL RESEARCH**. 2023, DOI: 10.1016/j.fmre.2023.07.005

Li, YY; Yun, HY; Chen, R; Jiao, NZ; Zheng, Q; Yang, YL*; Zhang, R*. Characterization of a vibriophage infecting pathogenic *Vibrio harveyi*. **INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES**. 2023, 24, 16202

Liao, YP; Shangguan, MJ*; Yang, ZF; Lin, ZF; Wang, YL; Li, SH. GPU-accelerated Monte Carlo Simulation for a single-photon underwater lidar. **REMOTE SENSING**. 2023, 15, 5245

Lin, BA; Jiang, Y; Liu, M*. Population structure and reproductive dynamics of the ridged swimming crab *Charybdis natator* in the southern Taiwan Strait of China: significant changes within 25 years. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1056640

Lin, HY; Xu, SY; Liu, ZY*; Hu, JY*; Zhang, FT; Cao, ZY. Scale-dependent temperature-salinity compensation in frontal regions of the Taiwan Strait. **JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS**. 2023, 128, e2022JC019134

Lin, JF*; Lee, ZP; Tilstone, GH; Liu, XH; Wei, JW; Ondrusek, M; Groom, S. Revised spectral optimization approach to remove surface-reflected radiance for the estimation of remote-sensing reflectance from the above-water method. **OPTICS EXPRESS**. 2023, 31: 22964-22981

Lin, JJ; Hu, AY; Wang, FF; Hong, YG; Krom, MD; Chen, NW*. Impacts of a subtropical storm on nitrogen functional microbes and associated cycling processes in a river-estuary continuum. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 861, 160698

Lin, L; Wang, FF; Cao, WZ*. Nitrate-dependent anaerobic methane oxidation in subtropical mangrove soils and environmental implication. **WETLANDS**. 2023, 43, 61

Lin, LJ; He, L; Hong, HL; Li, HY; Xiao, XL; Yuan, B; Liu, SL; Lu, HL; Liu, JC; Yan, CL*. Sequestration of strontium, nickel, and cadmium on glomalin-related soil protein: Interfacial behaviors and ecological functions. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 881, 163461

Lin, LJ; Zhang, XT; Yuan, B; Li, HY; Lu, HL; Liu, JC; Hong, HL*; Yan, CL*. Effects of biofouling on the properties and sinking behavior of disposable face masks in seawater: A systematic comparison

with microplastic films and particles. **ENVIRONMENTAL SCIENCE & TECHNOLOGY LETTERS**. 2023, 10: 792-797

Lin, LS; Chen, GX; Sun, XW; Cheng, H; Huang, BQ; Cai, PH; Chen, M; Zhang, YB; Cai, YH*. Abundance of colloidal organic phosphorus in the Taiwan Strait. **MARINE CHEMISTRY**. 2023, 254, 104276

Lin, QL; Chen, LZ*; Zhang, JL; Wang, LC; Yu, XY; Guo, Q. How fine root turnover functions during mangrove root zone expansion and affects belowground carbon processes. **PLANT AND SOIL**. 2023, 488: 451-463

Lin, S; Zhang, WZ*; Wang, YT*; Chai, F. Mechanism of oceanic eddies in modulating the sea surface temperature response to a strong typhoon in the western North Pacific. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1117301

Lin, WH; Xiao, QZ; Yu, F; Han, ZF; Liu, JY; Peng, WZ; Huang, ZK; Lei, YT; Li, WG; You, WW; Luo, X*; Ke, CH*. Development of a low-density SNP genotyping panel by a novel technology mGPS and its application in germplasm identification of abalone. **AQUACULTURE**. 2023, 565, 739089

Lin, X*; Tirichine, L*; Zhang, X. The dynamic duo: How DNA methylation and gene transcription help diatoms thrive in modern oceans. **JOURNAL OF EXPERIMENTAL BOTANY**. 2023, 74: 3879-3882

Lin, XL; Ma, JX; Zhou, ZH; Qiao, BY; Li, YX; Zheng, W; Tian, Y*. Oil-contaminated sites act as high-risk pathogen reservoirs previously overlooked in coastal zones. **WATER RESEARCH**. 2023, 242, 120225

Lin, XL; Qiao, BY; Chang, RR; Li, YX; Zheng, W; He, ZL; Tian, Y*. Characterization of two keystone taxa, sulfur-oxidizing, and nitrate-reducing bacteria, by tracking their role transitions in the benzo[a] pyrene degradative microbiome. **MICROBIOME**. 2023, 11, 139

Lin, XQ; Fang, YW; Chen, QS; Guo, ZY; Chen, X; Chen, XM*. Magnetically actuated microfluidic chip combined with a G-quadruplex DNAzyme-based fluorescent/colorimetric sensor for the dual-mode detection of ochratoxin A in wheat. **TALANTA**. 2024, 267, 125273

- Lin, ZF; Shangguan, MJ*; Cao, FQ; Yang, ZF; Qiu, Y; Weng, ZW. Underwater single-photon lidar equipped with high-sampling-rate multi-channel data acquisition system. *REMOTE SENSING*. 2023, 15, 5216
- Lin, ZL; Liang, D; Bhalla, APS; Al-Shabab, AAS; Skote, M; Zheng, W; Zhang, Y*. How wavelength affects hydrodynamic performance of two accelerating mirror-symmetric undulating hydrofoils. *PHYSICS OF FLUIDS*. 2023, 35, 81901
- Lin, ZL; Zheng, W; Zhang, JH; Ou, WZ; Yang, C; Huang, HB; Xu, WJ; Yang, ZY; Zhou, W*; Zhang, Y*. Mudskipper-inspired amphibious robotic fish enhances locomotion performance by pectoral-caudal fins coordination. *CELL REPORTS PHYSICAL SCIENCE*. 2023, 4, 101589
- Liu, CL; Xu, Q; Wang, Z; Jiang, XB; Ding, GM; Ren, QQ; Song, JH; Liu, M*. Community structure of benthic molluscs shaped by environmental and ecological variables in the coastal waters of Changle, Fujian Province, China. *FRONTIERS IN MARINE SCIENCE*. 2023, 10, 1045393
- Liu, GB; Chen, ZW*; Lu, HH; Liu, ZY; Zhang, Q; He, QY; He, YH; Xu, JX; Gong, YK; Cai, SQ*. Energy transfer between mesoscale eddies and near-inertial waves from surface drifter observations. *GEOPHYSICAL RESEARCH LETTERS*. 2023, 50, e2023GL104729
- Liu, HY; Jie, DM*; Liu, LD; Gao, GZ; Li, DH; Li, NN. Temperature sensitivity of surface soil phytoliths: A case study in Northeast China. *QUATERNARY INTERNATIONAL*. 2023, 667: 51-60
- Liu, J; Bellerby, RGJ*; Zhu, Q*; Ge, JZ. Estimating sea surface salinity in the East China Sea using satellite remote sensing and machine learning. *EARTH AND SPACE SCIENCE*. 2023, 10, e2023EA003230
- Liu, J; Bellerby, RGJ*; Zhu, Q; Ge, JZ. Estimation of sea surface $p\text{CO}_2$ and air-sea CO_2 flux in the East China Sea using *in-situ* and satellite data over the period 2000-2016. *CONTINENTAL SHELF RESEARCH*. 2023, 254, 104879
- Liu, JY; Yin, ZH; Zhou, MZ; Yu, WC; You, WW; Chen, YX; Luo, X*; Ke, CH*. Genetic parameters and genomic prediction for nutritional quality-related traits of Pacific abalone (*Haliotis discus hannai*). *AQUACULTURE*. 2024, 579, 740118
- Liu, JY; Zhou, MZ; Yin, ZH; Huang, D; Zhu, LY; Zou, WG; Yu, WC; Shen, YW; Huang, ZK; You, WW; Ke, CH*; Luo, X*. Development of near-infrared reflectance spectroscopy (NIRS) model and genome-wide association study for glycogen and protein content in Pacific abalone. *AQUACULTURE*. 2023, 576, 739764
- Liu, L; Chen, MM; Wan, XHS; Du, CJ; Liu, ZY; Hu, ZD; Jiang, ZP; Zhou, KB; Lin, HY; Shen, H; Zhao, D; Yuan, LY; Hou, L; Yang, JYT; Li, XL; Kao, SJ; Zakem, EJ; Qin, W; Dai, MH; Zhang, Y*. Reduced nitrite accumulation at the primary nitrite maximum in the cyclonic eddies in the western North Pacific subtropical gyre. *SCIENCE ADVANCES*. 2023, 9, eade2078
- Liu, L; Chen, XF; Ye, JN; Ma, XY; Han, Y; He, YJ; Tang, K*. Sulfoquinovose is a widespread organosulfur substrate for Roseobacter clade bacteria in the ocean. *ISME JOURNAL*. 2023, 17: 393-405
- Liu, L; Yu, XL; Xue, HJ; Xu, P*. Reconstructability of the open ocean's interior from satellite observations: Evaluating the isQG method using yearlong high-resolution mooring data in the Northeast Atlantic. *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*. 2023, 128, e2023JC020124
- Liu, L; Zhong, KX; Chen, Q; Wang, Y; Zhang, T; Jiao, NZ; Zheng, Q*. Selective cell lysis pressure on rare and abundant prokaryotic taxa across a shelf-to-slope continuum in the Northern South China Sea. *APPLIED AND ENVIRONMENTAL MICROBIOLOGY*. 2023, 89, e01393-23
- Liu, MY; Zheng, HW; Cai, MG*; Leung, KMY; Li, YF; Yan, M; Zhang, ZF; Zhang, K; Chen, M; Ke, HW. Ocean stratification impacts on dissolved polycyclic aromatic hydrocarbons (PAHs): From global observation to deep learning. *ENVIRONMENTAL SCIENCE & TECHNOLOGY*. 2023, 57: 18339-18349
- Liu, PY; Zheng, Y; Zhang, RR; Bai, JL; Zhu, KL; Benzerara, K; Menguy, N; Zhao, X; Roberts, AP; Pan, YX; Li, JH*. Key gene networks that control magnetosome biomineralization in magnetotactic bacteria. *NATIONAL SCIENCE REVIEW*. 2023, 10, nwac238
- Liu, XH; Li, P*; Wang, HL; Han, LL; Yang, K; Wang, YH; Jiang, Z; Cui, L; Kao, SJ. Nitrogen fixation and diazotroph diversity in groundwater systems. *ISME JOURNAL*. 2023, 17: 2023-2034

- Liu, XL; Ye, M; Lin, FY; Yang, LO; Lin, J; Jiang, YQ; Tian, DJ; Chen, X*. Fluorescence sensing of ammonia in water using lead-free perovskite Cs₂AgInCl₆:Bi. *MICROCHEMICAL JOURNAL*. 2023, 192, 108913
- Liu, XW; Liu, Y; Jiang, ZY; Cao, L*. Spatiotemporal variation of China's mariculture potential under climate change. *REVIEWS IN FISH BIOLOGY AND FISHERIES*. 2023, DOI: 10.1007/s11160-023-09814-2
- Liu, Y*; Moore, JK*; Primeau, F; Wang, WL. Reduced CO₂ uptake and growing nutrient sequestration from slowing overturning circulation. *NATURE CLIMATE CHANGE*. 2023, 13: 83-90
- Liu, Y; Cao, L*; Cheung, WWL; Sumaila, UR. Global estimates of suitable areas for marine algae farming. *ENVIRONMENTAL RESEARCH LETTERS*. 2023, 18, 64028
- Liu, ZJ; Cai, RH*; Chen, YL; Zhuo, XC; He, C; Zheng, Q; He, D; Shi, Q; Jiao, NZ*. Direct production of bio-recalcitrant carboxyl-rich alicyclic molecules evidenced in a bacterium-induced steroid degradation experiment. *MICROBIOLOGY SPECTRUM*. 2023, 11, e04693-22
- Long, S; Chen, FY; Li, JS; Yang, Y; Wang, KJ*. A new gene *SCY3* homologous to *Scygonadin* showing antibacterial activity and a potential role in the sperm acrosome reaction of *Scylla paramamosain*. *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*. 2023, 24, 5689
- Lu, YH*; Cheung, SY; Koh, XP ; Xia, XM; Jing, HM; Lee, PY; Kao, SJ; Gan, JP; Dai, MH; Liu, HB*. Active degradation-nitrification microbial assemblages in the hypoxic zone in a subtropical estuary. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 904, 166694
- Lu, ZY; Wang, FF; Xiao, K; Wang, Y; Yu, QBA; Cheng, P; Chen, NW*. Carbon dynamics and greenhouse gas outgassing in an estuarine mangrove wetland with high input of riverine nitrogen. *BIOGEOCHEMISTRY*. 2023, 162: 221-235
- Lu, ZY; Xiao, K; Wang, FF; Wang, Y; Yu, QB; Chen, NW*. Salt marsh invasion reduces recalcitrant organic carbon pool while increases lateral export of dissolved inorganic carbon in a subtropical mangrove wetland. *GEODERMA*. 2023, 437, 116573
- Luo, L*; Liao, TT; Zhang, XL; Wu, YF; Li, JW; Zhang, RJ; Zheng, ZZ; Kao, SJ. Quantifying the formation pathways of nitrate in size-segregated aerosols during winter haze pollution. *GONDWANA RESEARCH*. 2023, 115: 71-80
- Luo, L*; Wu, SQ; Zhang, RJ; Wu, YF; Li, JW; Kao, SJ. What controls aerosol ⁸15N-NO₃? NO_x emission sources vs. nitrogen isotope fractionation. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 871, 162185
- Luo, Q; Zhang, M; Lin, SH; Lin, ZX; Hu, Y; Ke, CH*; Gao, XL*. Behavioral plasticity of nocturnal marine organisms under interspecific competitive pressure. *GLOBAL ECOLOGY AND CONSERVATION*. 2023, 46, e02579
- Luo, WC; Luo, YW*. Diurnally dynamic iron allocation promotes N₂ fixation in marine dominant diazotroph *Trichodesmium*. *COMPUTATIONAL AND STRUCTURAL BIOTECHNOLOGY JOURNAL*. 2023, 21: 3503-3512
- Lyu, KW*; Zhang, XB*; Church, JA; Wu, QR; Fiedler, R; Dias, FB. Roles of surface forcing in the Southern Ocean temperature and salinity changes under increasing CO₂: Perspectives from model perturbation experiments and a theoretical framework. *JOURNAL OF PHYSICAL OCEANOGRAPHY*. 2023, 53: 19-36
- Lyu, M; Gao, XL*; Zhang, M; Lin, SH; Ke, CH*. Circadian feeding characteristics of different abalone species and construction of a gastrointestinal evacuation model. *AQUACULTURE*. 2023, 576, 739826
- Ma, H; Hong, WS; Chen, SX*. A progestin regulates the prostaglandin pathway in the neuroendocrine system in female mudskipper *Boleophthalmus pectinirostris*. *JOURNAL OF STEROID BIOCHEMISTRY AND MOLECULAR BIOLOGY*. 2023, 231, 106300
- Ma, LQ; Bai, XL; Laws, EA; Xiao, WP*; Guo, C; Liu, X; Chiang, KP; Gao, KS; Huang, BQ*. Responses of phytoplankton communities to internal waves in oligotrophic oceans. *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*. 2023, 128, e2023JC020201
- Ma, MM; Lu, MX; Sun, R; Zhu, ZH; Fuller, DQ; Guo, JX; He, GL; Yang, XM; Tan, LL; Lu, YX; Dong, JJ; Liu, RL; Yang, JS; Li, B; Guo, TN; Li, XR; Zhao, DY; Zhang, Y; Wang, CC*; Dong, GH*. Forager-farmer transition at the crossroads of East and Southeast Asia

4900 years ago. *SCIENCE BULLETIN*. 2023, DOI: 10.1016/j.scib.2023.10.015

Ma, RJ; Chen, XW; Li, YY; Jiao, NZ; Zhang, R*. Diversity, evolution and life strategies of CbK-like phages. *ENVIRONMENTAL MICROBIOLOGY*. 2023, 25: 1250-1264

Ma, YB; Zou, WG; Ai, CX; Luo, X; Liu, ST; Huang, HQ; Chen, YX; You, WW*; Ke, CH*. Interactive effects of diet and water temperature on the nutritional value, flavor, and sensory quality in hybrid abalone (*Haliotis discus hannai* ♀ x *H. fulgens* ♂) meat. *AQUACULTURE*. 2023, 567, 739241

Ma, YB; Zou, WG; You, WW; Ai, CX; Chen, YX; Su, Y; Luo, X*; Ke, CH*. Evaluation of optimal dietary protein levels and meat quality of adult hybrid abalone (*Haliotis discus hannai* ♀ x *H. fulgens* ♂) under two representative water temperatures. *AQUACULTURE*. 2023, 577, 739907

Ma, YF; Huang, LF; Zhang, WJ*. Environment drives the co-occurrence of bacteria and microeukaryotes in a typical subtropical bay. *JOURNAL OF OCEANOLOGY AND LIMNOLOGY*. 2023, 41: 2292-2308

Ma, YF; Zhou, KB; Chen, WF; Chen, JH; Yang, JYT; Dai, MH*. Partitioning of carbon export in the euphotic zone of the oligotrophic South China Sea. *BIOGEOSCIENCES*. 2023, 20: 2013-2030

Mantri, VA*; Kambey, CSB*; Cottier-Cook, EJ; Usandizaga, S; Buschmann, AH; Chung, IK; Liu, T; Sondak, CFA; Qi, ZZ; Lim, PE; Nguyen, NV. Overview of global *Gracilaria* production, the role of biosecurity policies and regulations in the sustainable development of this industry. *REVIEWS IN AQUACULTURE*. 2023, 15: 801-819

Mao, RY; Lu, YL*; Zhang, M; Wang, C; Sun, B; Shi, YJ; Song, S; Wang, P; Yuan, JJ; Zhao, JX. Distribution of legacy and novel per- and polyfluoroalkyl substances in surface and groundwater affected by irrigation in an arid region. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 858, 159693

Mei, K; Liu, JC*; Xue, LY; Xu, JC; Jiang, WL; Tan, ZW; Li, AR; Qu, JY; Yan, CL. Stimulation of oxalate root exudate in arsenic speciation and fluctuation with phosphate and iron in anoxic mangrove sediment. *MARINE POLLUTION BULLETIN*. 2023, 189, 114823

Meng, J*; Huo, JW; Zhang, ZK; Liu, Y; Mi, ZF*; Guan, DB; Feng, KS*. The narrowing gap in developed and developing country emission intensities reduces global trade's carbon leakage. *NATURE COMMUNICATIONS*. 2023, 14, 3775

Meng, XY; Chen, FY; Xiong, M; Hao, H; Wang, KJ*. A new pathogenic isolate of *Kocuria kristinae* identified for the first time in the marine fish *Larimichthys crocea*. *FRONTIERS IN MICROBIOLOGY*. 2023, 14, 1129568

Ou, WZ; Song, ZC*; Gao, ZY; Zhang, C; Zhang, JH; Hui, JG; Zhang, Y*. A porpoise-inspired receptor to enhance broadband sound reception. *APPLIED PHYSICS LETTERS*. 2023, 123, 43701

Pan, F; Xiao, K*; Cai, Y; Li, HL; Guo, ZR*; Wang, XH; Zheng, Y; Zheng, CM; Bostick, BC; Michael, HA. Integrated effects of bioturbation, warming and sea-level rise on mobility of sulfide and metalloids in sediment porewater of mangrove wetlands. *WATER RESEARCH*. 2023, 233, 119788

Pan, SQ; Luo, P; Chen, J; Wu, TR; Xu, B; Chen, FS; Wu, DY; Ren, B; Liu, GK*; Xie, JW*; Xu, PX*; Tian, ZQ*. Seeing is not necessarily believing: Is the surface-enhanced Raman spectroscopy signal really from the target. *ANALYTICAL CHEMISTRY*. 2023, 95: 13346-13352

Pan, ZL; Duan, AM*. Influence of the Tibetan Plateau on the coupling of the North Pacific-North Atlantic pressure systems. *ATMOSPHERIC RESEARCH*. 2023, 295, 107026

Peng, P; Bi, R*; Sachs, JP; Shi, J; Luo, YF; Chen, WF; Huh, CA; Yu, M; Cao, YL; Wang, YY; Cao, Z; Bao, XH; Guo, XY; Li, HJ; Feng, XW; Li, HC; Zhao, MX*. Phytoplankton community changes in a coastal upwelling system during the last century. *GLOBAL AND PLANETARY CHANGE*. 2023, 224, 104101

Peng, QN; Lin, L*; Tu, QC; Wang, XP; Zhou, YY; Chen, JY; Jiao, NZ; Zhou, JZ. Unraveling the roles of coastal bacterial consortia in degradation of various lignocellulosic substrates. *MSYSTEMS*. 2023, 8, e01283-22

Peng, YZ; Duan, AM*; Zhang, C; Tang, B; Zhao, XJ. Evaluation of the surface air temperature over the Tibetan Plateau among different reanalysis datasets. *FRONTIERS IN ENVIRONMENTAL SCIENCE*. 2023, 11, 1152129

Qi, L*; Cheng, P; Wang, MH; Hu, CM; Xie, YY; Mao, KY. Where does floating Sargassum in the East China Sea come from.

HARMFUL ALGAE. 2023, 129, 102523

Qian, LY; Wang, FF; Cao, W; Ding, S; Cao, WZ*. Ecological health assessment and sustainability prediction in coastal area: A case study in Xiamen Bay, China. **ECOLOGICAL INDICATORS.** 2023, 148, 110047

Qiu, L; Esposito, M; Martínez-Cabanas, M; Achterberg, EP*; Li, QL*. Autonomous high-frequency time-series observations of total alkalinity in dynamic estuarine water. **MARINE CHEMISTRY.** 2023, 257, 104332

Qiu, L; Jiang, KS; Li, QL*; Yuan, DX; Chen, JS; Yang, B; Achterberg, EP*. Variability of total alkalinity in coastal surface waters determined using an *in-situ* analyzer in conjunction with the application of a neural network-based prediction model. **SCIENCE OF THE TOTAL ENVIRONMENT.** 2023, 908, 168271

Qiu, L; Li, QL*; Yuan, DX; Chen, JS; Xie, JZ; Jiang, KS; Guo, LG; Zhong, GB; Yang, B; Achterberg, EP. High-precision *in situ* total alkalinity analyzer capable of month-long observations in seawaters. **ACS SENSORS.** 2023, 8: 2702-2712

Qu, A; Bai, YL; Wang, JY; Zhao, J; Zeng, JJ; Liu, Y; Chen, XT; Ke, QZ; Jiang, PX; Zhang, XY; Li, X; Xu, P; Zhou, T*. Integrated mRNA and miRNA expression analyses for *Cryptocaryon irritans* resistance in large yellow croaker (*Larimichthys crocea*). **FISH & SHELLFISH IMMUNOLOGY.** 2023, 135, 108650

Quan, Q; Liu, ZQ*; Xue, HJ; Hu, JY; Wang, Q; Zhang, H; Liu, XH; Jin, GZ; Wang, YP*. Observed oceanic surface modes in the Northern South China Sea. **JOURNAL OF PHYSICAL OCEANOGRAPHY.** 2023, 53: 1835-1849

Ren, QQ; Sun, M; Xie, B; Zhang, LL; Chen, Y; Liu, M*. Evaluating performance of data-limited management procedures in an ecosystem perspective: A case study for *Larimichthys crocea* (Sciaenidae) in the Min River Estuary, China. **ECOLOGICAL INDICATORS.** 2023, 146, 109772

Robertson, R*; Zhao, C; Wang, W; Xu, Z; Liu, Z. A case study off the Tiwi Islands and the Coburg Peninsula: Baroclinic on one side and barotropic on the other. **PROGRESS IN OCEANOGRAPHY.** 2023, 216, 103057

Shangguan, MJ*; Guo, YR; Liao, ZY; Lee, ZP. Sensing profiles of the volume scattering function at 180° using a single-photon oceanic fluorescence lidar. **OPTICS EXPRESS.** 2023, 31: 40393-40410

Shangguan, MJ*; Liao, ZY; Guo, YR; Lee, ZP. Sensing the profile of particulate beam attenuation coefficient through a single-photon oceanic Raman lidar. **OPTICS EXPRESS.** 2023, 31: 25398-25414

Shangguan, MJ*; Weng, ZW; Lin, ZF; Lee, ZP; Shangguan, MY; Yang, ZF; Sun, JX; Wu, TF; Zhang, Y; Wen, C. Day and night continuous high-resolution shallow-water depth detection with a single-photon underwater lidar. **OPTICS EXPRESS.** 2023, 31: 43950-43962

Shangguan, MJ*; Yang, ZF; Lin, ZF; Lee, Z; Xia, HY; Weng, ZW. Compact long-range single-photon underwater lidar with high spatial-temporal resolution. **IEEE GEOSCIENCE AND REMOTE SENSING LETTERS.** 2023, 20, 1501905

Shangguan, MJ*; Yang, ZF; Shangguan, MY; Lin, ZF; Liao, ZY; Guo, YR; Liu, C. Remote sensing oil in water with an all-fiber underwater single-photon Raman lidar. **APPLIED OPTICS.** 2023, 62: 5301-5305

Shao, ZB; Xu, YC; Wang, H; Luo, WC; Wang, LC; Huang, YH; Agawin, NSR; Ahmed, A; Benavides, M; Bentzon-Tilia, M; Berman-Frank, I; Berthelot, H; Biegala, IC; Bif, MB; Bode, A; Bonnet, S; Bronk, DA; Brown, MV; Campbell, L; Capone, DG; Carpenter, EJ; Cassar, N; Chang, BX; Chappell, D; Chen, YLL; Church, MJ; Cornejo-Castillo, FM; Detoni, AMS; Doney, SC; Dupouy, C; Estrada, M; Fernandez, C; Fernández-Castro, B; Fonseca-Batista, D; Foster, RA; Furuya, K; Garcia, N; Goto, K; Gago, J; Gradoville, MR; Hamersley, MR; Henke, BA; Hörstmann, C; Jayakumar, A; Jiang, ZB; Kao, SJ; Karl, DM; Kittu, LR; Knapp, AN; Kumar, S; LaRoche, J; Liu, HB; Liu, JX; Lory, C; Löscher, CR; Marañón, E; Messer, LF; Mills, MM; Mohr, W; Moisanter, PH; Mahaffey, C; Moore, R; Mouriño-Carballido, B; Mulholland, MR; Nakaoka, S; Needoba, JA; Raes, EJ; Rahav, E; Ramírez-Cárdenas, T; Reeder, CF; Riemann, L; Riou, V; Robidart, JC; Sarma, VVSS; Sato, T; Saxena, H; Selden, C; Seymour, JR; Shi, DL; Shiozaki, T; Singh, A; Sipler, RE; Sun, J; Suzuki, K; Takahashi, K; Tan, YH; Tang, WY; Tremblay, JÉ; Turk-Kubo, K; Wen, ZZ; White, AE; Wilson, ST; Yoshida, T; Zehr, JP; Zhang, R; Zhang, Y; Luo, YW*. Global oceanic diazotroph database version 2 and elevated estimate of

- globaloceanic N₂ fixation. *EARTH SYSTEM SCIENCE DATA*. 2023, 15: 3673-3709
- Shen, C; Tang, C; Zhu, KY; He, CY; Yang, CY; Zuo, ZH*. Toxicity and ecological risk assessment for two AhR agonistic pesticides mepanipyrim and cyprodinil and their metabolites. *ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH*. 2023, 30: 58944-58955
- Shen, DH; Wang, JN*; Liu, ZY; Wang, F*. Mixing in the upper western equatorial Pacific driven by westerly wind event. *FRONTIERS IN MARINE SCIENCE*. 2023, 9, 907699
- Shen, Y*; Guilderson, TP; Chavez, FP; McCarthy, MD. Important contribution of bacterial carbon and nitrogen to sinking particle export. *GEOPHYSICAL RESEARCH LETTERS*. 2023, 50, e2022GL102485
- Shen, YW; You, WW; Luo, X; Lu, Y; Huang, MQ; Ke, CH*. An overview of the mechanisms underlying hypoxia tolerance differences in aquatic animals and their inspirations for aquaculture. *REVIEWS IN FISH BIOLOGY AND FISHERIES*. 2023, 33: 1223-1236
- Sheng, HX; Wan, XHS; Zou, BB; Sun, YF; Hanoch, B; Zou, WB; Yang, WD; Wu, SQ; Huang, H; Ward, BB; Kao, SJ*. An efficient diazotroph-derived nitrogen transfer pathway in coral reef system. *LIMNOLOGY AND OCEANOGRAPHY*. 2023, 68: 963-981
- Shi, GY; Wu, HP; Luo, SH; Lu, XY; Ren, B; Zhang, Q; Lin, WQ; Chen, RY; Guo, P; Chen, HB; Tian, ZQ; Shao, GF*; Yang, L*; Liu, GK*. 1D gradient-weighted class activation mapping, visualizing decision process of convolutional neural network-based models in spectroscopy analysis. *ANALYTICAL CHEMISTRY*. 2023, 95: 9959-9966
- Shi, WA; Hu, JY*. Spatiotemporal variation of anticyclonic eddies in the South China Sea during 1993-2019. *REMOTE SENSING*. 2023, 15, 4720
- Shi, Y; Chen, BH; Kong, SN; Zeng, QM; Li, LB; Liu, B; Pu, F; Xu, P*. Comparative genomics analysis and genome assembly integration with the recombination landscape contribute to *Takifugu bimaculatus* assembly refinement. *GENE*. 2023, 849, 146910
- Shu, HL; You, YC; Wang, HW; Wang, JT; Li, L; Ma, J*; Lin, X*. Transcriptomic-guided phosphonate utilization analysis unveils evidence of clathrin-mediated endocytosis and phospholipid synthesis in the model diatom, *phaeodactylum tricornutum*. *MSYSTEMS*. 2023, 8, e01294-22
- Song, C; Xiong, YL; Jin, P; Sun, YX; Zhang, QC; Ma, ZL; Gao, G*. Mariculture structure adjustment to achieve China's carbon neutrality and mitigate climate change. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 895, 164986
- Song, LP; Lee, ZP*; Shang, SL; Huang, BQ; Wu, JH; Wu, ZL; Lu, WF; Liu, X. On the spatial and temporal variations of primary production in the South China Sea. *IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING*. 2023, 61, 9100201
- Song, LP; Lee, ZP*; Shang, SL; Huang, BQ; Wu, JH; Wu, ZL; Lu, WF; Liu, X. On the spatial and temporal variations of primary production in the South China Sea. *IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING*. 2023, 61, 4201514
- Song, YF; Du, JR; Yang, RJ; Lin, CJ; Chen, WJ; Wu, ZS; Lin, HW; Chen, X; Zhuang, YX*; Xie, RJ*. Recyclable time-temperature indicator enabled by light storage in particles. *ADVANCED OPTICAL MATERIALS*. 2023, 11, 2202654
- Song, ZC*; Quakenbush, L; Hobbs, R; Gaglione, E; Goertz, C; Castellote, M. Variability of echolocation clicks in beluga whales (*Delphinapterus leucas*) Within shallow waters. *AQUATIC MAMMALS*. 2023, 49: 62-72
- Song, ZC; Ou, WZ; Li, J; Zhang, C; Fu, WJ; Xiang, WJ; Wang, D; Wang, KX*; Zhang, Y*. Sound reception in the Yangtze finless porpoise and its extension to a biomimetic receptor. *BIOMIMETICS*. 2023, 8, 366
- Song, ZC; Ou, WZ; Su, YN; Li, HQ; Fan, WX; Sun, SY; Wang, T; Xu, XH; Zhang, Y*. Sounds of snapping shrimp (Alpheidae) as important input to the soundscape in the southeast China coastal sea. *FRONTIERS IN MARINE SCIENCE*. 2023, 10, 1029003
- Song, ZG; Yu, SJ; Bai, Y*; Guo, XH; He, XQ; Zhai, WD; Dai, MH. Construction of a high spatiotemporal resolution dataset of satellite-derived pCO₂ and air-sea CO₂ flux in the South China Sea (2003-2019). *IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING*. 2023, 61, 4207015

- Su, GY*; Lehmann, MF; Tischer, J; Weber, Y; Lepori, F; Walser, JC; Niemann, H; Zopfi, J*. Water column dynamics control nitrite-dependent anaerobic methane oxidation by *Candidatus Methyloirabilis* in stratified lake basins. *ISME JOURNAL*. 2023, 17: 693-702
- Su, QJ; Xiao, WZ; Simpson, SL; Tan, QG; Chen, R; Xie, MW*. Enhancing sediment bioaccumulation predictions: Isotopically modified bioassay and biodynamic modeling for nickel assessment. *ENVIRONMENTAL SCIENCE & TECHNOLOGY*. 2023, 57: 19352-19362
- Su, YN; Song, ZC*; Li, HQ; Zhang, Y; Xiang, WJ; Hui, JA; Sun, SY; Xiao, Z; Zhang, Y. Call properties of the large yellow croaker (*Larimichthys crocea*) during reproduction with insight into directivity. *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*. 2023, 153: 3192-3200
- Sun, HW; Chen, ZY; Zhao, ZH; Xu, MD; Zhang, YM; Yan, XH; Li, XD*; Jiang, YW*. Variability of volume transport in the Taiwan Strait and its response to tropical MJO convection: A numerical approach. *OCEAN MODELLING*. 2023, 186, 102240
- Sun, HY; Geng, XP; Meng, LS*; Yan, XH*. First Ocean Wave retrieval from HISEA-1 SAR imagery through an improved semi-automatic empirical model. *REMOTE SENSING*. 2023, 15, 3486
- Sun, N; Tao, L*; Wang, R; Zhu, KY; Hai, XJ*; Wang, CC*. The genetic structure and admixture of Manchus and Koreans in northeast China. *ANNALS OF HUMAN BIOLOGY*. 2023, 50: 161-171
- Sun, P*; Wang, Y; Zhang, YF; Logares, R; Cheng, P; Xu, DP; Huang, BQ*. From the sunlit to the aphotic zone: Assembly mechanisms and co-occurrence patterns of protistan-bacterial microbiotas in the Western Pacific Ocean. *MSYSTEMS*. 2023, 8, e00013-23
- Sun, XX; Tan, E; Wang, BC; Gan, ZX; Yang, J; Han, JB; Zhang, XY; Kao, SJ; King, G; Dong, HL; Jiang, HC*. Salinity change induces distinct climate feedbacks of nitrogen removal in saline lakes. *WATER RESEARCH*. 2023, 245, 1206688
- Sun, YF; Wang, GZ*; Weng, YB; Li, Q; Zhang, F; Jiang, WZ; Dai, GY; Lin, W; Sun, SY; Jiang, YY; Zhang, YJ*. Submarine groundwater discharge in Dongshan Bay, China: A master regulator of nutrients in spring and potential national significance of small bays. *FRONTIERS IN MARINE SCIENCE*. 2023, 10, 1164589
- Tang, K*; Liu, L. Bacteria are driving the ocean's organosulfur cycle. *TRENDS IN MICROBIOLOGY*. 2023, 31: 772-775
- Tao, L; Yuan, HB*; Zhu, KY; Liu, XY; Guo, JX*; Min, R; He, HF; Cao, DD; Yang, XM; Zhou, ZQ; Wang, R; Zhao, DY; Ma, H; Chen, J; Zhao, J; Li, YF; He, YH; Suo, DH; Zhang, RJ; Li, S; Li, L; Yang, F; Li, HC; Zhang, L; Jin, L; Wang, CC*. Ancient genomes reveal millet farming-related demic diffusion from the Yellow River into southwest China. *CURRENT BIOLOGY*. 2023, 33: 4995-5002
- Tian, HQ*; Yao, YZ; Li, Y; Shi, H; Pan, SF; Najjar, RG; Pan, NQ; Bian, ZH; Ciais, P; Cai, WJ; Dai, MH; Friedrichs, MAM; Li, HY; Lohrenz, S; Leung, LR. Increased terrestrial carbon export and CO₂ evasion from global inland waters since the preindustrial era. *GLOBAL BIOGEOCHEMICAL CYCLES*. 2023, 37, e2023GB007776
- Tong, S; Yang, DY; Qiu, JW; Ke, CH; Wang, Z*. *Podarkeopsis chinensis* sp. nov. (Annelida, Hesionidae) from southeastern China. *ZOOKEYS*. 2023, : 339-355
- Tong, ZY; Ma, LQ; Cai, SJ; Wang, L*; Xiao, WP*; Huang, BQ; Laws, EA. Responses of phytoplankton communities to the effect of both river plume and coastal upwelling. *JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES*. 2023, 128, e2023JG007486
- Tremblay, LA*; Chariton, AA; Li, MS; Zhang, Y; Horiguchi, T; Ellis, JI. Monitoring the health of coastal environments in the Pacific region-a review. *TOXICS*. 2023, 11, 277
- Tuo, P; Hu, ZY; Chen, SL*; Hu, JY; Yu, PN. Asymmetric drifter trajectories in an anticyclonic mesoscale eddy. *REMOTE SENSING*. 2023, 15, 3806
- Wan, R; Ge, LH; Chen, B; Tang, JM; Tan, EH*; Zou, WB; Tian, L; Li, M; Liu, ZB; Hou, LJ; Yin, GY; Kao, SJ*. Permeability decides the effect of antibiotics on sedimentary nitrogen removal in Jiulong River Estuary. *WATER RESEARCH*. 2023, 243, 120400
- Wan, S; Xiang, R*; Steinke, S; Du, Y; Yang, YP; Wang, SH; Wang, HY. Impact of the Western Pacific Warm pool and Kuroshio

dynamics in the Okinawa Trough during the Holocene. **GLOBAL AND PLANETARY CHANGE**. 2023, 224, 104116

Wan, XHS*; Sheng, HX; Liu, L; Shen, H; Tang, WY; Zou, WB; Xu, MN; Zheng, ZZ; Tan, E; Chen, MM; Zhang, Y; Ward, BB; Kao, SJ*. Particle-associated denitrification is the primary source of N₂O in oxic coastal waters. **NATURE COMMUNICATIONS**. 2023, 14, 8280

Wan, XHS*; Hou, L; Kao, SJ; Zhang, Y; Sheng, HX; Shen, H; Tong, SW; Qin, W; Ward, BB*. Pathways of N₂O production by marine ammonia-oxidizing archaea determined from dual-isotope labeling. **PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA**. 2023, 120, e2220697120

Wang, CY; Liu, ZY*; Lin, HY. A simple approach for disentangling vortical and wavy motions of oceanic flows. **JOURNAL OF PHYSICAL OCEANOGRAPHY**. 2023, 53: 1237-1249

Wang, CY; Liu, ZY*; Lin, HY. On dynamical decomposition of multiscale oceanic motions. **JOURNAL OF ADVANCES IN MODELING EARTH SYSTEMS**. 2023, 15, e2022MS003556

Wang, FF; Lu, ZY; Tobias, CR; Wang, Y; Xiao, K; Yu, QB; Lin, JJ; Huang, GM; Chen, NW*. Salt marsh expansion into estuarine mangrove mudflats reduces nitrogen removal capacity. **CATENA**. 2023, 232, 107459

Wang, FF; Lu, ZY; Wang, Y; Yan, RF; Chen, NW*. Porewater exchange drives the dissolved silicate export across the wetland-estuarine continuum. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1206776

Wang, FF; Tao, YR; Yang, SC; Cao, WZ*. Warming and flooding have different effects on organic carbon stability in mangrove soils. **JOURNAL OF SOILS AND SEDIMENTS**. 2023, DOI: 10.1007/s11368-023-03636-2

Wang, J; Zheng, Q; Wang, SS; Zeng, JL; Yuan, Q; Zhong, YS; Jiang, LJ*; Shao, ZZ*. Characterization of two novel chemolithoautotrophic bacteria of *Sulfurovum* from marine coastal environments and further comparative genomic analyses revealed species differentiation among deep-sea hydrothermal vent and non-vent origins. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1222526

Wang, JF; Yu, HY; Ma, SB; Lin, Q; Wang, DZ*; Wang, X*. Phylogenetic and evolutionary comparison of mitogenomes reveal adaptive radiation of lampriform fishes. **INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES**. 2023, 24, 8756

Wang, JL; Guan, DB; Zhang, ZK; Chen, DB; Yu, X*. Carbon footprints of the equity portfolios of Chinese fund firms. **COMMUNICATIONS EARTH & ENVIRONMENT**. 2023, 4, 296

Wang, JM; Li, RL; Liu, BB; Zhang, QZ; Wang, X; Zhu, YX; Zhang, Y*. Occurrence and distribution of lipophilic marine algal toxins in the coastal seawater of Southeast China and the South China Sea. **MARINE POLLUTION BULLETIN**. 2023, 187, 114584

Wang, JT; Li, L; Lin, SJ*. Active viral infection during blooms of a dinoflagellate indicates dinoflagellate-viral co-adaptation. **APPLIED AND ENVIRONMENTAL MICROBIOLOGY**. 2023, e0115623

Wang, L; Jian, X*; Fu, HJ; Zhang, W; Shang, F; Fu, L. Decoupled local climate and chemical weathering intensity of fine-grained siliciclastic sediments from a paleo-megalake: An example from the Qaidam basin, northern Tibetan Plateau. **SEDIMENTARY GEOLOGY**. 2023, 454, 106462

Wang, MY*; Xiong, HX; Yang, SY; Yu, FL; Kong, DM; Zong, YQ; Liu, ZH. Assessing the U37K'-sea surface temperature relationship in shallow marine waters. **SCIENCE CHINA-EARTH SCIENCES**. 2023, 66: 918-928

Wang, PX; Laws, EA; Liu, X*; Chen, JX; Zhong, YP; Xu, C; Huang, BQ. Proportion of dead cells in phytoplankton modulates community structure. **PROGRESS IN OCEANOGRAPHY**. 2023, 219, 103142

Wang, QQ; Cai, PH; Jiang, S; Wang, XJ; Li, G; Liu, ZX; Wang, FM; Li, HL*. Using ²²⁴Ra/²²⁸Th disequilibrium to quantify carbon transformation and export from intertidal sandy and muddy sediments. **GEOCHIMICA ET COSMOCHIMICA ACTA**. 2023, 355: 222-234

Wang, QQ; Tang, G; Jiang, S; Wang, XJ*; Xiao, K; Yu, SC; Cai, PH; Kuang, XX; Li, HL*. Tracing terrestrial groundwater discharge and porewater exchange derived dissolved carbon export in a tropical estuary using multiple isotopes. **JOURNAL OF HYDROLOGY**. 2023, 622, 129648

Wang, SQ; Wu, LB; Wang, ZJ; Du, HH; Zhu, JC; Li, YY; Cai, MH; Wang, XH*. Occurrence, vertical distribution and transport of organic amine pesticides in the seawater from the East China Sea and the South China Sea. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 860, 160487

Wang, SV*; Foster, A; Lenz, EA; Kessler, JD; Stroeve, JC; Anderson, LO; Turetsky, M; Betts, R; Zou, SJ; Liu, W; Boos, WR; Hausfather, Z. Mechanisms and impacts of earth system tipping elements. **REVIEWS OF GEOPHYSICS**. 2023, 61, e2021RG000757

Wang, TY; Wang, Y*; Zhang, ZK*; Liang, C; Shan, M; Sun, Y. A regional cooperative reduction game model for air pollution control in North China. **JOURNAL OF ENVIRONMENTAL MANAGEMENT**. 2023, 346, 118949

Wang, WL*; Fernández-Méndez, M; Elmer, F; Gao, G; Zhao, YY; Han, YY; Li, JD; Chai, F; Dai, MH. Ocean afforestation is a potentially effective way to remove carbon dioxide. **NATURE COMMUNICATIONS**. 2023, 14, 4339

Wang, WL*; Fu, WW; Frédéric, A. C. LM; Robert, L; Liu, Y; Tang, JM ; François, WP*. Biological carbon pump estimate based on multi-decadal hydrographic data. **NATURE**. 2023, 624: 579-585

Wang, WL*; Fu, WW; Le Moigne, FAC; Letscher, RT.; Liu, Y; Tang, JM; Primeau, FW*. Oceans can capture more carbon dioxide than previously thought. **NATURE**. 2023, 624: 579-585

Wang, X; Guo, S; Huang, Q; Zhu, YX; Zhang, Y*. A novel biomass pyrogenic index and its application coupled with black carbon for improving polycyclic aromatic hydrocarbon source identification. **ENVIRONMENTAL MONITORING AND ASSESSMENT**. 2023, 195, 882

Wang, X; Qiu, W*; Liu, XY*. From mesoscopic reconstruction to flexible meso-electronics based on nucleation control refolding rerouting of silk fibroin materials. **JOURNAL OF CRYSTAL GROWTH**. 2023, 603, 126977

Wang, X; Wang, YW; Lu, CS; Zhang, JH; Qiu, W; Yang, S; Lin, NB; Zhang, Y; Liu, XY*. Chameleon-inspired flexible photonic crystal lens-shaped dynamic pressure sensor based on structural color shift. **CELL REPORTS PHYSICAL SCIENCE**. 2023, 4, 101490

Wang, X; Zhang, YH; Shi, JH; Cai, JF; Liu, GK*; Tang, J*. *In situ*

temperature-modulated electrochemical surface-enhanced Raman spectroscopy study of the effect of *CO on metal surface. **JOURNAL OF PHYSICAL CHEMISTRY C**. 2023, 127: 13034-13043

Wang, X; Zhou, P; Yang, WF; Chen, M; Cheng, H; Chen, GX; Cai, YH*. Enhanced mesopelagic particle export in the northern South China Sea derived from ²¹⁰Po/²¹⁰Pb disequilibrium. **CHEMICAL GEOLOGY**. 2023, 634, 121582

Wang, Y; Li, Y; Xie, YS; Wei, GM; He, ZG; Geng, XP*; Shang, SP*. Assessment of sea-surface wind retrieval from C-band miniaturized SAR imagery. **SENSORS**. 2023, 23, 6313

Wang, Y; Lin, JJ; Wang, FF; Tian, Q; Zheng, Y; Chen, NW*. Hydrological connectivity affects nitrogen migration and retention in the land-river continuum. **JOURNAL OF ENVIRONMENTAL MANAGEMENT**. 2023, 326, 116816

Wang, Y; Pan, Z; Zhang, LX*; Lu, YL; Zhang, ZK; Ren, JZ. Consumption-based emissions at city level in China and the spatial heterogeneity analysis of the influential factors. **ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH**. 2023, 30: 28961-28974

Wang, Y; Zhang, R; Yang, YF; Tu, QC; Zhou, JZ*; Jiao, NZ*. Ocean acidification altered microbial functional potential in the Arctic Ocean. **LIMNOLOGY AND OCEANOGRAPHY**. 2023, 68: S217-S229

Wang, YH; Peng, ZX; Yan, L; Gao, X; Wu, L; Cui, SC; Zhou, MY; Ren, TJ; Wang, W; Sun, SH; Han, YZ*; Sun, H*. Effects of dietary glutamine supplementation on growth performance, intestinal digestive ability, antioxidant status and hepatic lipid accumulation in *Xenocypris davidi* (Bleeker, 1871). **AQUACULTURE INTERNATIONAL**. 2023, DOI: 10.1007/s10499-023-01187-4

Wang, YY; Yang, WF*; Cai, YH; Fang, ZM; Zhao, XF; Zhang, QH; Yuan, H; Lin, N; Zou, CY; Zheng, MF. Macroalgae culture-induced carbon sink in a large cultivation area of China. **ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH**. 2023, 30: 107693-107702

Wang, YY; Yang, WF*; Zhao, XF; Zhang, QH; Chen, HS; Fang, ZM; Zheng, MF. Changes in the carbon source and storage in a cultivation area of macro-algae in Southeast China. **MARINE**

POLLUTION BULLETIN. 2023, 188, 114680

Wang, Z*; Yang, DY; Qiu, JW; Cai, MG; Deng, YZ; Ke, CH*. *Micropodarke fujianensis* n. sp. (Annelida: Hesionidae) from Fujian, China. **ZOOTAXA.** 2023, 5256: 279-288

Wang, ZX; Wang, GZ; Guo, XH; Bai, Y; Xu, Y; Dai, MH*. Spatial reconstruction of long-term (2003-2020) sea surface pCO₂ in the South China Sea using a machine-learning-based regression method aided by empirical orthogonal function analysis. **EARTH SYSTEM SCIENCE DATA.** 2023, 15: 1711-1731

Wei, JL; Liu, HL*; Zhao, Y; Lin, PF; Yu, ZP; Li, LJ; Xie, JB; Duan, AM. Simulation of the climate and ocean circulations in the Middle Miocene Climate Optimum by a coupled model FGOALS-g3. **PALAEOGEOGRAPHY PALAEOCLIMATOLOGY PALAEOECOLOGY.** 2023, 617, 111509

Wu, GX; Zhou, XJ; Xu, XD; Huang, JP; Duan, AM*; Yang, S; Hu, WT; Ma, YM; Liu, YM; Bian, JC; Fu, YF; Yang, HJ; Zhao, P; Zhong, L; Ma, WQ. An integrated research plan for the Tibetan Plateau land-air coupled system and its impacts on the global climate. **BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY.** 2023, 104: E158-E177

Wu, JW; Kong, J; Laws, EA; Liu, X*; Wang, CY; Chen, JX; Chen, MR; Yao, QZ; Wang, YT; Zhen, Y; Li, CL; Huang, BQ. The link between marine thermal discharges and *Nemopilema nomurai* blooms around nuclear power plants. **ECOSYSTEM HEALTH AND SUSTAINABILITY.** 2023, 9, 9

Wu, ML; Xue, HJ; Chai, F*. Asymmetric chlorophyll responses enhanced by internal waves near the Dongsha Atoll in the South China Sea. **JOURNAL OF OCEANOLOGY AND LIMNOLOGY.** 2023, 41: 418-426

Wu, SP; Gu, XX; Zheng, YH; Chen, LZ*. Nocturnal sap flow as compensation for water deficits: an implicit water-saving strategy used by mangroves in stressful environments. **FRONTIERS IN PLANT SCIENCE.** 2023, 14, 1118970

Wu, YY; Peng, WZ; Wang, Y; Huang, ZK; Feng, Y; Han, ZF; Luo, X; You, WW*; Ke, CH*. Identification and dimorphic expression of sex-related genes in Pacific abalone (*Haliotis discus hannai*). **AQUACULTURE.** 2023, 574, 739610

Xi, LY; Sun, YA*; Xu, T; Wang, Z; Chiu, MY; Plouviez, S; Jollivet, D; Qiu, JW*. Phylogenetic divergence and population genetics of the hydrothermal vent annelid genus *Hesiolyra* along the East Pacific Rise: Reappraisal using multi-locus data. **DIVERSITY AND DISTRIBUTIONS.** 2023, 29: 184-198

Xia, MK; Wang, JJ; Li, SL; Lin, AH; Yao, QH; Guo, ZY; Chen, X; Chen, QS*; Chen, XM*. A sensitive electrochemiluminescence resonance energy transfer system between Ru-MOFs and Bi₂S₃ for deoxynivalenol detection. **SENSORS AND ACTUATORS B-CHEMICAL.** 2023, 393, 134192

Xiang, WJ; Song, ZC; Yang, WY*; Li, HQ; Fu, WJ; Zhang, Y*. Reverberation suppression for detecting underwater moving target based on robust autoencoder. **APPLIED ACOUSTICS.** 2023, 206, 109301

Xiao, K; Pan, F*; Li, YR; Li, ZY; Li, HL; Guo, ZR; Wang, XH; Zheng, CM. Coastal aquaculture regulates phosphorus cycling in estuarine wetlands: Mobilization, kinetic resupply, and source-sink process. **WATER RESEARCH.** 2023, 234, 119832

Xiao, SC; Chen, JX; Shen, Y; Chen, Q; Wang, Y; Li, YY; He, C; Cai, RH; Shi, Q; Jiao, NZ*; Zheng, Q*. Molecular characterization of organic matter transformation mediated by microorganisms under anoxic/hypoxic conditions. **SCIENCE CHINA-EARTH SCIENCES.** 2023, 66: 894-909

Xiao, X; Zhou, C*; Yang, QX; Jing, ZY; Liu, ZY; Yuan, DL; Xu, ZH; Zhao, W; Tian, JW. Diapycnal upwelling over the Kyushu-Palau Ridge in the North Pacific Ocean. **GEOPHYSICAL RESEARCH LETTERS.** 2023, 50, e2023GL104369

Xiao, XL*; Yamashita, Y; Gonsior, M; Jiao, NZ*. The efficiency of the microbial carbon pump as seen from the relationship between apparent oxygen utilization and fluorescent dissolved organic matter. **PROGRESS IN OCEANOGRAPHY.** 2023, 210, 102929

Xie, GH; Zhang, Y*; Liu, J; Xue, HJ; Ge, JZ; He, XQ; Ma, WT; Chai, F. Improvement of the sediment flux estimation in the Yangtze River Estuary with a GOCI data adjusted numerical model. **OCEAN MODELLING.** 2023, 186, 102284

Xie, LF; Luo, SH; Liu, YY; Ruan, XJ; Gong, KD; Ge, QY; Li, KJ; Valev, VK; Liu, GK; Zhang, LW*. Automatic identification of individual

nanoplastics by Raman spectroscopy based on machine learning. *ENVIRONMENTAL SCIENCE & TECHNOLOGY*. 2023, 57: 18203-18214

Xie, MY; Zheng, Y; Zhang, XQ; Xia, J; Maulani, N; Yuan, ZG; Cai, C*; Hu, SH*. Formate as an alternative electron donor for the anaerobic methanotrophic archaeon *Candidatus Methanoperedens nitroreducens*. *ENVIRONMENTAL SCIENCE & TECHNOLOGY LETTERS*. 2023, 10: 506-512

Xie, QP; Zhan, W; Shi, JZ; Liu, F; Niu, BL; He, X; Liu, M; Wang, J; Liang, QQ; Xie, Y; Xu, P*; Wang, X*; Lou, B*. Whole-genome assembly and annotation for the little yellow croaker (*Larimichthys polyactis*) provide insights into the evolution of hermaphroditism and gonochorism. *MOLECULAR ECOLOGY RESOURCES*. 2023, 23: 632-658

Xie, R; Chen, F; Ma, YX; Hu, W; Zheng, Q; Cao, JG*; Wu, Y*. Network pharmacology-based analysis of marine cyanobacteria derived bioactive compounds for application to Alzheimer's disease. *FRONTIERS IN PHARMACOLOGY*. 2023, 14, 1249632

Xie, X; Liu, D; Wang, WL; Xiang, J*; Yang, MH*; Liu, GK*. Microelectrode-based electrochemical impedance determination of brain-derived neurotrophic factor in aqueous humor for diagnosis of glaucoma. *ANALYTICAL CHEMISTRY*. 2023, 95: 2087-2093

Xie, XH*; Wang, Y; Liu, ZY; Liu, XH; Chen, DK; Zheng, DS; Wang, JN. Observation of near-inertial waves in the bottom boundary layer of an seamount. *JOURNAL OF PHYSICAL OCEANOGRAPHY*. 2023, 53: 635-645

Xie, XW; Lu, YL*; Wang, P; Lei, HJ; Liang, Z. Per- and polyfluoroalkyl substances in marine organisms along the coast of China. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 876, 162492

Xing, QW; Yu, HQ*; Wang, H; Ito, SI; Chai, F. Mesoscale eddies modulate the dynamics of human fishing activities in the global midlatitude ocean. *FISH AND FISHERIES*. 2023, 24: 527-543

Xing, XG*; Xiu, P; Laws, EA; Yang, G; Liu, X*; Chai, F. Light-driven and nutrient-driven displacements of subsurface chlorophyll maximum depth in subtropical gyres. *GEOPHYSICAL RESEARCH LETTERS*. 2023, 50, e2023GL104510

Xiong, TQ; Li, HM; Yue, YF; Hu, YB; Zhai, WD; Xue, L; Jiao, NZ; Zhang, YY*. Legacy Effects of Late Macroalgal Blooms on Dissolved Inorganic Carbon Pool through Alkalinity Enhancement in Coastal Ocean. *ENVIRONMENTAL SCIENCE & TECHNOLOGY*. 2023, 57: 2186-2196

Xu, MJ; Sun, CW*; Du, ZL*; Zhu, XD. Impacts of aquaculture on the area and soil carbon stocks of mangrove: A machine learning study in China. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 859, 160173

Xu, Q; Ren, QQ; Jiang, T; Jiang, CR; Fang, LP; Zhang, MZ; Yang, J; Liu, M*. Otolith microchemistry reveals various habitat uses and life histories of Chinese gizzard shad *Clupanodon thrissa* in the Min River and the estuary, Fujian Province, China. *FISHERIES RESEARCH*. 2023, 264, 106723

Xu, SM; Li, GH; He, C; Huang, Y; Yu, D; Deng, HW; Tong, ZY; Wang, YC; Dupuy, C; Huang, BQ; Shen, Z; Xu, J; Gong, J*. Diversity, community structure, and quantity of eukaryotic phytoplankton revealed using 18S rRNA and plastid 16S rRNA genes and pigment markers: a case study of the Pearl River Estuary. *MARINE LIFE SCIENCE & TECHNOLOGY*. 2023, 5: 415-430

Xu, WA; Lin, YH; Wang, Y; Li, YY; Zhu, HM; Zhou, HT*. Phenotypic analysis and molecular characterization of enlarged cell size mutant in *Nannochloropsis oceanica*. *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*. 2023, 24, 13595

Xu, XB; Xu, Y; Li, J*; IU, YL*; Jenkins, A; Ferrier, RC; Li, H; Stenseth, NC; Hessen, DO; Zhang, LX; Li, C; Gu, BJ; Jin, SQ; Sun, MX; Ouyang, Z; Mathijs, E. Coupling of crop and livestock production can reduce the agricultural GHG emission from smallholder farms. *ISCIENCE*. 2023, 26, 106798

Xu, XH; Liu, CS*; Li, JH*; Miao, YC; Zhao, L. Long-term trajectory prediction for oil tankers via grid-based clustering. *JOURNAL OF MARINE SCIENCE AND ENGINEERING*. 2023, 11, 1211

Xue, SH; Meng, LS; Geng, XP*; Sun, HY; Edwing, D; Yan, XH*. Retrieving ocean surface winds and waves from augmented dual-polarization sentinel-1 SAR data using deep convolutional residual networks. *ATMOSPHERE*. 2023, 14, 1272

Yan, RF; Wang, FF; Wang, Y; Chen, NW*. Pollution abatement

reducing the river N₂O emissions although it is partially offset by a warming climate: Insights from an urbanized watershed study. *WATER RESEARCH*. 2023, 236, 119934

Yang, LO; Zhang, LC; Tian, DJ; Ye, M; Lin, FY; Liu, XL; Wang, YR*; Chen, X*. Oxygen sensing behavior modulation of tetranuclear copper iodide hybrid materials using ligand engineering. *SENSORS AND ACTUATORS B-CHEMICAL*. 2023, 393, 134310

Yang, LQ; Sun, ZY; Hu, ZY; Huang, ZD; Chen, ZZ; Zhu, J; Hu, JY*. Surface currents along the coast of the Chinese mainland observed by coastal drifters during April-May 2019. *MARINE TECHNOLOGY SOCIETY JOURNAL*. 2023, 57: 156-167

Yang, T; Zeng, YX*; Kang, ZX; Cai, MG; Chen, K; Zhao, Q; Lin, JH; Liu, RA; Xu, GD*. Enrichment and ecological risks of microplastics in mangroves of southern Hainan Island, China. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 889, 164160

Yang, W*; Wei, H; Liu, ZY; Zhao, L. Widespread intensified pycnocline turbulence in the summer stratified Yellow Sea. *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*. 2023, 128, e2022JC019023

Yang, WF*; Fang, ZM; Zhang, QH; Chen, M; Zheng, MF. Dynamics of particulate black carbon in the South China Sea: Magnitude, resident timescale, sinking speed, and flux. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 877, 162847

Yang, WY*; Chang, WL; Song, ZC; Niu, FQ; Wang, XY; Zhang, Y. Denoising odontocete echolocation clicks using a hybrid model with convolutional neural network and long short-term memory network. *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*. 2023, 154: 938-947

Yang, XM; Meng, HL; Zhang, JL; Yu, Y; Allen, E; Xia, ZY; Zhu, KY; Du, PX; Ren, XY; Xiong, JX; Lu, XY; Ding, Y; Han, S; Liu, WP; Jin, L; Wang, CC*; Wen, SQ*. Ancient genome of Empress Ashina reveals the Northeast Asian origin of Göktürk Khanate. *JOURNAL OF SYSTEMATICS AND EVOLUTION*. 2023, 61: 1056-1064

Yao, Y; Alpert, PA; Zuend, A; Wang, BB*. Does liquid-liquid phase separation impact ice nucleation in mixed polyethylene glycol and ammonium sulfate droplets. *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*. 2023, 25: 80-95

Ye, JD; Zheng, HW; Liu, MY; Tanli, Y; Qi, HY; Jing, LK; Huang, JJ; Hossain, KB; Ke, HW; Wang, CH; Wang, SL*; Cai, MG*. Upwelling impact and lateral transport of dissolved PAHs in the Taiwan Strait and adjacent South China Sea. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 895, 165159

Ye, M; Lin, FY; Yang, LG; Jin, JW; Liu, XL; Wang, YR*; Chen, X*. Highly stable luminescence temperature sensing based on eco-friendly lead-free cesium copper iodine perovskites. *JOURNAL OF LUMINESCENCE*. 2023, 260, 119880

Ye, YT; Sunda, WG; Hong, HZ; Shi, DL*. Interrelated influence of iron, light, and CO₂ on carbon fixation in a Southern Ocean diatom. *LIMNOLOGY AND OCEANOGRAPHY*. 2023, 68: 1504-1516

Yi, XQ; Gao, KS*. Impact of ultraviolet radiation nearly overrides the effects of elevated pCO₂ on a prominent nitrogen-fixing cyanobacterium. *LIMNOLOGY AND OCEANOGRAPHY*. 2023, 68: 557-568

You, YC; Sun, XQ; Lin, SJ*. An ancient enzyme finds a new home: prevalence and neofunctionalization of trypsin in marine phytoplankton. *JOURNAL OF PHYCOLOGY*. 2023, 59: 152-166

Yu, F; Shen, YW; Peng, WZ; Chen, N; Gan, Y; Xiao, QZ; Liu, JY; Lu, YS; Lin, WH; Han, ZF; Luo, X; You, WW*; Ke, CH*. Metabolic and transcriptional responses demonstrating enhanced thermal tolerance in domesticated abalone. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 872, 162060

Yu, FL*; Li, NN*; Tian, GH; Huang, ZQ; Xiong, HX; Li, TH; Liu, ST; Liu, YZ. A re-evaluation of Holocene relative sea-level change along the Fujian coast, southeastern China. *PALAEOGEOGRAPHY PALAEOCLIMATOLOGY PALAEOECOLOGY*. 2023, 622, 111577

Yu, LY; Li, TC; Li, HF; Ma, ML; Li, L; Lin, SJ*. In Situ Molecular Ecological analyses illuminate distinct factors regulating formation and demise of a harmful dinoflagellate bloom. *MICROBIOLOGY SPECTRUM*. 2023, 11, e05157-22

Yu, SJ; Song, ZG; Bai, Y*; Guo, XH; He, XQ; Zhai, WD; Zhao, HD; Dai, MH. Satellite-estimated air-sea CO₂ fluxes in the Bohai Sea, Yellow Sea, and East China Sea: Patterns and variations during 2003–2019. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 904,

166804

Yu, WC; Shen, YW; Liu, JY; Zou, WG; Huang, ZK; Huang, MQ; Lu, Y; Ke, JW; Luo, X; You, WW*; Ke, CH*. Genotype by environment interactions in feed efficiency of Pacific abalone (*Haliotis discus hannai*) reared at different water temperatures. **AQUACULTURE**. 2023, 562, 738764

Yu, WC; Zeng, LT; Zou, WG; Shu, Y; Gwo, JC; You, WW; Luo, X*; Ke, CH*. Seasonal variation in the nutritional components and textural properties of Pacific abalone and its hybrids. **AQUACULTURE**. 2023, 563, 738930

Yu, XL*; Lee, ZP; Lai, WD. Global distribution of the spectral power coefficient of particulate backscattering coefficient obtained by a neural network scheme. **REMOTE SENSING OF ENVIRONMENT**. 2023, 296, 113750

Yuan, LT; Cai, PH*; Jiang, XY; Geibert, W; Cheng, YL; Chen, YJ. Precise measurement of ²²⁶Ra/²³⁰Th disequilibria in deep-sea sediments by high-sensitivity ICP-MS. **CHEMICAL GEOLOGY**. 2023, 620, 121351

Yuan, W; Liu, Q; Song, S*; Lu, YL; Yang, SJ; Fang, ZL; Shi, Z. A climate-water quality assessment framework for quantifying the contributions of climate change and human activities to water quality variations. **JOURNAL OF ENVIRONMENTAL MANAGEMENT**. 2023, 333, 117441

Yuan, Z; Pei, CL; Li, HX; Lin, L; Hou, R; Liu, S; Zhang, K; Cai, MG; Xu, XR*. Vertical distribution and transport of microplastics in the urban atmosphere: New insights from field observations. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 895, 165190

Yuan, ZW; Achterberg, EP; Engel, A; Wen, ZZ; Zhou, LB; Zhu, XC; Dai, MH; Browning, TJ*. Phytoplankton community response to episodic wet and dry aerosol deposition in the subtropical North Atlantic. **LIMNOLOGY AND OCEANOGRAPHY**. 2023, 68: 2126-2140

Yuan, ZW; Browning, TJ; Du, CJ; Shen, H; Wang, L; Ma, YF; Jiang, ZP; Liu, ZY; Zhou, KB; Kao, SJ; Dai, MH*. Enhanced phosphate consumption stimulated by nitrogen fixation within a cyclonic eddy in the Northwest Pacific. **JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS**. 2023, 128, e2023JC019947

Yuan, ZW; Browning, TJ; Zhang, RF; Wang, CW; Du, CJ; Wang, YM; Chen, Y; Liu, ZY; Liu, X; Shi, DL; Dai, MH*. Potential drivers and consequences of regional phosphate depletion in the western subtropical North Pacific. **LIMNOLOGY AND OCEANOGRAPHY LETTERS**. 2023, 8: 509-518

Zeng, QM; Zhou, ZX; He, Q; Li, LB; Pu, F; Yan, MZ; Xu, P*. Chromosome-level haplotype-resolved genome assembly for *Takifugu ocellatus* using PacBio and Hi-C technologies. **SCIENTIFIC DATA**. 2023, 10, 22

Zhai, MY; Mao, SY; Liu, LH*; Chen, XP; Cai, MG; Zhu, XW; Wu, DD; Wu, HC. Molecular distribution and stable carbon isotopic composition of lipid biomarkers of Shin-Yan-Ny-Hu Mud volcanoes in southwestern Taiwan: Implications for the origin and diagenesis. **MARINE AND PETROLEUM GEOLOGY**. 2023, 150, 106101

Zhang, C; Duan, AM*; Jia, XJ; Hu, J; Liu, SZ. Snow cover on the Tibetan Plateau and Lake Baikal intensifies the winter North Atlantic Oscillation. **GEOPHYSICAL RESEARCH LETTERS**. 2023, 50, e2023GL104754

Zhang, C; Jia, XJ*; Duan, AM; Hu, D. Interdecadal changes in the dominant modes of spring snow cover over the Tibetan Plateau around the early 1990s. **JOURNAL OF CLIMATE**. 2023, 36: 3765-3780

Zhang, JJ; Huang, ZH; Li, YC; Fu, DH; Li, QP; Pei, LX; Song, YW; Chen, L; Zhao, HW*; Kao, SJ. Synergistic/antagonistic effects of nitrate/ammonium enrichment on fatty acid biosynthesis and translocation in coral under heat stress. **SCIENCE OF THE TOTAL ENVIRONMENT**. 2023, 876, 162834

Zhang, KD*; Li, JS; Cheng, J; Lin, SJ*. Alkaline phosphatase PhoD mutation induces fatty acid and long-chain polyunsaturated fatty acid (LC-PUFA)-bound phospholipid production in the model diatom *Phaeodactylum tricornutum*. **MARINE DRUGS**. 2023, 21, 560

Zhang, KD; Shen, Z; Yang, WL; Guo, JN; Yan, ZC; Li, JS; Lin, JM; Cao, XC; Tang, J; Liu, ZQ; Zhou, Z*; Lin, SJ. Unraveling the metabolic effects of benzophenone-3 on the endosymbiotic dinoflagellate *Cladocopium goreau*. **FRONTIERS IN MICROBIOLOGY**. 2023, 13, 1116975

- Zhang, L; You, HM; Chen, JF; Huang, BQ; Cui, YZ; Hossain, KB; Chen, QH; Cai, MG*; Qian, QR*. Surface structures changes and biofilm communities development of degradable plastics during aging in coastal seawater. *MARINE POLLUTION BULLETIN*. 2023, 193, 114996
- Zhang, L; Zhu, YM; Guo, ZY; You, LJ; Zhang, C; Chen, X*. Colorimetric sensing of the peroxide number of milk powder using CsPbBr₃ perovskite nanocrystals. *BIOSENSORS-BASEL*. 2023, 13, 493
- Zhang, M; Gao, XL*; Luo, Q; Lin, SH; Lyu, M; Luo, X; Ke, CH; You, WW*. Ecological benefits of artificial light at night (ALAN): Accelerating the development and metamorphosis of marine shellfish larvae. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 903, 166683
- Zhang, M; Gao, XL; Lyu, M; Lin, SH; Luo, X; Ke, CH; You, WW*. Examination of the effects of blue light stress on monoamine oxidase-mediated immunomodulatory function in the Pacific abalone, *Haliotis discus hannai*. *AQUACULTURE*. 2023, 575, 739726
- Zhang, P; Duan, AM*. Connection between the tropical Pacific and Indian Ocean and temperature anomaly across West Antarctic. *NPJ CLIMATE AND ATMOSPHERIC SCIENCE*. 2023, 6, 49
- Zhang, P; Duan, AM*. Precipitation anomaly over the Tibetan Plateau affected by tropical sea-surface temperatures and mid-latitude atmospheric circulation in September. *SCIENCE CHINA-EARTH SCIENCES*. 2023, 66: 619-632
- Zhang, P; Duan, AM*; Wang, X. Joint effect of the Indian Ocean Dipole and the Silk Road Pattern on Indian rainfall during summer to autumn transition. *ATMOSPHERIC RESEARCH*. 2023, 283, 106589
- Zhang, QA; Zhang, Z; Xu, N; Li, YF*. Fully automatic training sample collection for detecting multi-decadal inland/seaward urban sprawl. *REMOTE SENSING OF ENVIRONMENT*. 2023, 298, 113801
- Zhang, QH; Zhou, JF; Fang, ZM*; Yang, WF*; Chen, M; Zheng, MF. Sources and dynamics of dissolved black carbon in the Pearl River Estuary and Shelf, Northern South China Sea. *JOURNAL OF OCEANOGRAPHY*. 2023, DOI: 10.1007/s10872-023-00708-2
- Zhang, RY; Qiao, J; Huang, DK*; Lin, XH; Tian, L; Wang, BY; Bao, HY*; Kao, SJ. Seasonal variations in the sources and influential factors of aerosol dissolved black carbon at a southeast coastal site in China. *JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES*. 2023, 128, e2023JD038515
- Zhang, WB; An, Z; Bai, YQ; Zhou, Y; Chen, FY*; Wang, KJ*. A novel antimicrobial peptide Scyreptin₁₋₃₀ from *Scylla paramamosain* exhibiting potential therapy of *Pseudomonas aeruginosa* early infection in a mouse burn wound model. *BIOCHEMICAL PHARMACOLOGY*. 2023, 218, 115917
- Zhang, X; Zhang, P; Deng, ZC; Huang, RP; Zhang, D; Tian, Y; Wang, N; Li, H; Wang, XY; Jiang, XW; Sun, JZ; Fu, QQ; Yi, XQ; Qu, LM; Zhou, C; Rao, YM; Zeng, XR; Hall-Spencer, JM; Gao, G; Gao, KS; Lin, X*. Ocean acidification has a strong effect on communities living on plastic in mesocosms. *LIMNOLOGY AND OCEANOGRAPHY LETTERS*. 2023, 8: 675-684
- Zhang, Y; Qu, ZS; Li, JQ; Hu, T; Chen, CZ; Lin, XF*. From river to ocean: Connectivity and heterogeneity of aquatic ecosystems depicted by planktonic microeukaryotes. *ECOLOGICAL INDICATORS*. 2023, 148, 110136
- Zhang, YF; Xie, MW*; Spadaro, DM; Simpson, SL. Improving toxicity prediction of metal-contaminated sediments by incorporating sediment properties. *ENVIRONMENTAL POLLUTION*. 2023, 338, 122708
- Zhang, YL*; Yang, KL; Chen, HM; Dong, YP; Li, W*. Origin, composition, and accumulation of dissolved organic matter in a hypersaline lake of the Qinghai-Tibet Plateau. *SCIENCE OF THE TOTAL ENVIRONMENT*. 2023, 868, 161612
- Zhang, YP; Guo, XH; Zhu, XD*. Strong diurnal variability of carbon dioxide flux over algae-shellfish aquaculture ponds revealed by eddy covariance measurements. *AGRICULTURE ECOSYSTEMS & ENVIRONMENT*. 2023, 348, 108426
- Zhang, YY; Yu, SE; Wang, WL; Yang, LE; Lu, QQ; Xie, CT; Liu, T; Dong, YW*. Temperature sensitivity of marine macroalgae for aquaculture in China. *AQUACULTURE*. 2023, 567, 739262
- Zhang, Z; Ahmed, MR; Zhang, Q; Li, Y; Li, YF*. Monitoring of 35-

year mangrove wetland change dynamics and agents in the sundarbans using temporal consistency checking. **REMOTE SENSING**. 2023, 15, 625

Zhang, ZH; Li, DH; Xie, RZ; Guo, RY; Nair, S; Han, H; Zhang, GJ; Zhao, Q; Zhang, LH; Jiao, NZ; Zhang, YY*. Plastoquinone synthesis inhibition by tetrabromo biphenyldiol as a widespread algicidal mechanism of marine bacteria. **ISME JOURNAL**. 2023, 17: 1979-1992

Zhang, ZH; Zhao, HS; Mou, SL; Nair, S; Zhao, JL; Jiao, NZ; Zhang, YY*. Phage infection benefits marine diatom phaeodactylum tricorutum by regulating the associated bacterial community. **MICROBIAL ECOLOGY**. 2023, 86: 144-153

Zhang, ZK; Li, JY; Guan, DB*. Value chain carbon footprints of Chinese listed companies. **NATURE COMMUNICATIONS**. 2023, 14, 2794

Zhang, ZW; Ma, WT*; Chai, F*. Dynamical response of the Arabian Sea oxygen minimum zone to the extreme Indian Ocean dipole events in 2016 and 2019. **GEOPHYSICAL RESEARCH LETTERS**. 2023, 50, e2023GL104226

Zhao, BC; Yan, JQ; Long, F; Qiu, W; Meng, GQ; Zeng, ZC; Huang, H; Wang, H; Lin, NB*; Liu, XY*. Bioinspired conductive enhanced polyurethane ionic skin as reliable multifunctional sensors. **ADVANCED SCIENCE**. 2023, 10, 2300857

Zhao, J; Ke, QZ; Miao, LW; Wang, JY; Bai, YL; Pu, F; Zhou, T; Xu, P*. Revealing the interaction effect on the accuracy of genomic selection between marker density and genetic architecture. **AQUACULTURE**. 2023, 563, 739022

Zhao, J; Wu, Q; Bai, XH; Allen, E; Wang, MG; He, GL; Guo, JX; Yang, XM; Xiong, JX; Jiang, ZX; Ji, XY; Wang, H; Tan, JZ*; Wen, SQ*; Wang, CC*. Genetic admixture of Chinese Tajik people inferred from genome-wide array genotyping and mitochondrial genome sequencing. **JOURNAL OF SYSTEMATICS AND EVOLUTION**. 2023, DOI: 10.1111/jse.12957

Zhao, JL; Wang, ZM; Li, CC; Shi, TM; Liang, YT; Jiao, NZ; Zhang, YY*. Significant differences in planktonic virus communities between cellular fraction (0.22 ~ 3.0 μm) and viral fraction (< 0.22 μm) in the ocean. **MICROBIAL ECOLOGY**. 2023, 86: 825-842

Zhao, Q; Zhao, J; Zhang, W*; Hu, X; Zhang, J; Xue, WB*; Jiang, L; Zhang, J; Liu, X; Jiang, HQ; Huo, RX; Zhang, ZK*. Revealing inter-regional environmental inequities hidden in China's energy transition. **ENVIRONMENTAL SCIENCE & TECHNOLOGY**. 2023, 57: 11852-11862

Zhao, Y; Chen, MR*; Chung, TH; Chan, LL; Qiu, JW*. The 2022 summer marine heatwaves and coral bleaching in China's Greater Bay Area. **MARINE ENVIRONMENTAL RESEARCH**. 2023, 189, 106044

Zhao, YZ; Li, YF*. Spatial disparity of fishing activities overlapping the abrupt shifts for marine net primary production. **REVIEWS IN FISH BIOLOGY AND FISHERIES**. 2023, 33: 1409-1421

Zheng, H; Zhang, WZ*. An extraordinary chlorophyll-a enhancement event jointly induced by two sequential tropical cyclones in the Kuroshio region south of Japan. **FRONTIERS IN MARINE SCIENCE**. 2023, 10, 1269310

Zheng, HT; Sun, YW*; Luo, T; Cheng, XL; Shao, SY; Zheng, SY; Tao, BY; Chen, B; Tu, QG; Huang, K; Wang, BB; Wang, M; Song, XQ; Zhang, TS; Cheng, Y; Liu, JG. Advances in coastal ocean boundary layer detection technology and equipment in China. **JOURNAL OF ENVIRONMENTAL SCIENCES**. 2023, 123: 156-168

Zheng, HW; Liu, MY; Lohmann, R; Li, DN; Vojta, S; Katz, S; Wang, WM; Ke, HW; Wang, CH; Cai, MG*. Gaseous polycyclic aromatic hydrocarbons over the South China Sea: Implications for atmospheric transport under monsoon influences. **MARINE POLLUTION BULLETIN**. 2023, 191, 114982

Zheng, KY; Liang, YT*; Paez-Espino, D; Zou, X; Gao, C; Shao, HB; Sung, YY; Mok, WJ; Wong, LL; Zhang, YZ; Tian, JW; Chen, F; Jiao, NZ; Suttle, CA; He, JF*; McMinn, A*; Wang, M*; Gilbert, JA. Identification of hidden N4-like viruses and their interactions with hosts. **MSYSTEMS**. 2023, e0019723

Zheng, XQ; Lu, YL*; Ma, CM; Yuan, JJ; Stenseth, NC; Hessen, DO; Tian, HQ; Chen, DL; Chen, Y; Zhang, S. Greenhouse gas emissions from extractive industries in a globalized era. **JOURNAL OF ENVIRONMENTAL MANAGEMENT**. 2023, 343, 118172

Zheng, YH; Zhuang, W*; Du, Y*. Extreme sea level changes over

the tropical western Pacific in 1.5 °C and 2.0 °C warmer climates.

FRONTIERS IN MARINE SCIENCE. 2023, 10, 1130769

Zhou, C; Zhang, D; Yi, XQ; Beardall, J; Gao, KS*. No adaptation to warming after selection for 800 generations in the coccolithophore *Emiliana huxleyi* BOF 92. **FRONTIERS IN MARINE SCIENCE.** 2023, 10, 1211804

Zhou, KB; Xu, YP; Kao, SJ; Xiu, P; Wan, XH; Huang, BQ; Liu, X; Du, CJ; Sun, J; Sun, ZY; Dai, MH*. Changes in nutrient stoichiometry in responding to diatom growth in cyclonic eddies. **GEOSCIENCE LETTERS.** 2023, 10, 12

Zhou, MC; Zhang, JP; Huang, MQ; You, WW; Luo, X; Han, ZF*; Ke, CH*. Genetic variation between a hybrid abalone and its parents (*Haliotis discus hannai* ♀ and *H. fulgens* ♂) based on 5S rDNA gene and genomic resequencing. **AQUACULTURE.** 2024, 579, 740173

Zhou, Y; Meng, XY; Chen, FY; Xiong, M; Zhang, WB; Wang, KJ*. Newly discovered antimicrobial peptide scyampcin₄₄₋₆₃ from *Scylla paramamosain* exhibits a multitargeted candidacidal mechanism *in vitro* and is effective in a murine model of vaginal candidiasis. **ANTIMICROBIAL AGENTS AND CHEMOTHERAPY.** 2023, 67, e00022-23

Zhou, YD; Han, YR; Xie, W; Li, MT; Wang, Z; Zhang, DS*. Diversity, phylogeny, and bathymetric zonation of *Sirsoe* (Annelida: Hesionidae) from colonization experiments in the South China Sea, with the description of three new species. **ECOLOGY AND EVOLUTION.** 2023, 13, e10256

Zhou, ZX; Yang, JY; Lv, HZ; Zhou, T; Zhao, J; Bai, HQ; Pu, F; Xu, P*. The adaptive evolution of *Leuciscus waleckii* in Lake Dali Nur and convergent evolution of cypriniformes fishes inhabiting extremely alkaline environments. **GENOME BIOLOGY AND EVOLUTION.** 2023, 15, evad082

Zhu, XY; Yang, ZX; Xie, YY; Zhou, KB*; Wang, WL*. Strong particle dynamics counteract the nutrient-pumping effect leading to weak carbon flux in a cyclonic eddy. **MARINE CHEMISTRY.** 2023, 255, 104279

Zhu, XY; Zhang, XH; Chen, MR*; Xu, XM*. Characteristics of auditory brainstem response in wild yellow grouper *Epinephelus awoara*. **FRONTIERS IN MARINE SCIENCE.** 2023, 10, 1135310

Zhu, ZH; Hossain, KB; Wei, HH; Jia, RM; Gao, XF; Jin, HY; Cai, MG*. Distribution and sources of microplastics in the Beibu Gulf using *in-situ* filtration technique. **MARINE POLLUTION BULLETIN.** 2023, 188, 114614

Zou, DY; Chen, JF; Zhang, CL; Kao, SJ; Liu, HB; Li, M*. Diversity and salinity adaptations of ammonia oxidizing archaea in three estuaries of China. **APPLIED MICROBIOLOGY AND BIOTECHNOLOGY.** 2023, 107: 6897-6909

Zou, SJ*; Bower, AS; Lozier, MS; Furey, HH. Deep ocean circulation in the subpolar North Atlantic observed by acoustically-tracked floats. **PROGRESS IN OCEANOGRAPHY.** 2023, 211, 102975

Zou, WG; Hong, JW; Yu, WC; Ma, YB; Gan, JC; Liu, YB; Luo, X*; You, WW; Ke, CH*. Comprehensive comparison of effects of antioxidant (astaxanthin) supplementation from different sources in *Haliotis discus hannai* diet. **ANTIOXIDANTS.** 2023, 12, 1641

主 编：史大林、张 瑶、刘志宇、曹知勉、马 剑、林孟妹
编 辑：王冠菲、刘琰冉、朱 佳、施 薇、杨听林、黄 迎、张莉莉
设 计：陈 蕾

近海海洋环境科学国家重点实验室（厦门大学）

地址：厦门市翔安南路厦门大学翔安校区周隆泉楼 361102

电话：0592-2186039 传真：0592-2184101 邮箱：mel@xmu.edu.cn

网址： <http://mel.xmu.edu.cn>

