ANNUAL REPORT

2024

MEL

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)

MEL INTRODUCTION

The Laboratory of Marine Environmental Science (MEL) was promoted to a state key laboratory in March 2005 and specializes in marine environmental science research. It was recognized as one of the best state key laboratories in the last two nation-wide reviews (2010 and 2015) by the Ministry of Science and Technology (MOST). To meet the nation's strategic needs of carbon-neutrality, an ocean powered country and ecological civilization, MEL is dedicated to cutting-edge and interdisciplinary research related to global and regional environmental changes focused on marine biogeochemistry and its ecosystem dynamics. The ultimate goal of MEL is to be an internationally recognized institution in advanced marine environmental research and a platform for fostering talent and academic cooperation.

MEL ACADEMIC COMMITTEE

Honorary Director
HU Dunxin

Director
WU Lixin

Associate Directors
JIAO Nianzhi

LIU Congqiang

Members
CHAI Fei

FU Bojie

GUO Zhengtang

JIAN Zhimin

Paul K.S. Lam

SONG Weibo

TANG Qisheng

WANG Fan

WANG Hui

WEI Ching-Ling

ZHANG Si

ZHAO Meixun

ZHU Tong

ZHU Yongguan

MEL LEADERSHIP TEAM

Honorary Directors
DAI Minhan

HONG Huasheng

Director
SHI Dalin

Associate Directors
CAO Zhimian

LIN Mengmei

LIU Zhiyu

MA Jian

ZHANG Yao

CONTENTS

CONTENTS

Boundless Youth, Infinite Future

What distinguishes the first ray of sunshine in 2025 from that of 2005? The answer lies not in the light itself but in our perspective. Standing at the threshold of MEL's 20th anniversary, the outlook of a young lab embarking on its journey contrasts sharply with that of an institution now bearing the maturity of two decades. Yet, amid the relentless passage of time, the spirit remains ever youthful: the unwavering hope and pursuit of "tomorrow." Youth and the future—concepts immeasurable by years and unbounded by time—merge as we reflect on MEL's past and project its limitless possibilities. At this moment, the spring of 20 years ago feels inseparable from today, as MEL thrives with vitality and strength, marching toward an infinite horizon on the eve of its 20th birthday.

"A great mountain is not built from a single stone, nor is a soaring pavilion made from a single beam." The power of a team comes together to create something vast, while the light of an individual can spark a movement. MEL researchers continue to excel, earning prestigious awards like the NSFC Distinguished Young Scholars and top national youth talent honors. Notable achievements include the 8th "ZENG Chengkui Marine Science and Technology Award" for Young Scientists, recognition in the "Top 10 Science and Technology Advances in Oceanology and Limnology," and the NSFC Innovation Research Group award for "Marine metabolism and element cycles." Senior scholars also lead with honors such as the AGU Fellow election, Geosciences Ambassador recognition, and inclusion in Elsevier's 2023 Most Cited Chinese Researchers.

"Great achievements require patience, for no masterpiece is created overnight." The path of scientific discovery is long, but perseverance leads to success. Our researchers have made significant strides, uncovering new pathways for anthropogenic CO_2 transport and revealing how light intensity regulates nitrogen fixation in the ocean's photic zone. They have also challenged established views, assessed cadmium as a proxy for ocean productivity, decoded cyclonic eddy biology in the Northwest Pacific, and developed a systematic framework for ammonia-oxidizing archaea. Applied research has advanced, with team-led standards on microbial carbon pool surveys. Domestically developed ocean monitoring tools, like the *i*SEA system, have been successfully localized. Over the past year, MEL's faculty and students have explored the Taiwan Strait, South China Sea, Western Pacific, and Eastern Indian Ocean, driving breakthroughs in blue frontier research.

"One flower doesn't make a garden, but a flourishing field brings spring." True harmony comes from collective growth and collaboration. The 9th Young Scientist Forum of Earth Science convened over 6,000 early-career scholars in Xiamen to explore innovative paths in Earth sciences. MEL also established a new partnership with Plymouth Marine Laboratory and renewed its collaboration with the Swire Group for marine ecological protection and education programs. The Global-ONCE initiative led the first-ever international proposal on ocean carbon neutrality standards, having secured ISO approval. The Plank Manifesto co-authored by MEL researchers was presented at the United

A Message from Director

Nations General Assembly, weaving global efforts toward human-ocean harmony.

"It takes ten years to grow a tree, but a hundred to cultivate a person." The vast ocean nurtures the stars of tomorrow. MEL hosted the Training Workshop on Marine Radioactivity and 2024 Chief Scientist Training Cruise, fostering leadership in marine research. It supported the "XMU @ Sea" Undergraduate Training Cruise, convened the 16th University Consortium on Aquatic Sciences Symposium, and held the 9th MEL Graduate Academic Forum, building a strong talent pipeline in marine science. Public engagement saw innovation, with upgraded Xiamen University Ocean Sciences Days and live-streamed lectures bringing oceanic knowledge to diverse audiences. Seeds of marine aspirations were sown among the youth, transcending mountains and seas. Just before Teachers' Day, MEL was honored as an "Outstanding Groups and Institutions in the Education Sector" by the Ministry of Education, affirming its integration of education, research, and talent cultivation.

As the sun and moon rise and fall, our passion remains steadfast. Two decades of storms and sunshine, we stand united in the spirit of "reaching for the peak to greet the dawn, and riding the winds to conquer the waves." Now, at the threshold of 20 years, MEL begins a new chapter, poised to chart unknown waters. With courage and vision, we will push the boundaries of research, fueling the dream of a maritime powerhouse, and sail toward a boundless, future with no regrets.

As the old and new years intertwine in a single night, we pause to honor the journey. To every member of MEL, your dedication shines like stars in the night sky; to our friends and partners, near and far, we send a heartfelt greeting. May the Year of the Snake bring with it a tide of fortune, as we turn the page to a new chapter of creation and discovery.

Prof. SHI Dalin
Director of MEL
December 31st, 2024

2024 Headlines

January

◎ Research on “Stronger increases but greater variability in global mangrove productivity compared to that of adjacent terrestrial forests” was published in *Nature Ecology & Evolution*

◎ The project on “Precision and rapid analysis of nearshore biodiversity based on environmental genomics” (supported by Young Scientist Project of the National Key Research and Development Program) was launched

March

◎ 11 MEL scholars were listed among “the Most Cited Chinese Researchers in 2023” by Elsevier

April

◎ China’s first *Seagrass Bed Carbon Sink Methodology*, led by MEL scientists, passed its panel review

◎ The MoU between MEL and City University of Hong Kong was signed

May

◎ Research on “Functional vertical connectivity of microbial communities in the ocean” was published in *Science Advances*

◎ Research on “Biological carbon pump estimate based on multidecadal hydrographic data” won “Top 10 Science and Technology Advances in Oceanology” of China

◎ MEL organized the 9th Young Scientist Forum of Earth Science

◎ MEL organized the Scoping Workshop on “Synergy of Ocean Observations and Biogeochemical Models”

June

◎ LI Jianghui and LIU Zhiyu were awarded the Distinguished Young Scholars of China Frontiers of Engineering

◎ MEL invited Andreas Bjelland Eriksen, Minister of the Ministry of Climate and Environment of Norway, to join a Nanqiang Lecture to discuss “Blue Economy and Marine Sustainable Development”

◎ Two projects supported by the National Key Research and Development Program, the “Nutrient regulation and evolution of the biological pump in the Western North Pacific” and the “Understanding and prediction of decadal climate change based on energy processes”, were launched

July

◎ The 5th XMU @ Sea Undergraduate Training Cruise set sail, untilizing the South China Sea as the field site for research, teaching and training. The RV *TKK* was open to the public during its stops in Singapore, Malaysia and Hong Kong

August

◎ The Group of Excellence on "Ocean metabolism and elemental cycles" was awarded the NSFC Science Fund for Innovative Research Groups

◎ Co-organized by MEL, the Training Workshop on Marine Radioactivity was held at Xiamen University Malaysia

September

◎ The 2024 Chief Scientist Training Cruise and Cruise in the Central South China Sea supported by NSFC were organized aboard the RV *TKK*

◎ MEL was awarded the title of Outstanding Groups and Institutions in the Education Sector by Ministry of Education of China

◎ DAI Minhan was awarded the AGU Fellow and received the AGU Ambassador Award for Earth and Space Science

◎ CAO Ling and WANG Chuanchao received the NSFC Fund for Distinguished Young Scholars

◎ Research on "Pacific Ocean originated anthropogenic carbon and its long-term variations in the South China Sea" was published in *Science Advances*

◎ An agreement was signed by MEL team and Xiamen Standar Scientific Instruments Co., Ltd., aiming at transferring the technology of *i*SEA

October

◎ WANG Weilei received the ZENG Chengkui Marine Science and Technology Award for Young Scientists. His research on "Global biological carbon pump estimation" was listed among the 2023 "Top 10 Science and Technology Advances in Oceanology and Limnology" in China

◎ Research on "Light-driven integration of diazotroph-derived nitrogen in euphotic nitrogen cycle" was published in *Nature Communications*

◎ The 3rd Global-ONCE Open Science Conference was held, where the integrated undergraduate-graduate course on *Habitable Earth* was launched

November

◎ The world's first international standard proposal on ocean carbon neutrality, titled "Ocean Negative Carbon Emissions and Carbon Neutrality—General Principles and Requirements" was approved, led by Global ONCE

◎ The Swire Group donated to D-SMART's Marine Ecology Conservation and Education Project

◎ The MoU between MEL and Plymouth Marine Laboratory, UK, was signed

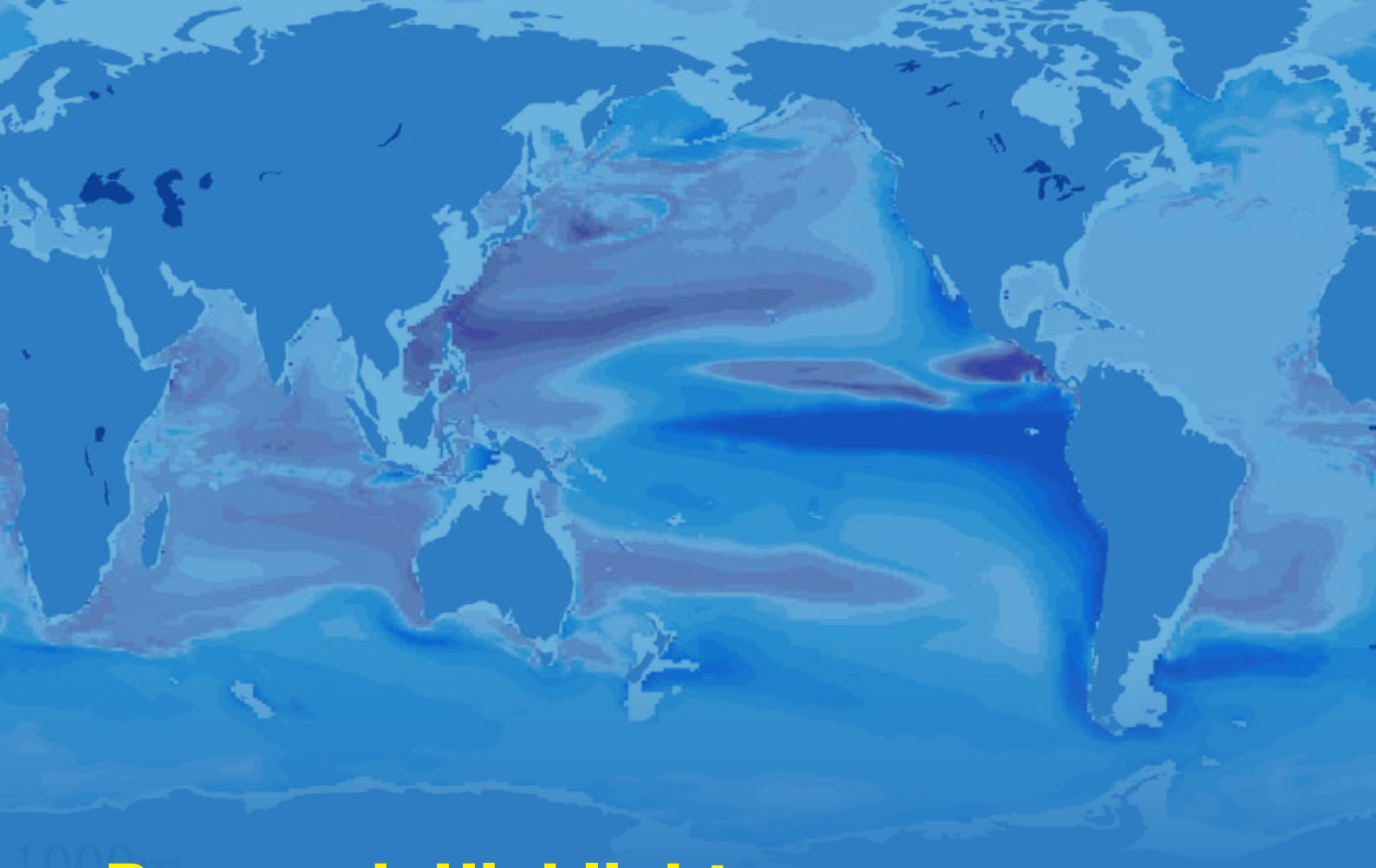
◎ The MoU between MEL and the Institut de Physique du Globe de Paris (France) was signed

◎ Cruise observations of eddies in the Northwest Pacific Subtropical Countercurrent zone was conducted aboard the RV *TKK*

◎ The 13th Xiamen University Ocean Sciences Day was held

December

◎ JI Rongrong was awarded the 2024 Fellow of International Association for Pattern Recognition

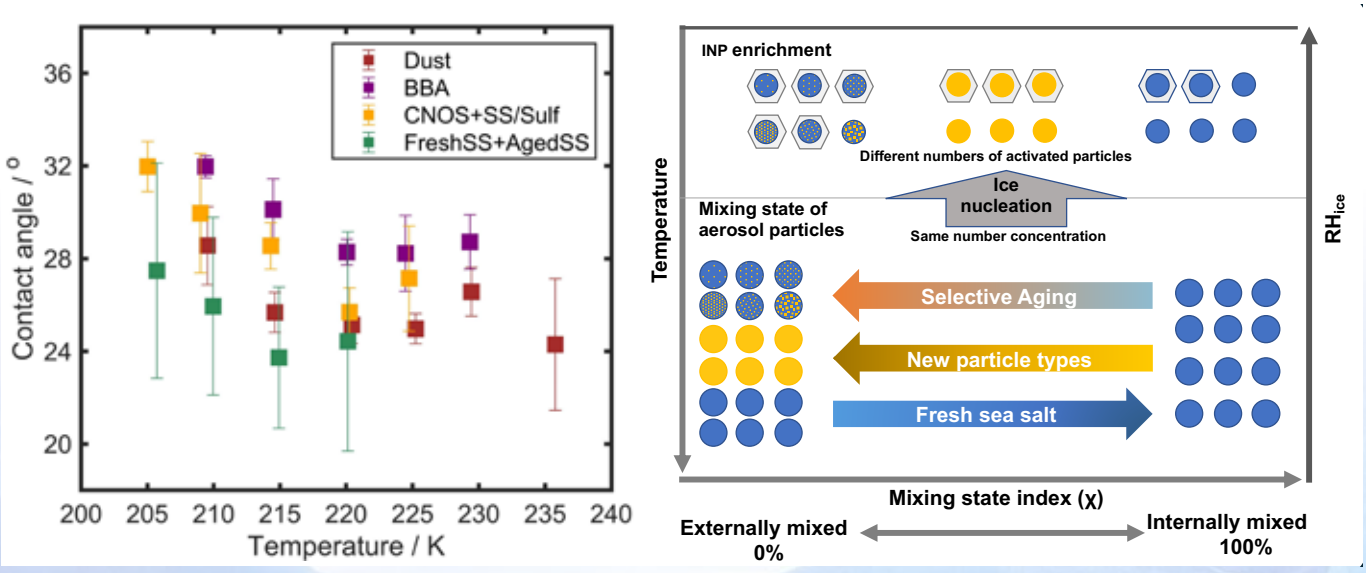


Research Highlights

Mixing state and ice nucleation properties of aerosol particles over the western Pacific and Southern Ocean

Atmospheric particles can impact cloud formation and play a critical role in regulating cloud properties. However, particle characteristics at the single-particle level and their ability to act as ice-nucleating particles (INPs) over the marine atmosphere are poorly understood. In this study, we present micro-spectroscopic characterizations and ice nucleation properties of particles collected over the western Pacific and Southern Ocean. We found that the mixing state of marine aerosols are more internally mixed as the contribution of fresh sea salt particles increases. However, non-uniform aging process or new particle sources makes the aerosol more externally mixed. There were significant differences in the ice nucleating properties of particles from different sources. Sea salt particles with organic coating exhibit the highest ice nucleation properties, whereas particles affected by Australia forest fires showed the lowest ice formation ability. The dominant types of atmospheric particles can serve as INPs, with mixtures of aged sea salt and sulfate being enriched in INPs. The results suggest that the ice formation ability of aerosols is influenced not only by their composition but also their physical and chemical mixing state. We propose parameterizations for heterogeneous nucleation rate coefficients and contact angles of marine aerosols from different sources, which can be used in the cloud and climate models for a better understanding in aerosol's climate effects.

Reference:
Xue, J; Zhang, T; Park, K; Yan, JP; Yoon, YJ; Park, J*; Wang, BB* (2024). Diverse sources and aging change the mixing state and ice nucleation properties of aerosol particles over the western Pacific and Southern Ocean. *ATMOSPHERIC CHEMISTRY AND PHYSICS*, 24(13): 7731–7754.

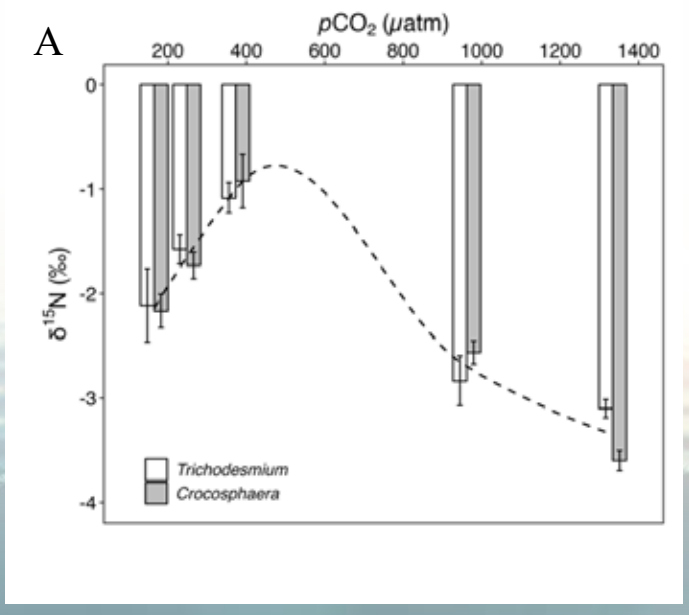


The effects of various atmospheric processes in marine aerosols on the mixing state of particle population and ice nucleation

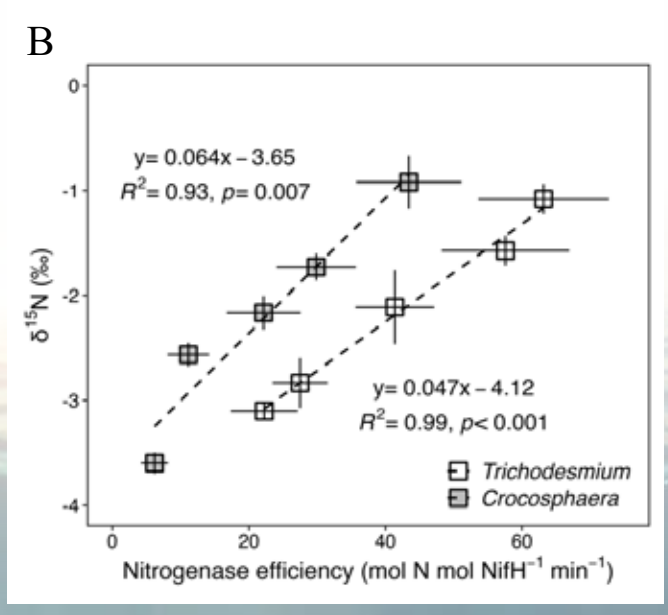
Effects of CO_2 on the nitrogen isotopic composition of marine diazotrophic cyanobacteria

Biological N_2 fixation has been crucial for sustaining early life on Earth. Very negative $\delta^{15}N$ values detected in Archean sediments, which are not observed in present-day environments, have been attributed to the low efficiency of proto-nitrogenases. Alternatively, variations in early atmospheric CO_2 may also play a role. Here we examine the effects of CO_2 concentrations on the biomass $\delta^{15}N$ signatures of the diazotrophs *Trichodesmium erythraeum* and *Crocosphaera watsonii*, which utilize Mo-Fe nitrogenase (the most common form of the enzyme). Our results show that these organisms produce biomass with $\delta^{15}N$ values up to ~3‰ lower under both decreased and elevated CO_2 concentrations compared to modern levels (~380 µatm). These deviations from modern CO_2 levels reduce nitrogenase enzyme efficiency, leading to increased organismal isotopic fractionation during N_2 fixation. This study offers an alternative explanation for the observed fluctuations in geological $\delta^{15}N$ records and provides new insights into the past nitrogen cycle on Earth.

Reference:
Wen, ZZ; Jiang, RT; He, TL; Browning, TJ; Hong, HZ; Kao, SJ; Yang, JYT; Shi, DL* (2024). Effects of CO_2 on the nitrogen isotopic composition of marine diazotrophic cyanobacteria. *GEOPHYSICAL RESEARCH LETTERS*, 51(19), e2024GL110599.



Biomass $\delta^{15}N$ values of *T. erythraeum* and *C. wastonii* produced when grown in variable CO_2 concentrations

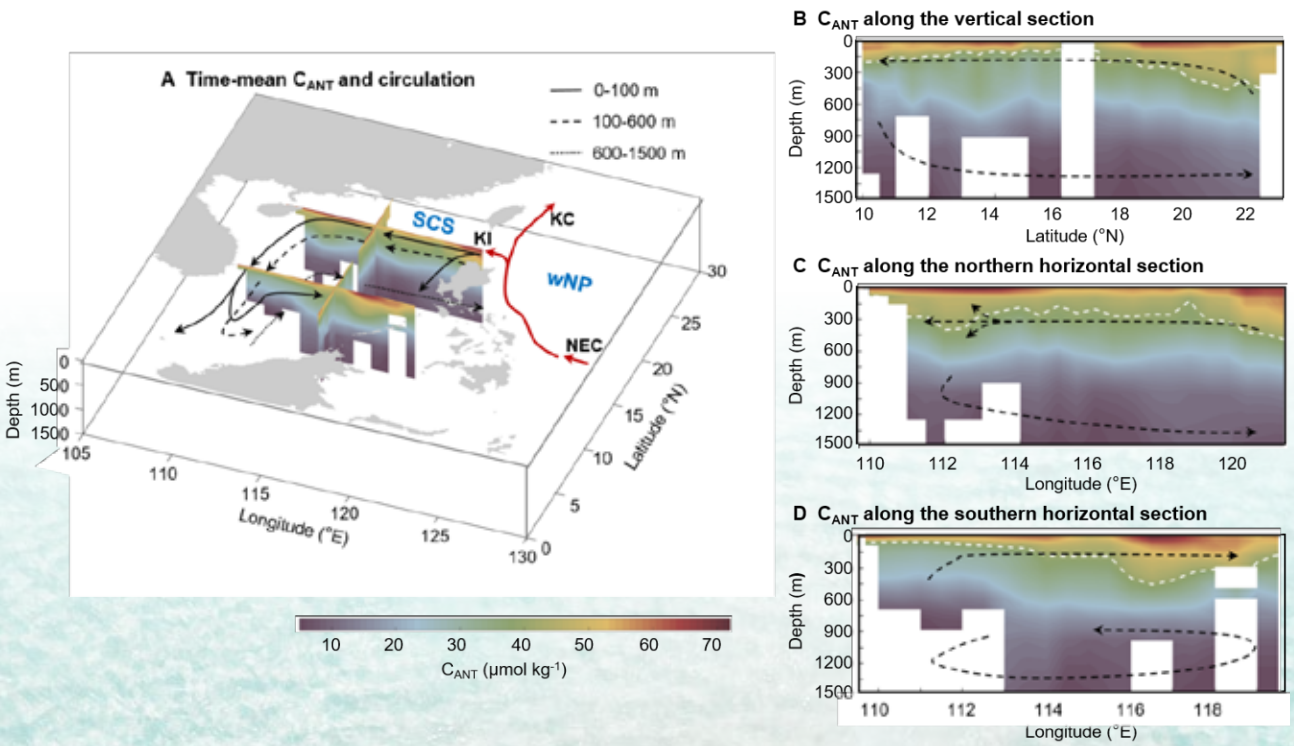


Relationships between nitrogenase efficiency and biomass $\delta^{15}N$

Anthropogenic carbon from open to coastal oceans

Coastal oceans, traditionally seen as a conduit for transporting atmospheric carbon dioxide (CO_2)-derived anthropogenic carbon (C_{ANT}) to open oceans, exhibit complex carbon exchanges at their interface. South China Sea (SCS) exemplifies this complexity, where interactions with the Pacific, particularly through Kuroshio intrusion, challenge the understanding of C_{ANT} source and variability in a coastal ocean. Contrary to prevailing paradigm expectations, our high-resolution, long-term data reveal that CANT in the SCS primarily originates from Pacific water injection across the Luzon Strait rather than atmospheric CO_2 invasion. Over the past two decades, the SCS has experienced increasing CANT levels, with notable interannual fluctuations driven by El Niño and La Niña events influencing Kuroshio intrusion, generating anomalously high and low C_{ANT} inventories, respectively. This highlights an overlooked C_{ANT} transport pathway from open to coastal oceans, responsible for cumulative ocean acidification that has already affected coral reefs enriched in the SCS located west of the Coral Triangle.

Reference:
Wang, ZX; Cao, ZM*; Liu, ZQ; Zhai, WD; Luo, YH; Lin, YX; Roberts, E; Gan, JP; Dai, MH* (2024). Pacific Ocean-originated anthropogenic carbon and its long-term variations in the South China Sea. *SCIENCE ADVANCES*, 10, eadn9171.

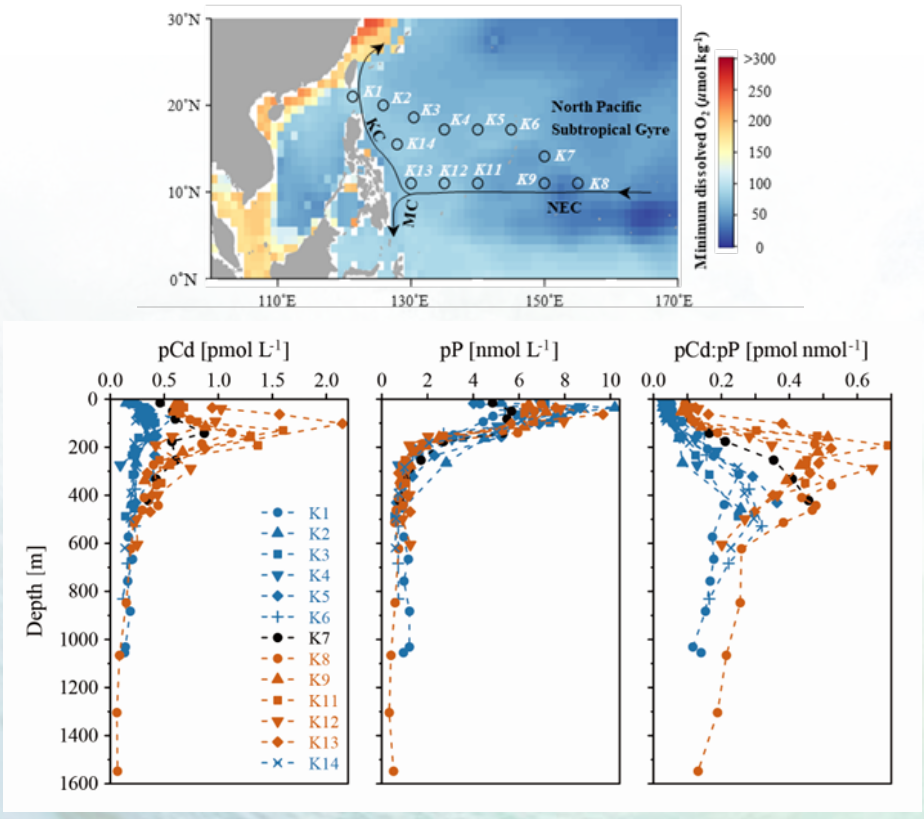


Both latitudinal and longitudinal gradients of C_{ANT} correspond well to the circulation fields; in particular, C_{ANT} concentrations generally decrease westward along the pathway of intruding Kuroshio waters from the Luzon Strait

Decoupled cycling of particulate cadmium and phosphorus in the subtropical Northwest Pacific

Cadmium (Cd) is a highly toxic element to human health but an important micronutrient in the ocean. Early studies revealed a strong correlation between dissolved Cd and the macronutrient phosphate (PO4), leading to the use of Cd records preserved in planktonic and benthic foraminifera to reconstruct surface and deep-water phosphate distributions in ancient oceans. However, the biogeochemical cycling of cadmium and phosphorus in the modern ocean remains not fully understood. In this study, we present the first depth profiles of size-fractionated (0.8–51 µm; > 51 µm) particulate Cd and P concentrations in the western sector of the oligotrophic North Pacific Subtropical Gyre from the China GEOTRACES Section GP09. Our results reveal a decoupled cycling of particulate Cd and P, as evidenced by spatial variability in their biological uptake and organic remineralization. In the euphotic zone, the depletion of biologically important trace metals (e.g., Fe, Zn) in the presence of elevated macronutrients leads to increased uptake and utilization of cadmium by phytoplankton. In the mesopelagic zone, phosphorus is preferentially remineralized over cadmium, resulting in a variable remineralization ratio (ΔCd:ΔP) with depth. This study highlights the complex processes that fractionate Cd from P in the oligotrophic ocean, complicating the use of Cd as a palaeo-phosphate proxy.

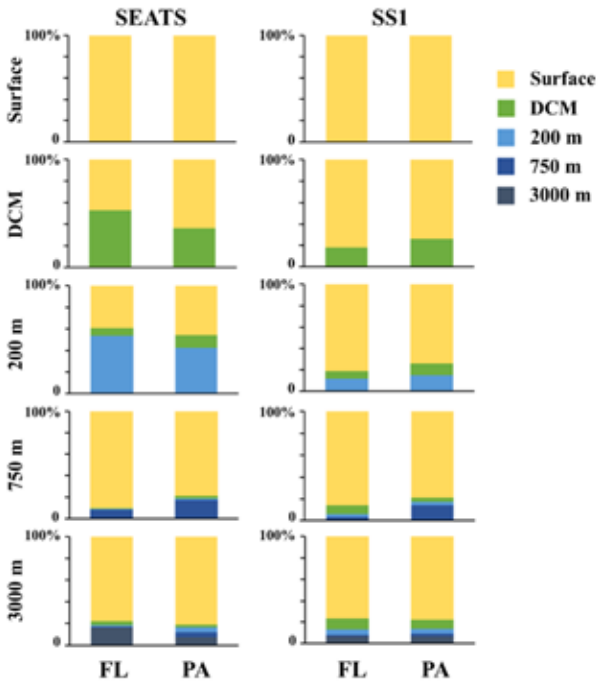
Reference:
Zhang, K; Zhou, KB; Cai, YH; Yuan, ZW; Chen, YJ; Xu, FP; Liu, X; Cao, ZM; Dai, MH* (2024). Decoupled cycling of particulate cadmium and phosphorus in the subtropical Northwest Pacific. *LIMNOLOGY AND OCEANOGRAPHY*, 69: 1941-1954.



Particle sampling stations along the GEOTRACES GP09 Northwestern Pacific transect, and depth profiles of total particulate cadmium (pCd), phosphorus (pP), and Cd : P ratio (pCd : pP)

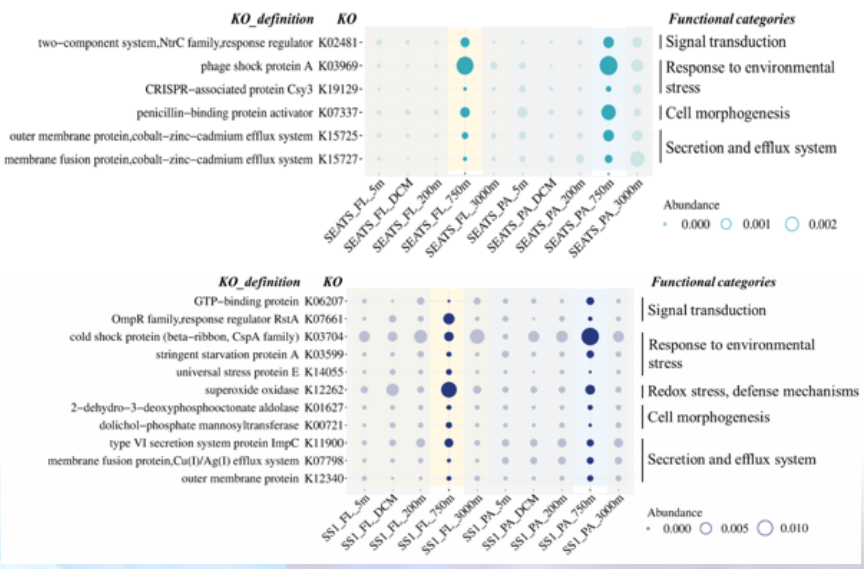
Functional vertical connectivity of microbial communities in the ocean

Sinking particles are a critical conduit for the transport of surface microbes to the ocean's interior. Vertical connectivity of phylogenetic composition has been shown; however, the functional vertical connectivity of microbial communities has not yet been explored in detail. We investigated protein and taxa profiles of both free-living and particle-attached microbial communities from the surface to 3000 m depth using a combined metaproteomic and 16S rRNA amplicon sequencing approach. A clear compositional and functional vertical connectivity of microbial communities was observed throughout the water column with *Oceanospirillales*, *Alteromonadales*, and *Rhodobacterales* as key taxa. The surface-derived particle-associated microbes increased the expression of proteins involved in basic metabolism, organic matter processing, and environmental stress response in deep waters. This study highlights the functional vertical connectivity between surface and deep-sea microbial communities via sinking particles and reveals that a considerable proportion of the deep-sea microbes might originate from surface waters and have a major impact on the biogeochemical cycles in the deep sea.



Contribution of proteins categorized by depths in PA or FL fraction at SEATS and SS1 stations

Reference:
Chen, S; Xie, ZX; Yan, KQ; Chen, JW; Li, DX; Wu, PF; Peng, L; Lin, L; Dong, CM; Zhao, ZH; Fan, GY; Liu, SQ; Herndl, GJ*; Wang, DZ* (2024). Functional vertical connectivity of microbial communities in the ocean. *SCIENCE ADVANCES*, 10(2), eadj8184.



Distribution of seed proteins involved in the environmental response

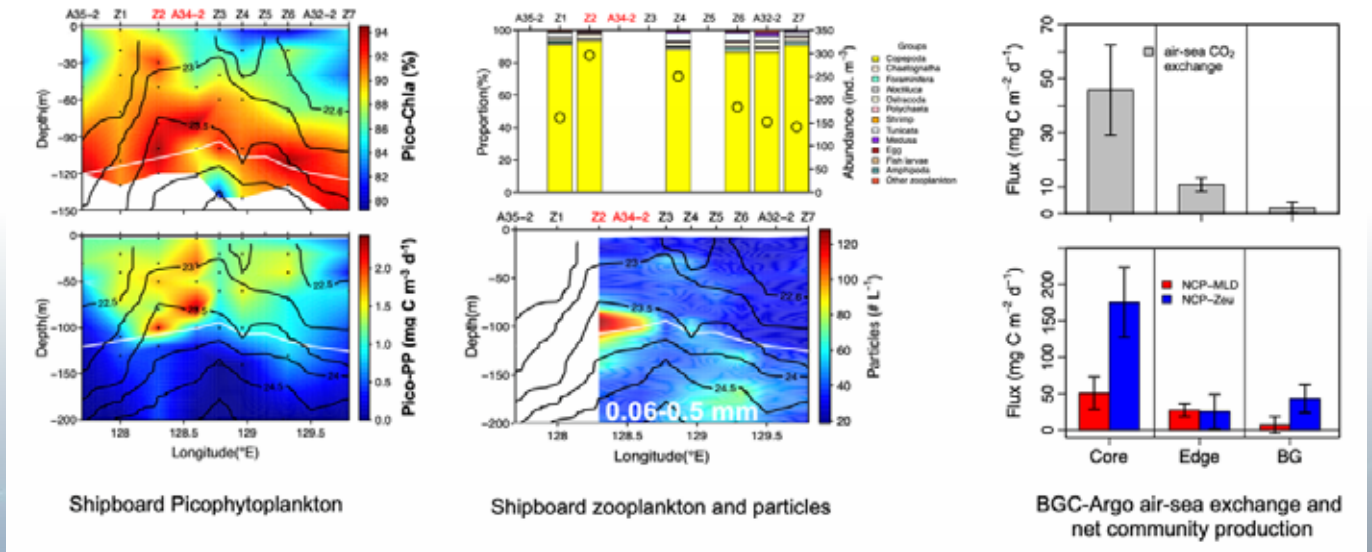
Progress in the study of processes and effects of the biological pump in marine mesoscale eddy

Cyclonic eddies in oligotrophic ocean can drive the upwelling of deep nutrient rich water, which has a significant impact on maintaining primary production and the biological pump. However, due to the lack of direct evidence from multidisciplinary collaboration, there is still a debate about whether cyclonic eddies can remarkably enhance the carbon biomass of plankton and the export of particulate organic carbon.

Through multidisciplinary intersection, the plankton ecology and biological pump processes of cyclonic eddies in the subtropical gyre region of the Northwest Pacific Ocean were analyzed. The study found that the uplift of the nutricline driven by cyclonic eddies mainly promoted the primary production of picophytoplankton and increased the subsurface chlorophyll-a concentration. However, due to the rapid and close growth-grazing relationship between phytoplankton and zooplankton, the existing biomass of phytoplankton integrated over the euphotic layer did not increase significantly. Nevertheless, the significant increases in both the primary production rate of phytoplankton and the grazing rate of microzooplankton still led to a significant increase in the concentration of mesozooplankton and large-sized particulate matter that can observe in the center of the eddy. The combined effects of the decrease in water temperature, the increase in productivity, and the strong wind stress resulted in an obvious sink of atmospheric CO_2 observed by BGC - Argo in the center of the eddy. These results of field observations through multidisciplinary collaboration indicate that in the vast ocean desert regions, the bottom-up effect of cyclonic eddies in strengthening the supply of nutrients can indeed promote the growth of phytoplankton, but the biomass is also controlled by the top-down effect of zooplankton grazing. This also means that taking either the chlorophyll-a concentration or the carbon biomass of phytoplankton as a single indicator cannot accurately assess the carbon fixation and sequestration capacities of cyclonic eddies. It is necessary to comprehensively consider the marine carbon sink function within specific spatio-temporal scales at the ecosystem level.

Reference:

Liu, HR; Browning, TJ; Laws, EA; Huang, YB; Wang, L; Shang, YW; Xing, XG; Zhou, KB; Jiang, ZP; Liu, X*; Huang, BQ; Dai, MH (2024), Stimulation of small phytoplankton drives enhanced sinking particle formation in a subtropical ocean eddy. *LIMNOLOGY AND OCEANOGRAPHY*, 69: 834-847.



Responses of key parameters in the biological bump responses within a mesocascale cyclonic eddy

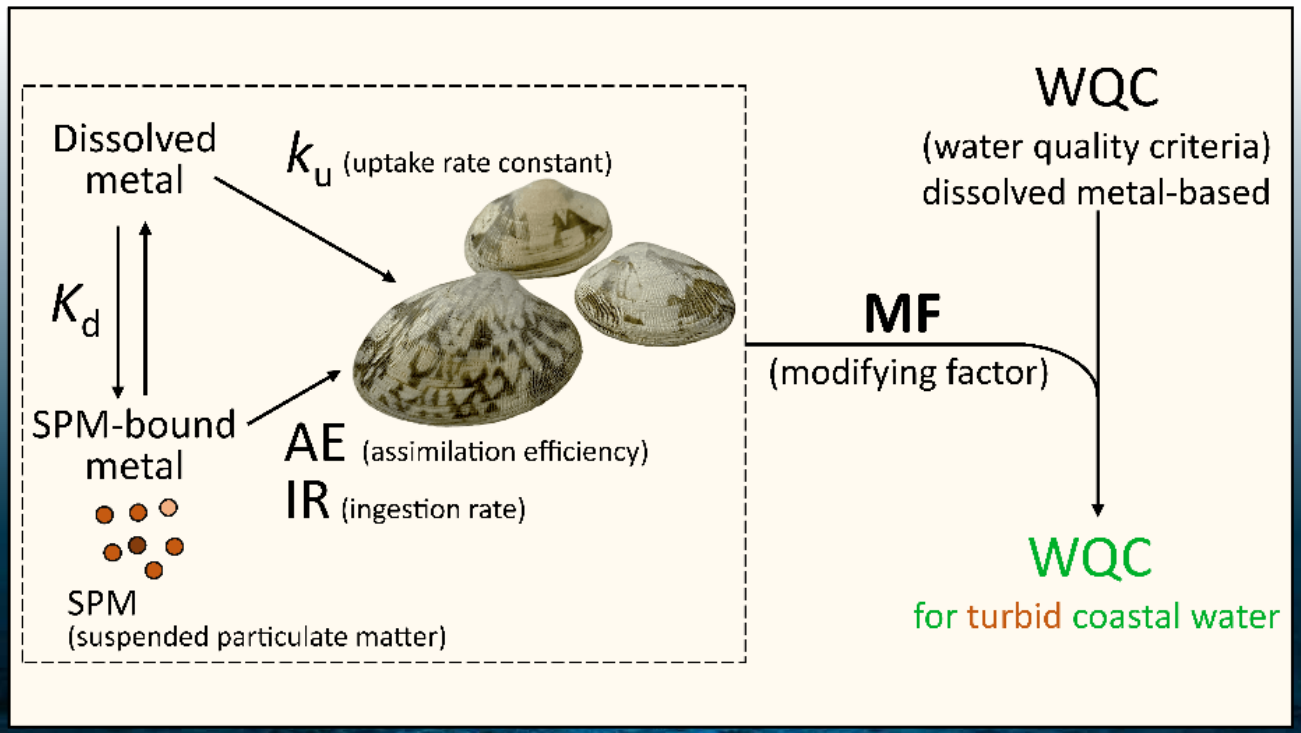
Turbid waters and clearer standards: Refining water quality criteria for coastal environments by encompassing metal bioavailability from suspended particles

In coastal turbid waters, metals primarily exist in particulate form. However, existing water quality assessments and criteria, both domestically and internationally, often focus on dissolved metals as the primary indicator of water quality, neglecting the potential ecological risks posed by particulate metals. For example, China's Marine Monitoring Standards stipulate that water samples must be immediately filtered through a 0.45 μm membrane to remove particulate metals. While this approach is relatively robust, it reduces the accuracy of metal risk assessments, making it difficult to effectively protect the ecological health of turbid waters.

This study focuses on the bioaccumulation risks of particulate metals in turbid waters. Suspended particulate matter was collected from 23 coastal stations in China, and a novel method was developed to measure the bioavailability of particulate metals. The study used the widely distributed filter-feeding clam Ruditapes philippinarum as a representative species. The results showed that the bioavailability of particulate metals was 42% for Zn, 26% for Cd, 20% for Cu, 8% for Ni, and 6% for Pb.

Based on the bioavailability of particulate metals and their distribution characteristics in turbid waters, the study used the Monte Carlo method to calculate modifying factors for water quality criteria. These modifying factors allow for the calculation of water quality criteria for turbid waters, which are determined by dividing the water quality criteria based on dissolved metal exposure by the modifying factor. This study provides foundational guidelines to refine water quality criteria in turbid waters and protect coastal ecosystems

Reference:
Qian, J; Hu, TS; Xiong, HY; Cao, X; Liu, FJ; Gosnell, KJ; Xie, MW; Chen, R; Tan, QG* (2024). Turbid waters and clearer standards: Refining water quality criteria for coastal environments by encompassing metal bioavailability from suspended particles. *ENVIRONMENTAL SCIENCE & TECHNOLOGY*, 58(12): 5244-5254.



Methods for refining water quality criteria in turbid waters

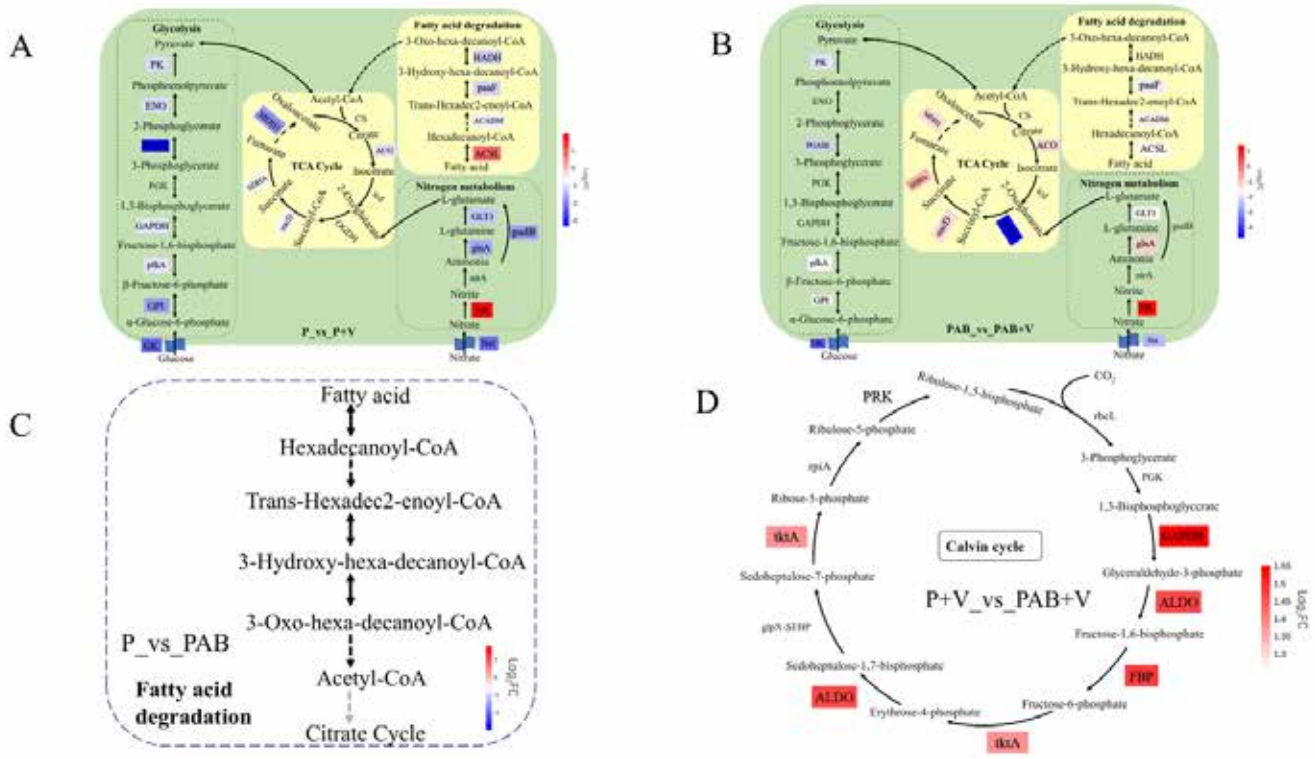
Warming and UV radiation alleviate the effect of virus infection on the microalga *Emiliania huxleyi*

Coccolithorphorids contribute to marine biological CO_2 pump and carbonate counter pump via photosynthesis and bio-calcification, playing important roles in regulating air-sea CO_2 fluxes. They form large scale microalgal blooms on sea surface, whose declines are usually attributed to cellular lyses caused by coccolithoviruses. However, little is known about how global change factors like solar UV radiation (UVR) and ocean warming affect the host-virus interaction.

We grew the microalga at 2 temperature levels with or without the virus in the presence or absence of UVR and investigated the physiological and transcriptional responses. We showed that viral infection noticeably reduced photosynthesis and growth of the alga but was less harmful to its physiology under conditions where UVR influenced viral DNA expression. In the virus-infected cells, the combination of UVR and warming (+4°C) led to a 13-fold increase in photosynthetic carbon fixation rate, with warming alone contributing a change of about 5–7-fold. This was attributed to upregulated expression of genes related to carboxylation and light-harvesting proteins under the influence of UVR, and to warming-reduced infectivity. In the absence of UVR, viral infection downregulated the metabolic pathways of photosynthesis and fatty acid degradation.

Water motions drive phytoplankton cells up and down in the upper mixing layers, exposing the microalga to changed levels of temperature and UV radiation. The results of this study demonstrate that coccolithovirus is less harmful to its host under combined influences of UV and warming, implying that solar UV exposure in a warming ocean can reduce the severity of viral attack on this ecologically important microalga, potentially prolonging its blooms.

Reference:
Fu, QQ; Huang, RP; Li, FT; Beardall, J; Hutchins, DA; Liu, JW; Gao, KS* (2024). Warming and UV radiation alleviate the effect of virus infection on the microalga *Emiliania huxleyi*. *PLANT CELL AND ENVIRONMENT*, DOI: 10.1111/pce.15262

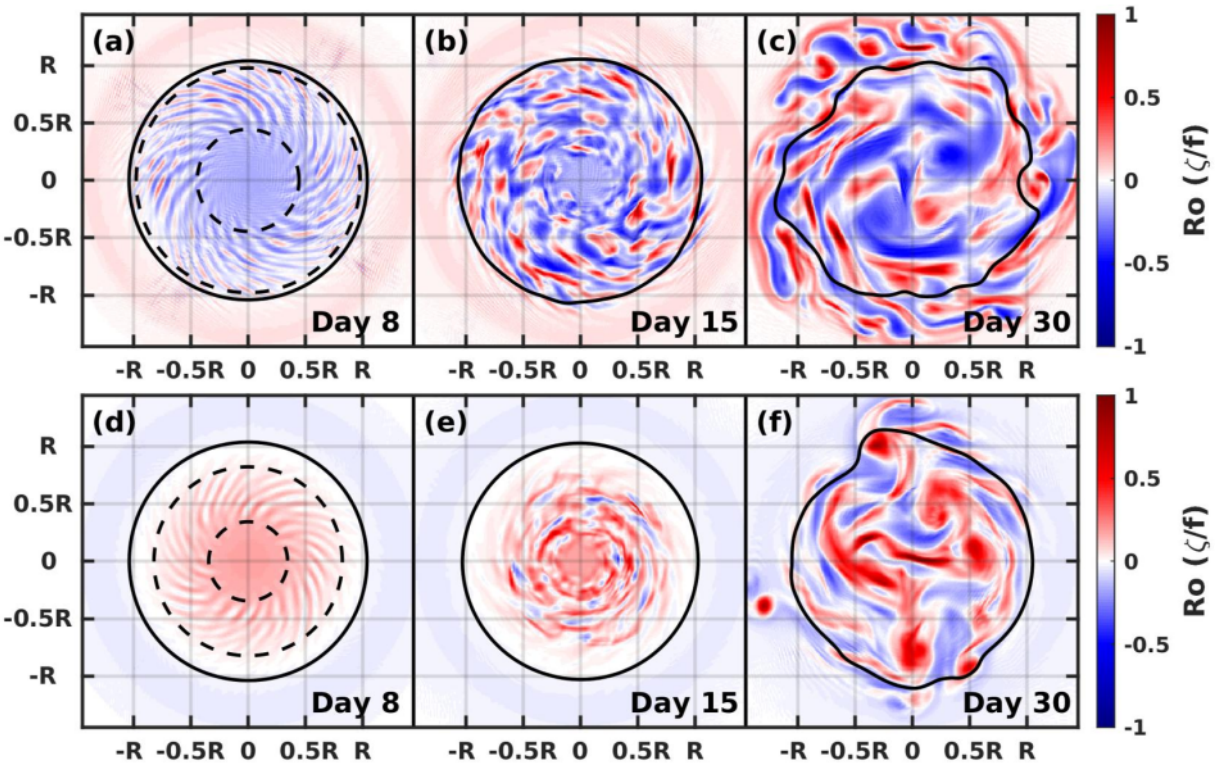


The regulated pathways based on the differentially expressed genes (DEGs) between P (PAR alone) and PAB (PAR + UVR) treatment in E. huxleyi with (+V) and without (–V) EhV infection

Asymmetry of Submesoscale Instabilities in Anticyclonic and Cyclonic Eddies

The upper-ocean relative vorticity has been found to be cyclonically skewed, but altimetry observations indicate that long-lifespan mesoscale eddies tend to be anticyclonic. We are thus interested in whether cyclonic or anticyclonic eddies are more unstable under similar circumstances. Here we use submesoscale-resolving simulations of idealized mesoscale eddies, incorporating theoretical analyses, to investigate asymmetries of submesoscale instabilities within the anticyclones and cyclones. It is found that submesoscale filaments initiate at regions with the largest horizontal buoyancy gradients for both anticyclones and cyclones, but these filaments subsequently rotate outward in anticyclones while inward in cyclones. Hence submesoscales are more vigorous at anticyclone peripheries and the cyclone center. Such differing distributions and evolutions of submesoscale processes are primarily caused by changes in the background stratification associated with the decaying of mesoscale eddies. The active submesoscales near the cyclone center eventually distort its core structure radically, whereas the anticyclone remains largely unaffected.

Reference:
Shi, WA; Lin, HY*; Deng, Q; Hu, JY (2024). Asymmetry of submesoscale instabilities in anticyclonic and cyclonic eddies. *GEOPHYSICAL RESEARCH LETTERS*, 51(2), e2023GL106853.



Spatial distribution of normalized relative vorticity in the (upper) anticyclonic and (lower) cyclonic eddies at different stages, which shows the asymmetric evolution features of submesoscale filaments in different polarities of eddies

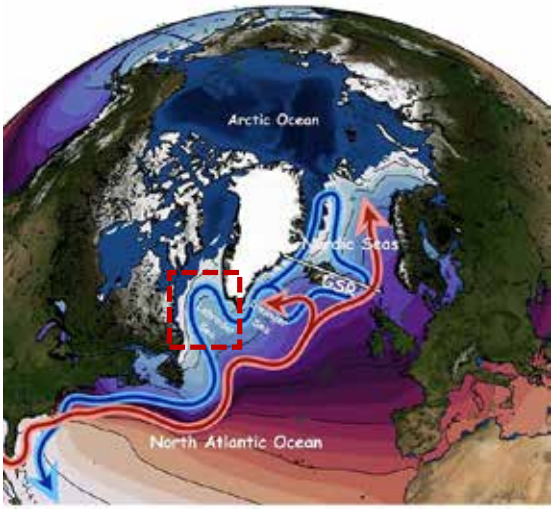
Observation-based estimates of water mass transformation and formation in the Labrador Sea

The Labrador Sea Water (LSW) is one of the key mid-deep water masses in the Atlantic ocean. Its formation and subsequent spreading are known to exert critical impacts on the deep thermohaline properties and circulation structure. Previous estimates using different approaches, including those based on numerical models and inverse methods, vary significantly and have mostly emphasized on the role of surface buoyancy forcing. A robust observation-based estimate is still lacking.

In this study, we combine moored measurements, hydrographic datasets and atmospheric reanalysis products to estimate the mean formation rate of the LSW and to assess its quantitative attributions to different forcing mechanisms under the water mass transformation framework. We find an indispensable role of diapycnal mixing, which contributes to the LSW formation rate by 63%. The remaining is mostly driven by air-sea buoyancy flux acting on outcropping isopycnals. Finally, the thermohaline anomalies associated with the LSW formation are evaluated and their linkage to air-sea heat flux and interior mixing are discussed.

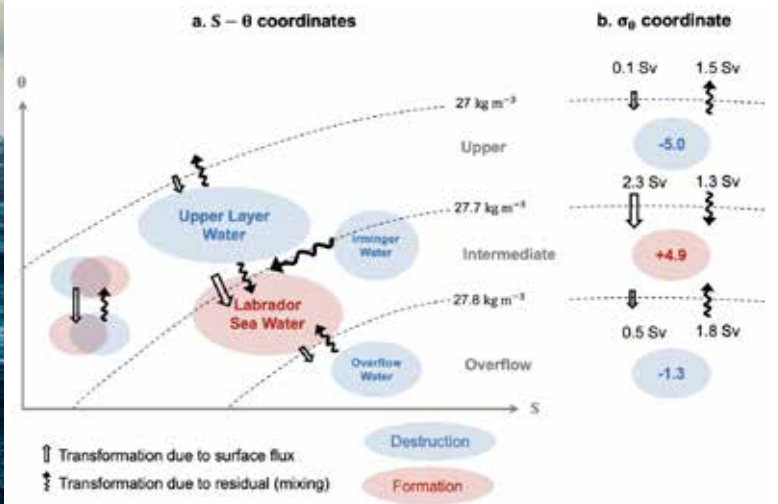
Results from this study underline the critical role of mixing in determining the formation and properties of the LSW. We believe that results from this work provide important observational constraints for modeling deep-water evolution, which is key for simulating deep ocean property and circulation, as well as predicting their response to a warming climate.

Reference:
Zou, SJ*; Petit, T; Li, FL; Lozier, MS (2024). Observation-based estimates of water mass transformation and formation in the Labrador Sea. *JOURNAL OF PHYSICAL OCEANOGRAPHY*, 54(7): 1411–1429.



Schematic of North Atlantic circulation (Chafik et al. 2021). The Labrador Sea is located in the red box.

(Chafik et al., 2021)



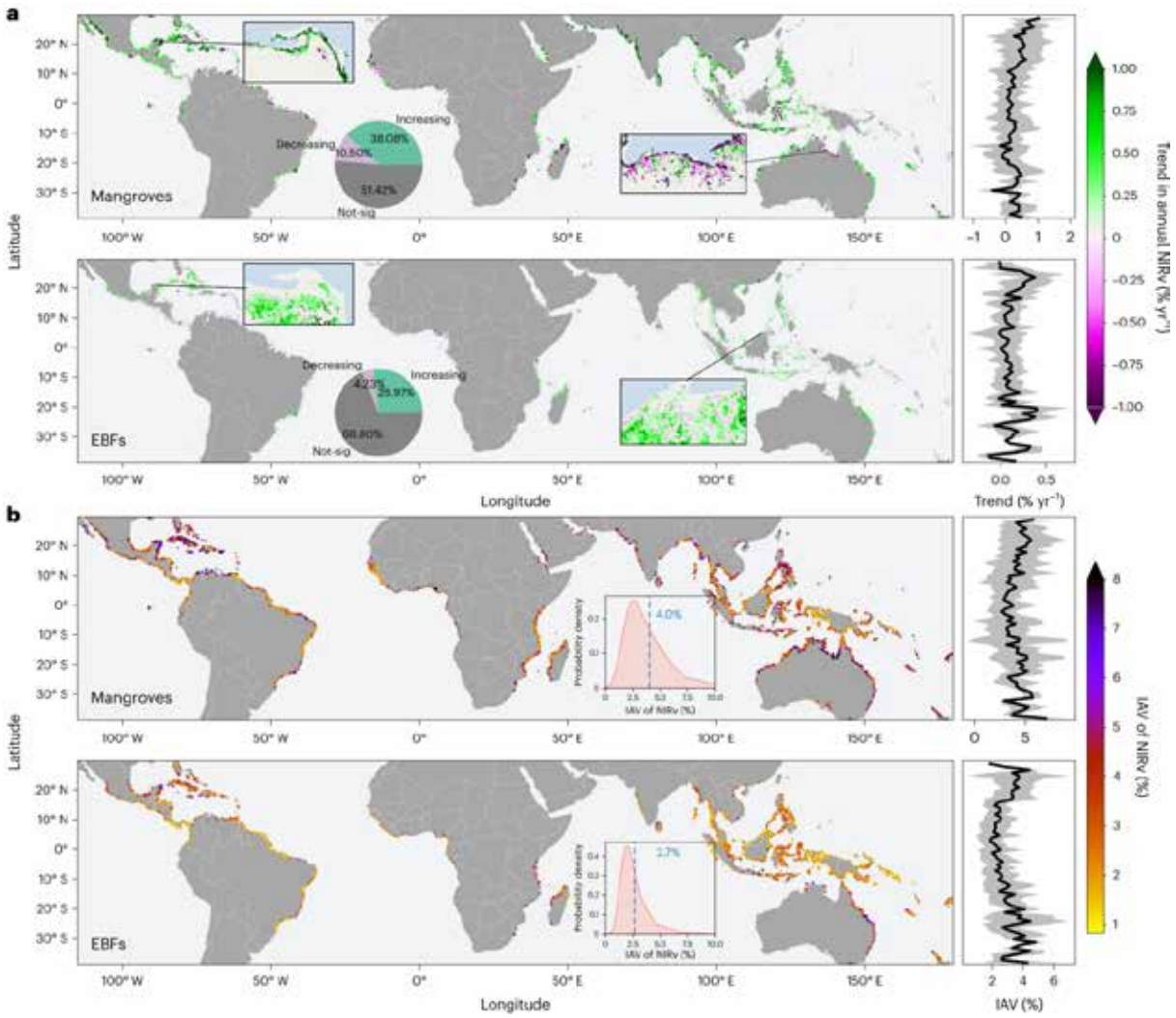
Water mass transformation and formation rates in the Labrador Sea (Zou et al. 2024).

(Zou et al., 2024)

Stronger increases but greater variability in global mangrove productivity compared to that of adjacent terrestrial forests

Mangrove forests are a highly productive ecosystem with important potential to offset anthropogenic greenhouse gas emissions. Mangroves are expected to respond differently to climate change compared to terrestrial forests owing to their location in the tidal environment and unique ecophysiological characteristics, but the magnitude of difference remains uncertain at the global scale. Here we use satellite observations to examine mean trends and interannual variability in the productivity of global mangrove forests and nearby terrestrial evergreen broadleaf forests from 2001 to 2020. Although both types of ecosystem experienced significant recent increases in productivity, mangroves exhibited a stronger increasing trend and greater interannual variability in productivity than evergreen broadleaf forests on three-quarters of their co-occurring coasts. The difference in productivity trends is attributed to the stronger CO_2 fertilization effect on mangrove photosynthesis, while the discrepancy in interannual variability is attributed to the higher sensitivities to variations in precipitation and sea level. Our results indicate that mangroves will have a faster increase in productivity than terrestrial forests in a CO_2-rich future but may suffer more from deficits in water availability, highlighting a key difference between terrestrial and tidal ecosystems in their responses to climate change.

Reference:
Zhang, Z; Luo, XZ*; Friess, DA; Wang, SH; Li, Y; Li, YF* (2024). Stronger increases but greater variability in global mangrove productivity compared to that of adjacent terrestrial forests. *NATURE ECOLOGY & EVOLUTION*, 8(2): 239-250.

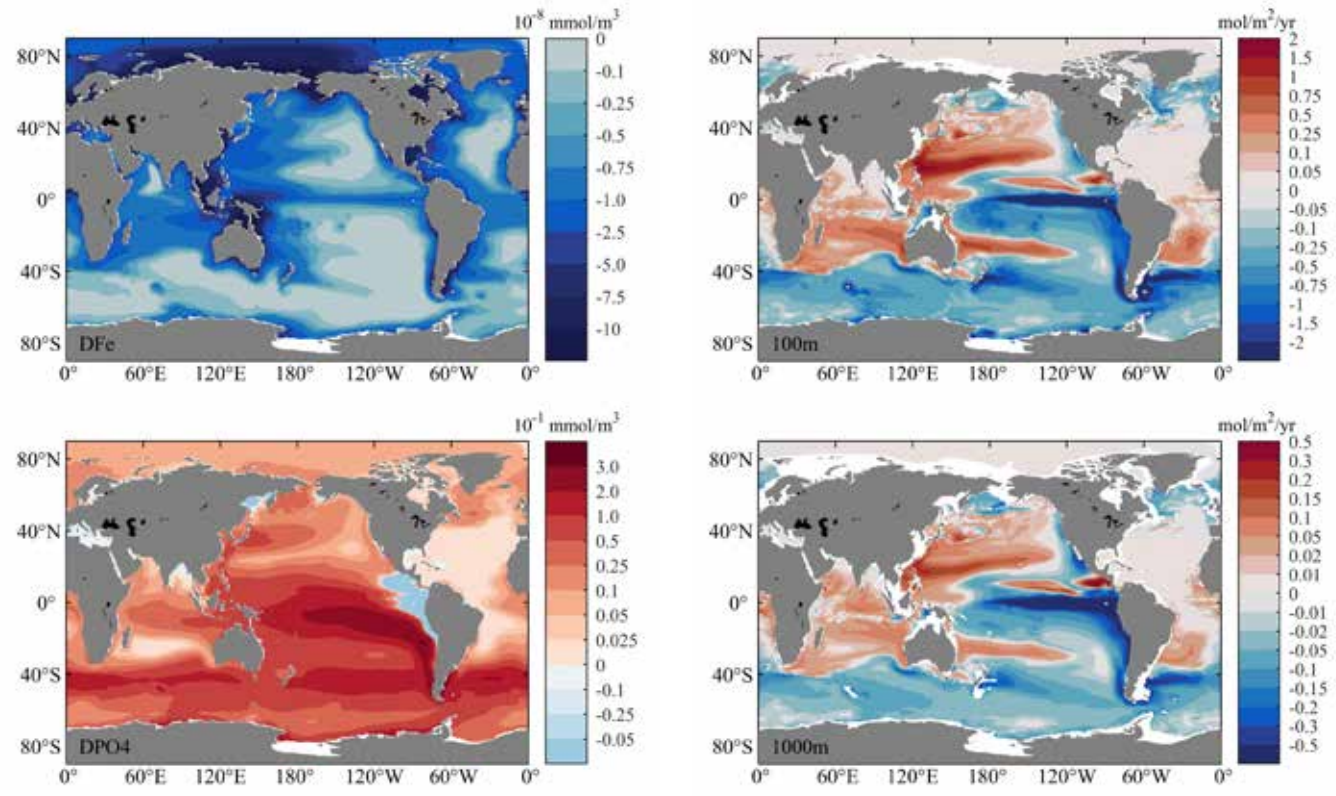


Changes in NIRv during 2001–2020 for mangroves and EBFs at the global scale

The ballast effect of terrigenous lithogenic particles from rivers and its Influence on POC fluxes in the ocean

Lithogenic material such as terrigenous lithogenic particles (TLP) can efficiently promote the formation and sinking of mineral-associated marine organic matter, acting as important ballasts and potentially playing an important role on the global carbon cycle. To assess the influence of TLP on fluxes of particulate organic carbon (POC) and other biogeochemical cycles, we construct TLP forcing fields based on global riverine suspended sediment data and then apply them to the Community Earth System Model, version 2 (CESM2) modified with TLP ballasting effect term. Simulations forced by different concentrations of TLP transported in the surface ocean or along bottom of continental shelves and slopes are conducted. When the TLP transports seaward along the bottom, simulated POC fluxes at 100 m and 2000 m decrease about 11% and 19%, respectively, for the global ocean, and about 9% and 12%, respectively, for the oceanic regions of continental margins. The initial abiotic ballast processes triggered by TLP inputs increase POC fluxes, causing additional removal and burial of dissolved iron in continental margins. This further enhances the accumulation of macronutrients in the upwelling regions and their advection transport to neighboring subtropical gyres, thus it alters regional productivity when simulations reach quasi-equilibrium. When consider the impacts of TLP in simulations, the simulated POC flux exhibits an increase in subtropical gyres but a decrease in tropical Pacific and mid-high latitude regions. The present work highlights the importance of TLP to global biogeochemical cycles, suggesting that the amount of carbon sequestration might be overestimated without TLP in models.

Reference:
Li, SS; Li, HL; Tang, TT; Wang, SL* (2024). The ballast effect of terrigenous lithogenic particles from rivers and its influence on POC fluxes in the ocean. *GLOBAL BIOGEOCHEMICAL CYCLES*, 38(5), e2024GB008155.



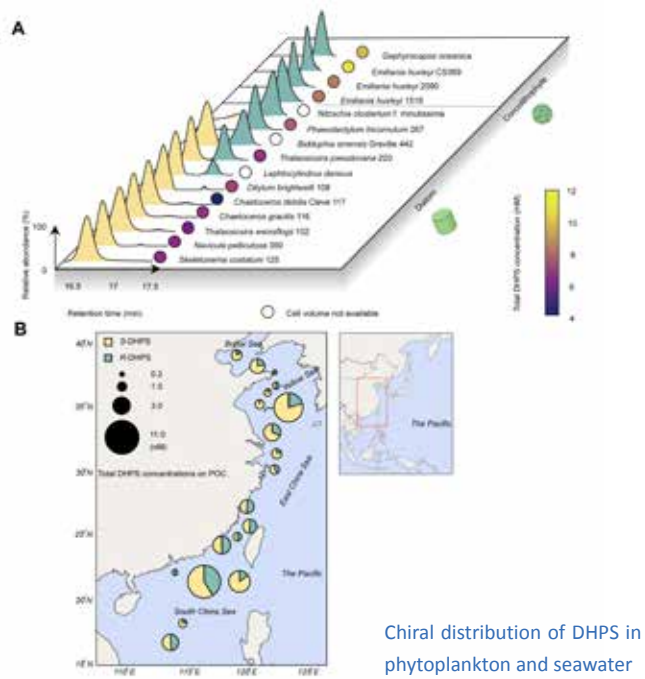
The differences in the annual average iron (a) and phosphate (b) concentrations (0~100 m), as well as the annual POC flux at 100 m (c) and 1000 m (d), between the modified model (with the ballast effect of TLP, and TLP transporting seaward along bottom of continental shelves and slopes) and the default model (without the ballast effect of TLP)

Enantioselective transformation of phytoplankton-derived dihydroxypropanesulfonate by marine bacteria

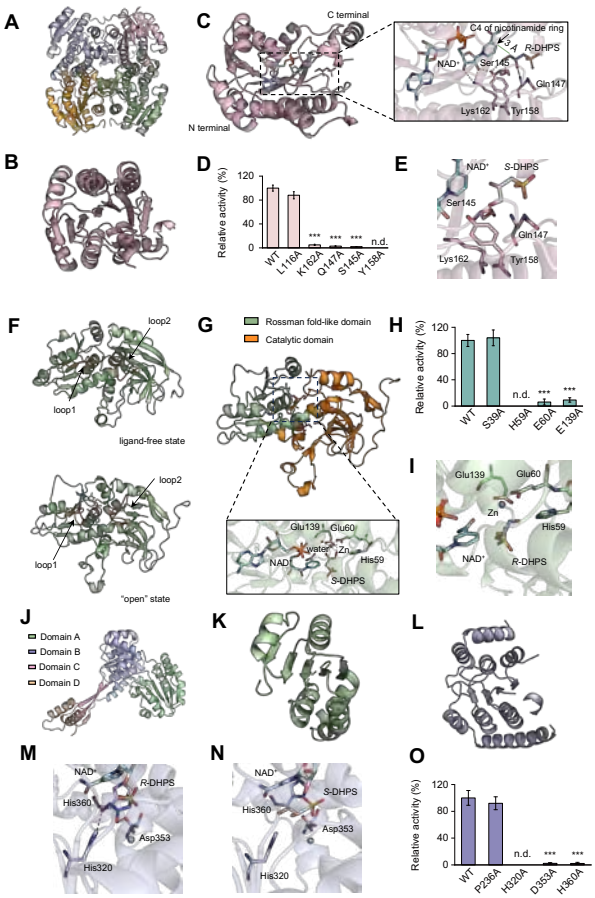
Chirality, a fundamental property of nature, has been overlooked in the cycling of marine organic matter. Dihydroxypropanesulfonate (DHPS), a ubiquitous and abundant organic sulfur compound in nature, serves as a "chemical currency" transferring matter and energy from marine phytoplankton to heterotrophic bacteria. However, the chirality of DHPS in nature, as well as the microbial transformation processes and molecular mechanisms of DHPS enantiomers, have remained elusive.

This study, based on a newly established chiral resolution method for DHPS enantiomers, analyzed the chiral distribution of DHPS in phytoplankton and marine environments. It was found that diatoms and coccolithophores can produce at least one chiral configuration of DHPS, and both R-DHPS and S-DHPS were present on particulate matter in coastal waters of China (Bohai Sea, Yellow Sea, East China Sea, and South China Sea). Furthermore, this study investigated the metabolic pathways of DHPS by heterotrophic bacteria and the molecular mechanisms of chiral selection. Metabolic pathways for both R-DHPS and S-DHPS were reconstructed, and protein structure analysis revealed the molecular mechanism of chiral selection by DHPS metabolic enzymes. The specific interactions between the enzyme's active site and the chiral center of DHPS are key factors in the enzymatic chiral selection of DHPS. Moreover, the study highlighted the role of enzyme promiscuity in the evolution of marine bacteria's ability to metabolize DHPS enantiomers.

This research provides evidence for the involvement of chirality in the metabolic processes between phytoplankton and bacteria, emphasizing the importance of metabolite chirality and enzyme stereoselectivity in the cycling of marine organic matter.



Chiral distribution of DHPS in phytoplankton and seawater

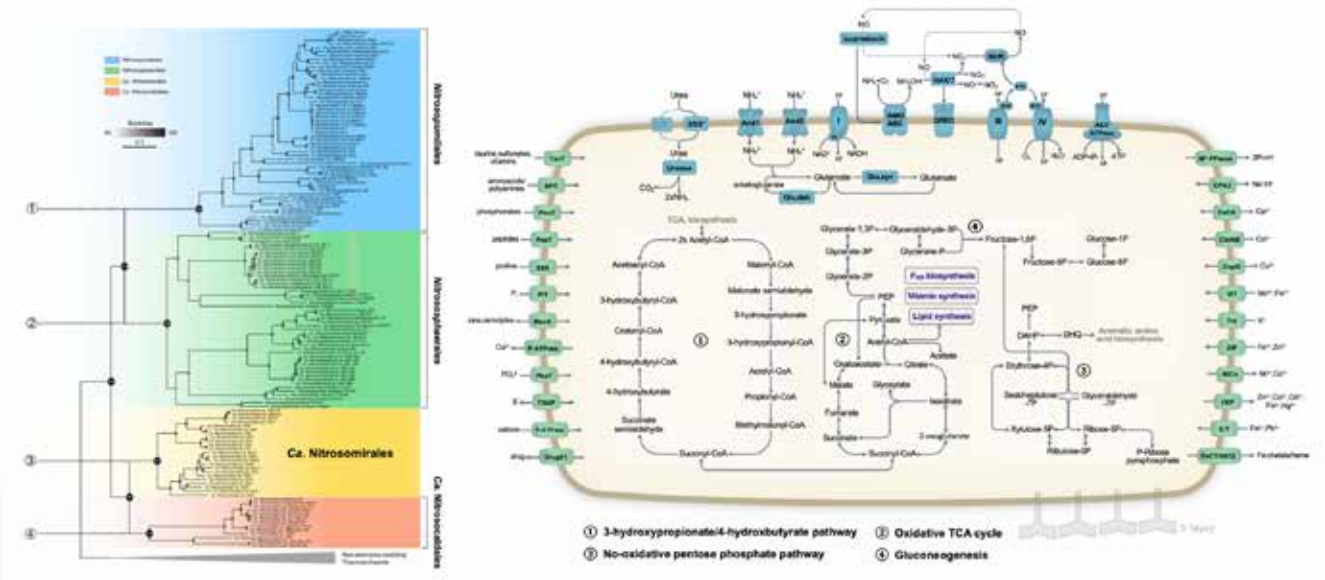


Protein structural analysis of DHPS dehydrogenase HpsO, HpsP, HpsN

Reference:
Liu, L; Gao, X; Dong, CJ; Wang, HY; Chen, XF; Ma, XY; Liu, SJ; Chen, QR; Lin, D; Jiao, NZ; Tang, K* (2024). Enantioselective transformation of phytoplankton-derived dihydroxypropanesulfonate by marine bacteria. *THE ISME JOURNAL,* 2024. 18(1), wrae084.

Novel lineage of marine ammonia-oxidizing archaea

Ammonia-oxidizing archaea (AOA) are among the most ubiquitous and abundant archaea on Earth, widely distributed in marine, terrestrial, and geothermal ecosystems. However, the genomic diversity, biogeography, and evolutionary process of AOA populations in subsurface environments are vastly understudied compared to those in marine and soil systems. Here, we report a novel AOA order Candidatus (*Ca*.) Nitrosomirales which forms a sister lineage to the thermophilic *Ca*. Nitrosocaldales. Metagenomic and 16S rRNA gene-read mapping demonstrates the abundant presence of Nitrosomirales AOA in various groundwater environments and their widespread distribution across a range of geothermal, terrestrial, and marine habitats. Terrestrial Nitrosomirales AOA show the genetic capacity of using formate as a source of reductant and using nitrate as an alternative electron acceptor. Nitrosomirales AOA appear to have acquired key metabolic genes and operons from other mesophilic populations via horizontal gene transfer, including genes encoding urease, nitrite reductase, and V-type ATPase. The additional metabolic versatility conferred by acquired functions may have facilitated their radiation into a variety of subsurface, marine, and soil environments. We also provide evidence that each of the four AOA orders spans both marine and terrestrial habitats, which suggests a more complex evolutionary history for major AOA lineages than previously proposed. Together, these findings establish a robust phylogenomic framework of AOA and provide new insights into the ecology and adaptation of this globally abundant functional guild.



The fourth lineage of ammonia-oxidizing archaea (*Ca*. Nitrosomirales) and their metabolic pathways

Reference:
Zheng, Y; Wang, BZ; Gao, P; Yang, YY; Xu, B; Su, XQ; Ning, DL; Tao, Q; Li, Q; Zhao, F; Wang, DZ; Zhang, Y; Li, M; Winkler, MKH; Ingalls, AE; Zhou, JZ; Zhang, CL; Stahl, DA; Jiang, JD*; Martens-Habbena, W*; Qin, W* (2024). Novel order-level lineage of ammonia-oxidizing archaea widespread in marine and terrestrial environments, *THE ISME JOURNAL*, 18(1), wrad002.

Research Projects and Cruises

58

Newly Funded Projects

1

National Key Research and Development Programs

1

NSFC Innovation Research Group Program

2

NSFC Key Programs

2

NSFC Fund for Distinguished Young Scholars

4

NSFC International (Regional) Cooperation and Exchange Programs

2

NSFC Key Programs / Joint Funds

15

NSFC General Programs / Young Scientist Funds

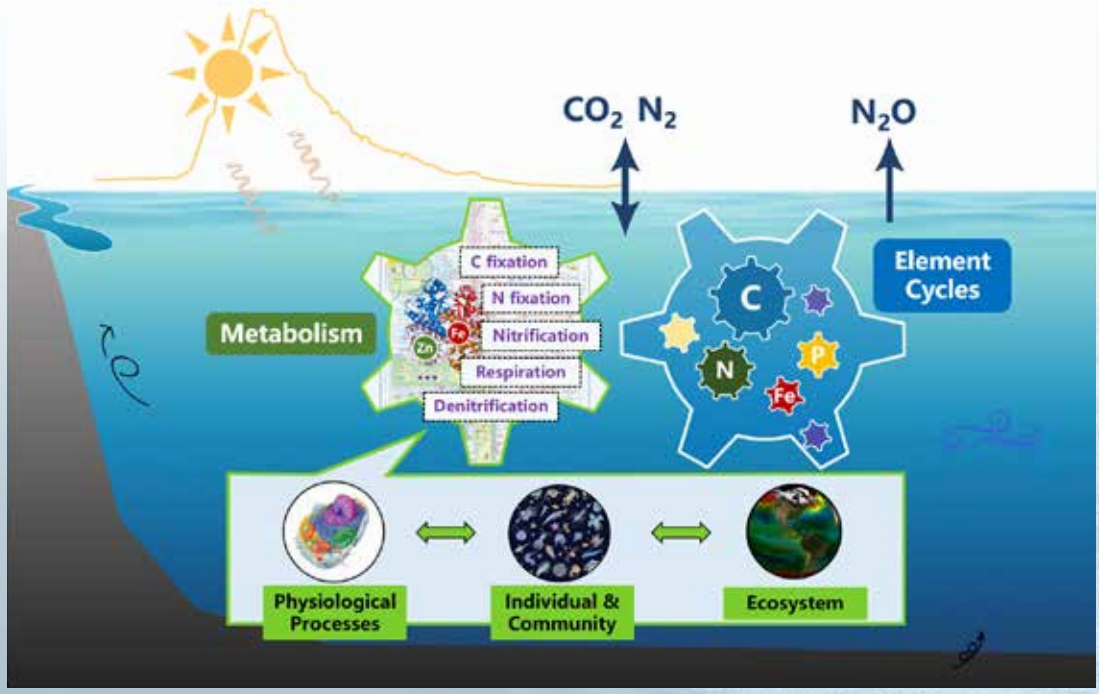
31

Other Programs

Marine metabolism and element cycles

- **NSFC Innovation Research Group 2025-2029 | SHI Dalin, ZHANG Yao, CAO Zhimian, LIU Xin, SHEN Yuan**

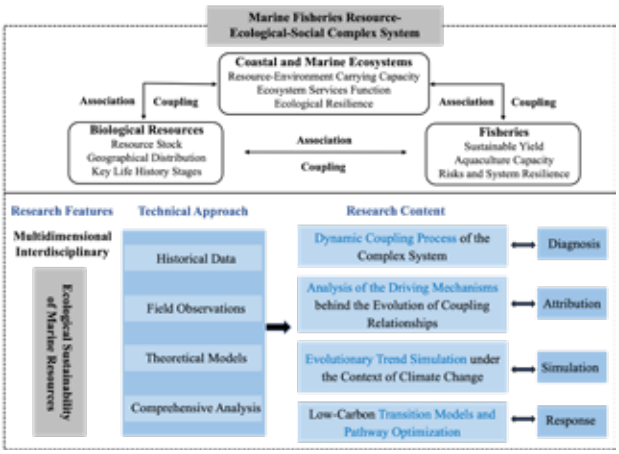
The group brings together expertise in marine ecophysiology, microbial oceanography, and marine biogeochemistry, united by a shared research interest in marine metabolism and element cycles. Through collaboration, group members have made important advancements in understanding marine microbial carbon and nitrogen metabolism, phytoplankton carbon, nitrogen, and energy metabolism, and the biogeochemical cycling of trace elements in the ocean. Looking ahead, the group aims to deepen collaborations to unveil spatiotemporal patterns and regulatory mechanisms of marine plankton metabolism, reveal its coupling relationships and mechanisms with element cycling, and evaluate and predict its responses and feedbacks to global change. The ultimate goal is to achieve breakthroughs and establish international prominence in the field of marine plankton metabolism and elemental cycles.



Marine biological resource conservation and sustainable utilization

• NSFC Fund for Distinguished Young Scholars 2025-2029 | CAO Ling

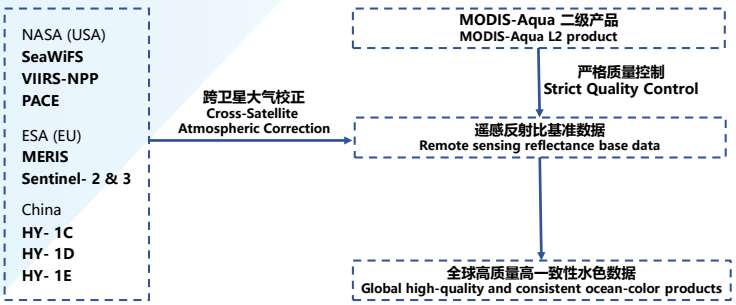
This project addresses the longstanding and emerging ecological, environmental, and industrial efficiency challenges arising from the development and utilization of marine biological resources in China. It aims to establish a dynamic, integrative analytical framework that captures the coupled feedback mechanisms among coastal fishery resources, ecosystems, and socio-economic systems under global changing conditions. Employing a multi-tiered research strategy encompassing diagnosis, attribution, simulation, and response, the project will examine the dynamic evolution, adaptive responses, and synergistic processes within these coastal resource–ecology–society networks. Ultimately, it seeks to quantify and identify multidimensional risks and to propose integrated, sustainable development and regulatory strategies that balance resource conservation, ecological security, carbon reduction and sequestration, and enhanced economic value creation.



Research on high consistency multi source ocean color satellite data fusion technology

• NSFC Key Program 2025-2029 | Zhongping Lee et al.

This project aims to develop a new processing scheme for ocean-color satellite data, significantly enhancing the consistency of products across different ocean-color satellites. The goal is to create a reliable, long-term, and globally comprehensive dataset of upper ocean biogeochemical optical properties. This "remote sensing big data" serves as a foundation for assessing the current state of marine ecosystems and their climate-related dynamics. The project introduces an innovative concept of cross-satellite atmospheric correction for ocean color data processing, integrating artificial intelligence techniques to ensure consistency in remote sensing reflectance among different satellites. The project will expand spatial coverage and extend the temporal series by merging data from various ocean-color satellites. The resulted dataset will be crucial for monitoring changes in marine ecosystems, studying the role of the ocean in the carbon cycle, and evaluating the impacts of climate change. Furthermore, the AI-based cross-satellite atmospheric correction framework sets a new standard for future ocean color data processing, marking a transition into a new era in atmospheric correction: moving from traditional radiative-transfer-based methods to data-driven artificial intelligence systems.



Ecological and evolutionary strategies of marine autotrophic microorganisms under global warming and their impacts on biogeochemical cycling

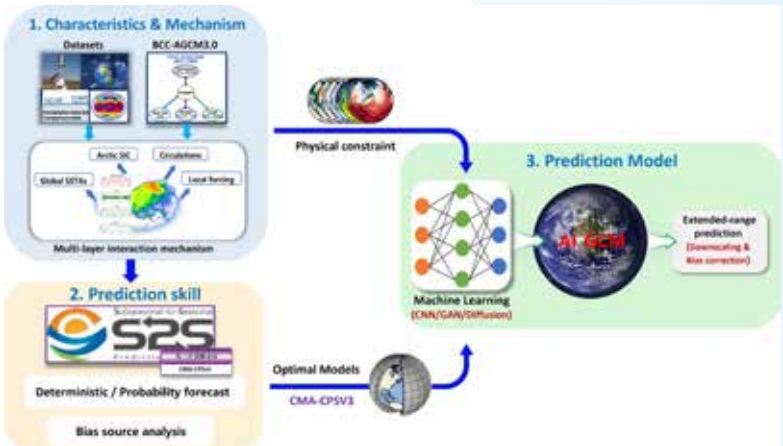
• **NSFC Key Program 2025-2029 | ZHANG Yao et al.**

This project focuses on the most dominant/key groups of marine primary producers, namely *Prochlorococcus* in the euphotic zone and nitrifiers in the dark ocean. Through a combination of long-term serially propagated experiments in the laboratory, field observations, global multi-omics analysis, and Earth system numerical simulations, this project will investigate the genome evolution, responses of matter and energy metabolism, and the evolution and ecological strategies of typical autotrophic marine microbes, as well as their impacts on the global-scale marine ecosystem and elemental cycling. This project will achieve the following three objectives: (1) Clarify the differences in short-term responses and long-term adaptation of typical species to ocean warming, unveil their genome evolution characteristics and physiological phenotype changes under long-term adaptation, as well as explore the evolution trends of interspecies relationships; (2) Elucidate the regulatory mechanisms of temperature on population structure, key/functional gene features and expression profiles, as well as important biogeochemical cycling processes such as microbial-mediated carbon sequestration, nitrogen/phosphorus assimilation and transformation, and oxygen production and consumption; (3) Establish a set of parameters for the growth and metabolic processes of typical species, populations, and communities under warming effects; and construct and optimize models to predict the impact of warming-driven shifts of autotrophic microbes on key element cycles in the ocean and their feedback to climate change.

Mechanism and prediction model for summertime extreme precipitation events over the Tibetan Plateau

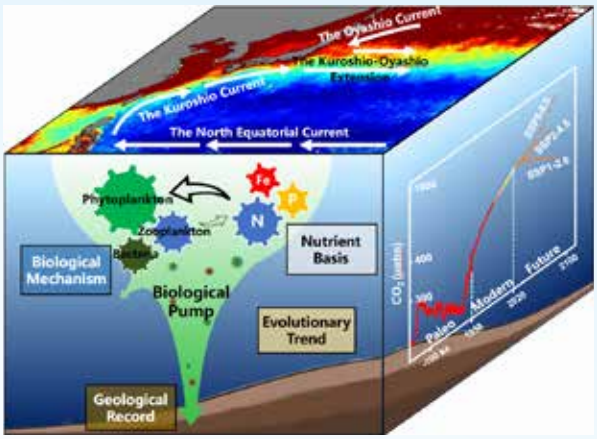
• **NSFC Key Support Program of the Joint Meteorologica Fund 2025-2028 | DUAN Anmin et al.**

The extreme weather and climate events over the Tibetan Plateau significantly impact the local ecological safety. However, there's a considerable gap in understanding the spatiotemporal variations and causes of extreme summer precipitation events over the Plateau, making accurate simulation and prediction a substantial challenge. This project plans to utilize multi-source datasets, integrating climatological dynamics diagnostics and climate system model simulations, to focus on the spatiotemporal characteristics of extreme summer precipitation over the Plateau, and to reveal the impact processes, relative contributions, and physical mechanisms of key drivers across multiple spheres (ocean, land, ice, atmosphere) on the Plateau's extreme summer precipitation from a global perspective of interactions across multiple spheres. Further, evaluate the prediction skills and biases for extreme summer precipitation based on multi-model prediction products, and leverage machine learning to predict the extreme summer precipitation events over the Plateau. This research is expected to deepen the understanding of the spatiotemporal characteristics and causes of extreme weather and climate events in the Plateau region, with the developed prediction model expected to improve prediction capabilities for extreme summer precipitation over the Plateau, serving disaster prevention and mitigation needs and sustainable development goals in this crucial ecological barrier zone.



Phosphorus, iron, and nitrogen regulation of the biological pump in the western North Pacific

• National Key Research and Development Program 2023-2028 | SHI Dalin et al.



The project focuses on the regulation of nitrogen, phosphorus, and iron in the biological pump of the western North Pacific and the evolution trends of the region's carbon sink. Through comparative studies at different spatial and temporal scales, it aims to uncover the cycling of elements such as nitrogen, phosphorus, and iron, and elucidate their regulatory mechanisms on key processes of the biological pump. Additionally, the project seeks to reconstruct the evolutionary history of the biological pump, interpret the impacts of climate change, and ultimately assess the long-term trends of carbon sink evolution in the western North Pacific. Over the past year, the project has achieved important progress by integrating historical records and observational data from the (sub)tropical western North Pacific and conducting laboratory experiments. Key advancements include: 1) revealing the distribution patterns of rare earth elements in seawater; 2) deciphering the diversity and the distribution patterns of planktonic microeukaryotes, and elucidating nutrient regulation mechanisms of nitrogen fixation and carbon export; 3) analyzing the sources and age variations of terrestrial organic carbon in sediments since the Last Glacial Maximum; 4) identifying the impact of ocean acidification on the nitrogen isotopic composition of diazotrophs.

Controls of planktonic heterotrophic processes on biological pump in the South China Sea and the Western Pacific Ocean: in-depth analysis and integration

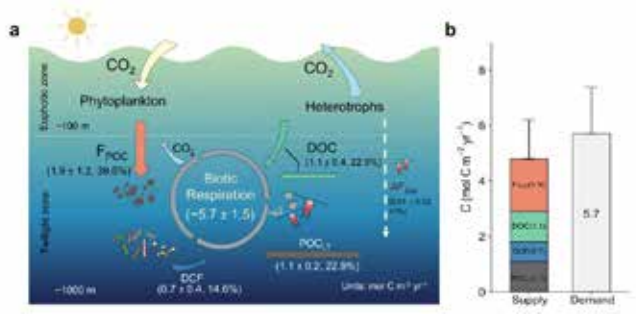
• NSFC Key Program 2022-2026 | HUANG Bangqin et al.

The project focuses on understanding the coupling mechanisms between heterotrophic processes and their influence on the biological carbon pump and particulate organic carbon export in both the euphotic and twilight zones. It addresses the core scientific question of how planktonic and microbial heterotrophic processes control the biological carbon pump in low-latitude, oligotrophic marginal seas. The following advancements were made:

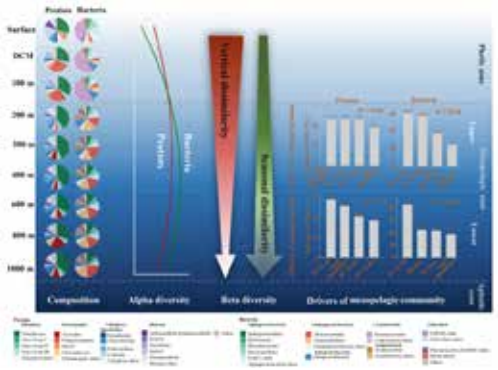
1) Using an interdisciplinary approach, we quantified twilight zone remineralization (TZR) in the South China Sea and revealed the role of multiple organic carbon sources in balancing the carbon budget in this zone. This study provides insights into the mechanisms of the biological pump and carbon cycling in low-latitude marginal seas.

2) We assessed the impact of Typhoons Bailu and Podul on phytoplankton dynamics in the northern South China Sea, combining hydrographic measurements, pigment analysis, and satellite data to study their response to rapid hydrodynamic changes.

3) We proposed a conceptual framework for mesopelagic protistan and bacterial communities in oligotrophic marginal seas, enhancing understanding of microbial dynamics and their role in carbon export and long-term storage in the ocean.



(a) Schematic diagram illustrating the different processes contributing to the regional carbon budget, and (b) synthesis of estimated carbon supply and demand in the South China Sea basin

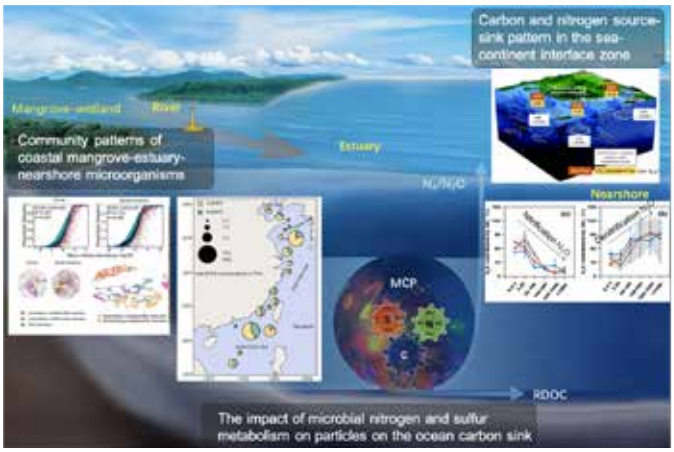


A conceptual framework for community composition, alpha- and beta-diversity, and underlying drivers influencing the mesopelagic protist-bacteria microbiota in the South China Sea.

Integrated project on the mechanism of carbon, nitrogen and sulfur cycling by microorganisms and carbon source and sink effects in the sea–land transition zone

• Integrated Project of the NSFC Major Research Plan Program 2023-2024 | TANG Kai et al.

This project focuses on the intersection of estuaries, coastal wetlands, and the near-shore, aiming to investigate the impact of microbe-driven carbon, nitrogen, and sulfur cycling processes on marine carbon sinks and their responses to global change, with the goal of comprehensively enhancing our understanding of the carbon and nitrogen source and sink effects in the land-sea transition zone. The project conducted joint surveys in multiple regions, including the Yangtze River Estuary, Pearl River Estuary, Jiulong River Estuary, Zhoushan, Shenzhen, and Zhuhai mangrove forests. The study revealed the distribution patterns of microbial communities in China's mangrove wetlands and discovered novel archaea and their unique physiological functions in mangroves. It elucidated the spatiotemporal distribution characteristics of nearshore microorganisms and their regulation by environmental factors, and in-depth analyzed the adaptation strategies of microorganisms in the Yangtze River Estuary to hypoxic environments, as well as the impact of microorganisms at the freshwater-saltwater interface on organic carbon transformation. The study also revealed the role of particle-attached microorganisms in organic matter degradation and found that particle-associated denitrification is the primary cause of N_2O production in oxygen-rich estuarine waters. The project investigated the impact of sediment nitrification-denitrification processes on carbon sinks and the interference of antibiotics on nitrogen removal, and revealed the link between marine euphotic zone sulfolipids and the carbon cycle, as well as the implicit chirality in element cycles. By quantifying the air-sea CO_2 flux in the Bohai and Yellow Seas, analyzing the greenhouse gas budget of the Pearl River Estuary, and quantifying carbon and nitrogen cycling processes, this study systematically assessed the greenhouse gas effects of the land-sea transition zone.



Flow-Solid interactions and iron transport mechanism at the sediment-water interface

• Key Project of the NSFC Major Research Plan Program 2021-2024 | CAI Pinghe et al.

The project focuses on mechanistic understanding of fluid transport and dissolved iron transfer at the sediment-water interface in the North Pacific Ocean and adjacent marginal seas. The major findings achieved in the project include: 1) a large portion of the organic matter deposited over the seafloor in the East China Sea during summer is decomposed during winter. Sediment oxygen consumption rates (FO_2) in the mud wedge of the Yangtze River delta can be described using a modified form of the Michaelis-Menten kinetics. Our study highlights intense winter mixing as an important mechanism that causes the highly efficient decomposition of sedimentary organic matter in coastal seas; 2) Using a $^{224}Ra/^{228}Th$ disequilibrium approach, we demonstrate that regeneration of sedimentary P and Fe in the seasonally hypoxic Yangtze River Estuary were largely manipulated by two counteracting processes: the decomposition of sedimentary organic matter and adsorption of DIP onto iron (Fe) oxides; 3) We develop the $^{226}Ra/^{230}Th$ isotope systematics as a novel tool for quantifying nitrate and dissolved silicate fluxes across the sediment-water interface of the deep North Pacific Ocean， and the results show that both nitrate and silicate fluxes exhibit a clear depth-dependent trend.

MEL Afield

74
Cruises

610
People-time

1127
Days at Sea


© GAO Youyan

2024 "XMU @ Sea" Undergraduate Training Cruise

July 11 - August 28

On August 28, the 5th "XMU @ Sea" Undergraduate Training Cruise was completed on the RV *TKK*, which was also a commemorative voyage in honor of Mr. Tan Kah Kee's 150th birthday anniversary. ZHOU Kuanbo, ZHANG Run, and BAI Xiaolin from Xiamen University served as the chief scientists of leg of the cruise. 77 undergraduates from 10 universities home and abroad participated in and conducted various operations onboard, including CTD casts, single- and multiple-net plankton trawls, box sediment sampling, gravity cores, hydroacoustic communication test, and benthic trawls, covering marine chemistry, physical oceanography, marine physics, marine biology, and geological oceanography.


© LIN Qianqian


© LIN Qianqian

The research vessel hosted open days in Singapore, Malaysia, and Hong Kong during the training cruise, showcasing its scientific capabilities and promoting cultural exchange.


© CHEN Weifang


© FENG Weipeng


© FENG Weipeng

NSFC Open Research Cruise 2024 - Chief Scientist Training Cruise

August 31 - September 6

To foster the talents in marine scientific research and enhance the effectiveness of the NSFC's Open Research Cruise Project, the "Chief Scientist Training Cruise" was initiated and conducted onboard the RV *TKK* in early September. This training cruise featured experienced mentors, including Dr. WEI Hao from Tianjin University, Dr. ZHANG Xin from the Institute of Oceanology, CAS, and Dr. CAO Zhimian from Xiamen University. 20 young scientists from 17 universities and research institutions were selected to participate in this seven-day expedition. Despite the challenges posed by Super Typhoon Yagi, these young participants took turns serving as the chief executive scientists and successfully completed 10 operations at three stations, including CTD casts, single-net plankton trawls, box cores, gravity cores and rock trawls. Pre-cruise training conferences, onboard training cruise, and pre- and post-cruise workshops equipped the young scientists with the necessary skills to plan oceanographic fieldwork aboard a vessel.

NSFC Open Research Cruise in the Central SCS (NORC2024-06)

September 8 - October 28

From September to October, the NSFC Open Research Cruise in the central SCS (NORC2024-06) was accomplished onboard the RV *TKK*. This expedition was divided into two legs—the comprehensive biogeochemical leg and the geological+geophysical+biogeochemical leg. Associate Prof. XIAO Wupeng and CHEN Hongmei from Xiamen University served as the chief scientists for this cruise. The cruise supported 31 NSFC-funded projects conducted by 66 scientists and researchers from 15 domestic institutions. During this cruise, multiple over-the-side operations were carried out at 50 stations, including CTD casts, deployments of multi-net plankton samplers, trace metals sampling, in situ LVPs, box sediment samples, gravity cores, and geographic survey lines.

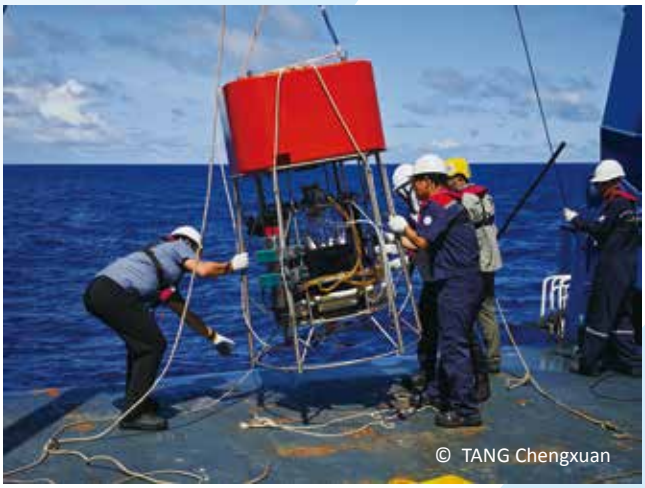

© SHEN Wanqing

© YE Chengmiao

Cruise Observations of Eddies in the North Pacific Subtropical Countercurrent Zone

November 1 - December 6

During the cruise, eddy dynamic structure and distributions of nutrients, organic carbon, and biological communities were determined, and carbon and nitrogen fixation rates were measured. It aims to investigate the mesoscale process effect on the phytoplankton composition in the upper ocean and export of particulate organic carbon, nitrogen, and phosphorus and biogenic silicon from the euphotic zone. It also explores the role of the spatiotemporal evolution of eddies in regulating the carbon sequestration of the biological pump and the CO_2 source/sink nature.



© TANG Chengxuan

© TANG Chengxuan

MEL Synergy

9

Conferences, meetings, trainings hosted

150

Talks at national / international conferences

24

Newly appointed in journals

26

Newly appointed in organizations or associations

22

Visiting scholars

36.1%

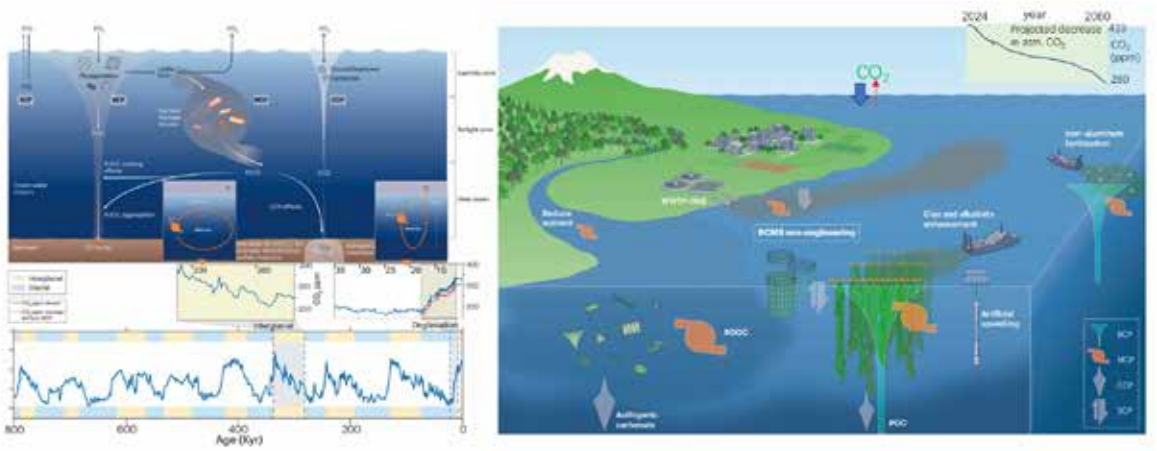
International joint publications

© WANG Xiaoyi

Global Ocean Negative Carbon Emissions (Global-ONCE) Programme

Global-ONCE Programme is in the framework of the United Nations Decade of Ocean Science for Sustainable Development (2021-2030). Initiated by Prof. JIAO Nianzhi, Global-ONCE is based on his original theoretical framework for the Microbial Carbon Pump (MCP). Through multidisciplinary integration, Global-ONCE aims to establish a comprehensive carbon storage system combining the Biological Carbon Pump (BCP), Carbonate Counter Pump (CCP), MCP, and Solubility Carbon Pump (SCP), collectively forming the BCMS framework. Since 2017, Global-ONCE has attracted participation from hundreds of experts and scholars from 79 research institutions in 33 countries.

◎ On March 15, Prof. JIAO Nianzhi published a review article in *Nature Reviews Microbiology*, unveiling the response of the MCP to climate change and proposing the innovative theory that the MCP acts as a bidirectional regulator of climate change.



Response of the MCP to climate change
© JIAO Nianzhi, et al

◎ On October 22, the 3rd Global-ONCE Open Science Conference was held in Xiamen University. Under the theme "Advance integrated development of education, sci-tech and talent," the Conference was attended by notable guests, including HUAI Jinpeng, Minister of Education of China; Peter Thomson, United Nations Secretary-General's Special Envoy for the Ocean; and Fields Medalist Efim Zelmanov. During the Conference, the integrated undergraduate-graduate course on Habitable Earth, along with other educational achievements, was launched.

The 3rd Global-ONCE Open Science Conference

◎ On November 22, the International Organization for Standardization (ISO) announced the approval of the world's first international standard proposal on ocean carbon neutrality, the "Ocean Negative Carbon Emissions and Carbon Neutrality—General Principles and Requirements," with a 100% approval rate.

Approval of the "Ocean Negative Carbon Emissions and Carbon Neutrality-General Principles and Requirements"

Coastal Zones Under Intensifying Human Activities and Changing Climate: A Regional Programme Integrating Science, Management and Society to Support Ocean Sustainability (COASTAL-SOS)

2021 UN OCEAN DECADE ENDORSED PROJECT 2030 COASTAL-SOS

COASTAL-SOS is UN Ocean Decade endorsed project led by MEL. It partners cross-sectoral stakeholders, including leading academic institutions, industrial enterprises, non-profit foundations, and nongovernmental/intergovernmental organizations from East Asian countries to advance scientific understanding of critical coastal ocean health issues.

- In January, the BLUE-CARE Project, COASTAL-SOS pilot project, organized an International Workshop on Blue Carbon Ecosystems, attracting scholars at home and abroad on oceanography, ecology and carbon finance.

International Workshop on Blue Carbon Ecosystems
© BLUE-CARE Project

- In June, the BLUE-CARE Project held a Blue Carbon Science Fair, with the participation of over 300 elementary school students in Xiamen. The Fair promoted knowledge of blue carbon through different types of activities.

Blue Carbon Science Fair
© CHEN Yimin

- In September, the COASTAL-SOS completed its Xiamen Pre-study Project, which focuses on Xiamen's coastal areas with the aims of supporting a sustainable development strategy for the city.

- In April, Prof. DAI Minhan, Chief Scientist of COASTAL-SOS, presented the latest research on offshore deoxygenation and digital twin oceans at the 2024 Ocean Decade Conference and 2nd UN Ocean Decade Regional Conference, engaging in discussions with international organization leaders for plan future collaborations.

Prof. DAI Minhan attended the 2024 Ocean Decade Conference
© WANG Guihua

Prof DAI Minhan attended the 2nd UN Ocean Decade Regional Conference © Khanittha Uthaipan

Surface Ocean-Lower Atmosphere Study (SOLAS)

SOLAS aims to achieve a quantitative understanding of the key biogeochemical-physical interactions and feedbacks between the ocean and atmosphere, and of how this coupled system affects and is affected by climate and global change. The SOLAS International Project Office (IPO)-China has been hosted by MEL since January 2021. Prof. DAI Minhan, was elected as Co-Chair of the SOLAS Scientific Steering Committee for a 3-year term from 2021 to 2023. Dr. LI Li is the Executive Director of SOLAS. In 2024, the IPO continued to provide support to the SOLAS global community, including 33 national/regional networks, 17 sponsored/endorsed projects and 4 integrated atmosphere-ocean time series stations.

10
International Conferences, Meetings and Workshops

23
National / Regional Reports

2
Event Reports

12
Issues of Newsletters

34
Announcements

149
Tweets

- SOLAS organized a special issue on "Boundary Shift: The Air-Sea Interface in a Changing Climate" in *Elementa: Science of the Anthropocene* to assess the current state of air-sea exchange science, highlight critical future research directions, and identify emerging opportunities for new collaborations, technologies, and discoveries. 12 invited papers were included in the special issue.

- In April, SOLAS and the UN Ocean Decade endorsed program, the Observing Air-Sea Interactions Strategy (OASIS), co-organized a side event entitled "Unifying Strategies to Develop Integrated Global Air-Sea Community Networks" at the UN Ocean Decade Conference. The event aimed to unify strategies for developing integrated global air-sea community networks and to scale up ocean action using science-based solutions, contributing to Ocean Vision 2030.

Joint SOLAS & OASIS Side Event at the UN Ocean Decade Conference. © OASIS

- In November, SOLAS celebrated its 20th anniversary at the 9th Open Science Conference in 2024 in Goa, India. The conference welcomed nearly 220 ocean-atmosphere scientists from over 25 countries to share their research work around 5 core themes and 3 cross-cutting themes in the SOLAS science plan.

Group photo of the 9th Open Science Conference ©National Institute of Oceanography, Goa, India

9th Young Scientist Forum of Earth Science

May 17- 20 · Xiamen

Sponsored by the Council of the Youth Geoscience Forum, and co-organized by MEL, the Institute of Urban Environment, CAS and the Third Institute of Oceanography, MNR.

Prof. DAI Minhan from Xiamen University, Dr. HE Hong from the Institute of Urban Environment, CAS, Prof. SHEN Yan'an from the University of Science and Technology of China, Prof. WANG Yanfen from the University of Chinese Academy of Sciences, and Prof. LI Jinhua from the Institute of Geology and Geophysics, CAS were invited to deliver keynote speeches on the forum.


DAI Minhan


HE Hong


SHEN Yan'an


WANG Yanfen


LI Jinhua

Over 6,600 participants, reaching a new record

20 sessions, 280 topics

4538 oral presentations and nearly 950 posters, reaching a new record

© MEL

The Scoping Workshop on Synergy of Ocean Observations and Biogeochemical Models

May 21 - 23 · Xiamen

柴扉

Organized by MEL and the Fujian Ocean Innovation Center, the workshop attracted 40 well-known scholars in marine sciences from 8 countries. The workshop was co-moderated by Prof. CHAI Fei from Xiamen University, and Dr. Veronique Garçon, Senior Scientist from French National Centre for Scientific Research.

The workshop had 3 goals:

- To identify effective strategies for incorporating observational data into models, enhancing their accuracy and reliability, and improving forecasting skills;
- To consider novel approaches for data collection and model development, such as autonomous platforms (e.g., BGC Argo, gliders, sail drones, wave gliders, etc.) and remote sensing techniques;
- To discuss the integration of BGC observations and predictions, through data assimilation, use of data for deep learning into models, emergent constraints, and digital twins of the ocean, etc.

The workshop focused on 4 topics:

- BGC data for emergent constraints for future climatic scenarios;
- BGC data for model validation, such as the standards, practices, data formats, and evaluation metrics in the ocean forecast community;
- Digital twins of the ocean and artificial intelligence for BGC and marine ecosystems, including omics data;
- Data assimilation to include BGC and bio/eco data into operational prediction/forecasting systems.

Veronique Garçon

Forum on "We Share the Ocean: Accelerating the Blue Transition and Carbon Neutrality"

October 10-12, Beijing

Organized by Ocean Governance Policy Research Project Working Group, under China Council for International Cooperation on Environment ad Development (CCICED) with Professor DAI Minhan as the leader of Chinese party, the forum carried out in-depth discussions focused on important topics such as ocean-based sustainable development solutions, ocean value accounting and blue finance, and international instruments on plastic pollution and ocean plastic reduction.

High-level Forum for Strategically Developing a Sustainable Blue Economy in the Guangdong-Hong King- Macao Greater Bay Area under the Vision of Carbon Neutrality

October 8-9, Hong Kong

Organized by Ocean Governance Policy Research Project Working Group, the forum focused on important issues such as sustainable blue economy development in the Greater Bay Area, coordinated development in the Bay Area and comprehensive marine governance, and aimed to offer suggestions for the high-quality development of sustainable Marine economy in the Greater Bay Area.

The 4th Offshore Carbon Capture, Utilization and Storage Forum

October 12 - 15 · Hangzhou

Co-sponsored by MEL and the Pacific Society of China, and organized by the Second Institute of Oceanography, Ministry of Natural Resources, the forum themed “Coupling synergy between multi-layer carbon cycle and OCCUS,” attracted over 200 representatives from research institutions and industry. The event focused on discussing the development path of OCCUS, with the goal of explorning ways for emerging low-carbon industries to achieve carbon neutrality.

Visiting Fellowship Program

In 2009, MEL launched a “Visiting Fellowship Program” for visiting scholars in marine sciences to conduct collaborative research with MEL members. Combined with the MEL Open Science Fund, the program offers visiting scholars financial support for 1-6 month stays in Xiamen. 22 scholars have been sponsored in 2024, including 4 Distinguished (Zhongzheng Distinguished)Visiting Fellows, 11 Senior Visiting Fellows and 7 Young Scientist Visiting Fellows.

Prof. Michael David Krom from University of Haifa, Israel

Prof. Mark Lovell Wells from the University of Maine, USA

22
sponsored in 2024

4
Distinguished (Zhongzheng Distinguished) Visiting Fellows

11
Senior Visiting Fellows

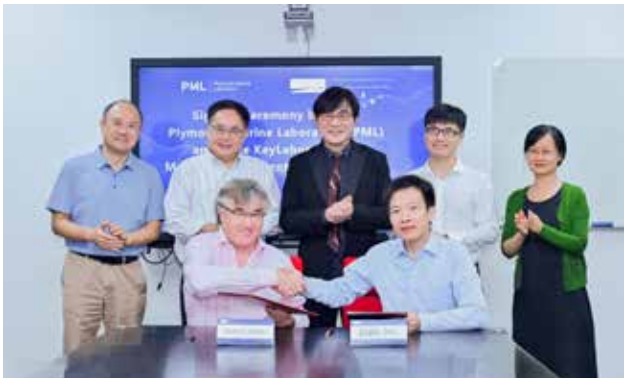
7
Young Scientist Visiting Fellows

Dr. Nima Pourang from the Iranian Fisheries Science Research Institute (Senior Visiting Fellow), presented at MEL Luncheon Seminar

Associate Professor Berchie Asiedu (Senior Visiting Fellow) from University of Energy and Natural Resources, communicated with students after the MEL Luncheon Seminar

新增合作伙伴

The MoU between MEL and the State Key Laboratory of Marine Pollution, City University of Hong Kong was renewed in April



The MoU between MEL and Plymouth Marine Laboratory, UK, was signed in November

IPGP Sciences pour la planète

The MoU between MEL and the Institut de Physique du Globe de Paris, France, was signed in November

Other exchanges

196

Visitors initiated cooperations through academic presentations, teaching, and research partnerships

30

MEL Luncheon Seminars and MEL Seminars

7

MEL Lingfeng Forums

Andreas Bjelland Eriksen, Minister of the Ministry of Climate and Environment of Norway gave a Nanqiang Lecture and participated in the Synergy Between Blue Economy and Carbon Neutrality Towards Ocean Sustainability

Research Center for Oceanography (National Research and Innovation Agency) representatives, led by Director Udhi Eko Hernawan paid a visit

Shenyang Institute of Automation, CAS, led by Director YU Haibin, paid a visit

Delegates of Institute of the Marine Sciences, Italian National Research Council paid a visit

Newly Appointed in Organizations or Associations

International Positions

- CHAI Fei, Member / Digital Twins of the Ocean (DITTO) Steering Committee
- CHAI Fei, Member / Partnership for Observation of the Global Ocean (POGO) Board of Trustees
- XIU Peng, Member / Ocean Predict Marine Ecosystem Analysis and Prediction Task Team (MEAP-TT)
- XUE Huijie, Member / CoastPredict Steering Committee

Domestic Positions

- CHEN Luzhen, Vice Chairman / Ocean Geography Professional Committee of the Geographical Society of China
- SHI Dalin, Member / Advisory Committee of Department of Earth Sciences, NSFC
- ZHANG Yao, Council member / Geobiology Branch of Palaeontological Society of China

Newly Appointed in Journals

International Positions

- BAO Hongyan, Early Career Editorial Fellow / *Journal of Geophysical Research: Biogeosciences*
- DAI Minhan, Editorial Board Member / *Global Ocean Science Report (GOSR-III)*
- LI Yangfan, Editorial Board Member / *Ocean & Coastal Management*
- LIU Guokun, Editorial Board Member / *Environmental Analytical Chemistry*
- LIU Xin, Associate Editor / *Limnology and Oceanography: Methods*
- LYU Kewei, Early Career Editorial Fellow / *Fundamental Research*
- TAN Qiaoguo, Editor / *Environmental Toxicology and Chemistry*
- WANG Bingbing, Editor / *Aerosol Research*
- XU Dapeng, Editorial Board Member / *Microorganisms*
- YU Fengling, Special Issue Editor / *Geomorphology*
- ZHANG Yao, Editorial Board Member / *Marine Life Science & Technology*
- ZHU Xudong, Associate Editor / *Remote Sensing in Ecology and Conservation*

Domestic Positions

- CAO Zhimian, LI Feili, LIN Hongyang, LYU Kewei, YU Fengling, Early Career Editorial Fellows / *Acta Oceanologica Sinica*
- LI Yangfan, Editorial Board Member / *Ocean Development and Management*
- LIU Zhiyu, Associate Editor / *Marine Forecasts*
- SHANGGUAN Mingjia, Member of Youth Editorial Board / *Journal of Atmospheric and Environmental Optics*
- TAN Qiaoguo, Editorial Board Member / *Asian Journal of Ecotoxicology*

Selected Invited Talks in International / National Conferences

- CAO Ling. Blue food futures. Marine Socio-Ecological Systems Symposium 2024. June 2-8. Yokohama, Japan. (Invited talk)
- CAO Ling. Development of marine protected areas in China - A policy perspective. Hong Kong Marine Protection Alliance 2024 Quarterly Members Meeting. Hong Kong, China. (Invited talk)
- CHEN Luzhen. Introduction of standard development in coastal blue carbon WG5. The 43rd plenary meeting of the International Standardization for Organization Technical Committee 8 “Ships and Marine Technology”. September 21-29. Panama. (Invited talk)
- CHEN Nengwang. Marine cloud: A digital support system. 2024 Chinese Engineers Forum and Chinese Engineering Pavilion. September 17-22. Kuala Lumpur, Malaysia. (Invited talk)
- DAI Minhan. Coastal ocean under intensifying human activities and changing climate: From science to sustainability and needs for a digital twin platform. Joint Conference of ISEH ICEPH & ISEG. August 11-18. Galway, Ireland. (Invited talk)
- DAI Minhan. Predominant biological consumption over physical transport on nutrient budget within mesoscale eddies in the oligotrophic ocean. The 3rd Hong Kong and Macau Ocean and Areas Excellence (AOE) Forum. Hong Kong. China. (Invited talk)
- JIAO Nianzhi. Microbial carbon pump and climate change: A new insight for Ocean Negative Carbon Emissions (ONCE). American Geophysical Union Annual Meeting 2024. December 9-13. Washington, D.C., United States.(Sessions invited talk)
- LIU Guokun. AI + SERS analysis of trace targets in complex matrices. The 12th Singapore International Chemistry Conference. December 9-13. Singapore. (Invited talk)
- LIU Zhiyu. Dynamical decomposition of multiscale oceanic motions. Workshop on Physics of Wave Turbulence and Beyond. September 2-6. Les Houches, France. (Invited talk)
- LU Yonglong. Sustainable path of China under global environmental change. Sustainable Asia Conference 2024. Inchon, South Korea. (Plenary talk)
- MA Jian. New development of an integrated syringe-pump-based environmental-water analyzer (*i*SEA). The 23rd International Conference on Flow Injection Analysis and Related Technigues. December 3-7. Chiang Mai, Thailand. (Invited talk)
- TAN Qiaoguo. Metal risks in turbid coastal waters. Society for Environmental Toxicology and Chemistry 14th Asia-Pacific Biennial Meeting. September 21-25. Tianjin, China. (Invited talk)
- WANG Weilei. A global estimate of the biological carbon pump and its application in carbon sequestration. Society for Environmental Toxicology and Chemistry 14th Asia-Pacific Biennial Meeting. September 20-23. Tianjin, China. (Keynote Speech)

© The colofor vein near Jeju Island by HiSea-2

MEL Education

259
Enrolled postgraduates

177
Enrolled doctoral students

111
Master's graduates

40
PhD graduates

22
Postdocs

© SHI Wei

MEL Marine and Environmental International Joint Training Program

The MEL Marine and Environmental International Joint Training Program for Innovative Talents was launched in 2020. This program supports PhD candidates, postdoctoral fellows, and, faculty members to visit or study at the University of Delaware, GEOMAR Helmholtz Centre for Ocean Research Kiel, and Laboratoire d'Océanographie de Villefranche, Sorbonne University–CNRS.

6 newly approved

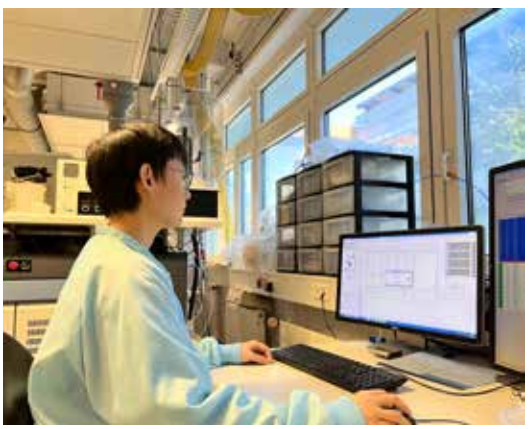
6 completed their projects

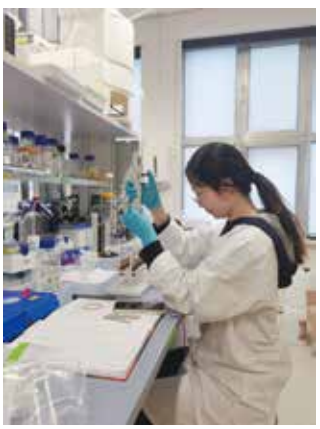
10 on-going projects

4 articles are published in *Reviews of Geophysics, Environmental Science & Technology, Talanta, IEEE Transactions on Geoscience* and *Remote Sensing*


Remote Sensing Estimations of the Seawater Partial Pressure of CO_2 Using Sea Surface Roughness Derived From Synthetic Aperture Radar


HAN Yuye (2nd from the left in the first row) participated in Cruise M197 in the East Mediterranean Sea


YUAN Yi (GEOMAR) did sample measurement


YIN Xiaohan (GEOMAR) did muniton extraction

Outstanding Postdoctoral Fellowship

To foster innovative research and interdisciplinary collaborations, MEL launched the Outstanding Postdoctoral Fellowship Program in 2014. In 2024, a total of 5 applicants were awarded funding, including Dr. JIANG Weimin, Dr. CHENG Shuo, Dr. LIU Lingk, Dr. CHEN Lin, Dr. CHANG Tianyi.

- **10** articles were published in *Limnology and Oceanography*, *Communications Biology*, and *Environmental Research*, etc.
- **JIANG Weimin** was awarded National Postdoctoral talent program
- **SUN Bin** was awarded the Marie Skłodowska-Curie Actions Postdoctoral Fellowship 2023, which is the highest recognition given to personal research in European Union
- **3** people were awarded under the NSFC Young Scientists Fund

  5 people were awarded different kinds of national Postdoctoral Fellowships

  2 people were involved in the Marine and Environmental International Joint Training Program

Dr. WANG Zhi is leading a tour to the public during the RV *TKK*'s Open Day in Singapore

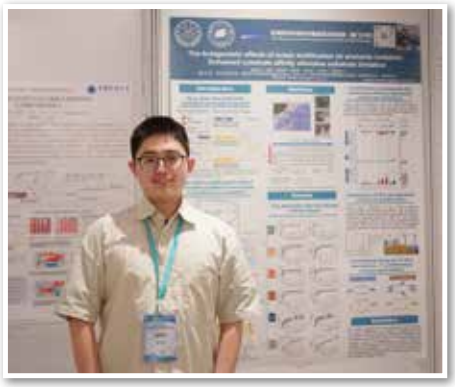
Dr. SHEN Yawei (3rd from the right) attended the 2nd Ocean Decade Regional Conference & 11th WESTPAC International Marine Science Conference and was awarded the "Best Oral Presentation for Young Scientists" (Photo by SHEN Yawei)

ZHANG Mingzhen (2022 MEL PhD, 3rd from the right) visiting Assistant Professor LUO Xin's research group at the University of Hong Kong (Photo by ZHANG Mingzhen)

MEL PhD Fellowship

MEL initiated the MEL PhD Fellowship in 2016 to cultivate academically outstanding PhD students in marine environmental sciences and other interdisciplinary research fields that fit into MEL's research scopes.

- This year, we have **7** newly approved, **8** completed their projects and **30** on-going projects
- **16** articles were published in journals including *Remote Sensing of Environment*, *Talanta*, *Global Biogeochemical Cycles* and *Marine Chemistry*, etc.
- **ZHANG Mingzhen** was granted funding under the NSFC Fund for Students' Basic Research Projects (PhD)



TONG Senwei (2021 MEL PhD) participated in the 12th Microbiology Academic Symposium (Wuhan) hosted by the Chinese Society for Microbiology

LAI Wendian (2023 MEL PhD Felloq) participated in the 5th Student Lingfeng Forum and made oral presentation

HU Xiaohua

LU Juying

TANG Jinming

ZOU Shixian

Grade A PhD students

in 2024 annual assessment

MEL Graduate Academic Forum

July 18 - 21 · Dongshan Swire Marine Station (D-SMART)


© FENG Mingjun

With the theme of "Deeper Blue, Deeper Thoughts", the forum aims to awaken the understanding, compassion, cooperation and commitment of students and the early career researchers for the ocean, promoting marine studies to a further level through deeper thinking. 80 graduate students and faculty members from Xiamen University, Peking University, and Shanghai Ocean University were involved.

- **6** topics, **48** oral presentations, **18** posters
- Icebreaker, **round-table discussion**, and **salon**
- An outreach event themed on the **"3D Ocean"** for students and teachers from nearby middle schools and primary school was organized


© FENG Mingjun


© LIN Simin


© YOU Huimin

University Consortium on Aquatic Sciences Symposium

June 11 - 16 · Dongshan Swire Marine Station (D-SMART)

With the theme "Ocean: Bridging Science and Humankind, Past and Future," the symposium not only stresses the role of the ocean as a link between humans and science, it also strives to foresee the future of the ocean and human kind through lessons from the past. Meanwhile, it is expected to serve as a healthy regional exchange platform for students and early career researchers in the field of environmental science to share innovative ideas and achievements. 51 graduate students and faculty members from Xiamen University, The University of Hong Kong, Taiwan Ocean University, and Taiwan Sun Yat-sen University were involved.

- **6** keynote speeches, **35** oral presentations and lightning talks, **entirely organized by UCAS student committees**
- R Programming Language Skills Training workshop, academic debate, exploration theater
- An open house themed "**Blue Planet and Co-existence Between Humans & the Ocean**" and a field trip in Dongshan county were held


© TING Zheng Yu

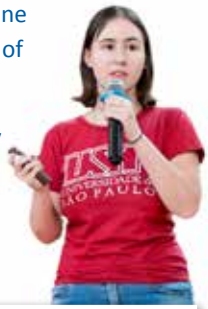

© TING Zheng Yu


© TING Zheng Yu


© ZHANG Jingwen

2024 MEL Summer Undergraduate Research Fellowship Program in Marine Environmental Science

From July to September, MEL hosted the 2024 MEL Summer Undergraduate Research Fellowship Program in Marine Environmental Science. Fellows were exposed to professional research training which aims to cultivate the ability of innovation and academic spirit.



- **26** Students from **18** universities participated, including the University of Pennsylvania (the US), University of São Paulo (Brazil), Ocean University of China, and Harbin Institute of Technology (China).
- **6** seminars, **3** talks, **2** outreach activities, **2** field trips


© WANG Guanfei


© WANG Guanfei

Training Workshop on Marine Radioactivity

From August 19 to 23, the Training Workshop on Marine Radioactivity was held at Xiamen University Malaysia, Selangor Darul Ehsan, Malaysia. This series of workshops was initiated by Dr. Ken O. Buesseler from the Woods Hole Oceanographic Institution (WHOI) and Prof. DAI Minhan from MEL, in collaboration with SCOR Working Group 146 (Radioactivity in the Ocean, 5 Decades Later Rio5). The workshop has been held in Xiamen (China), Paris (France), Joondalup (Australia), and San Juan (Puerto Rico) since 2016. It is also endorsed as an UN Ocean Decade Activity.


© SHI Wei

- The workshop selected **27** participants from **14** countries, including China, Japan, Indonesia, Malaysia, Thailand, Algeria, and Kenya, etc.


© SUN Xiaodi

MEL in the Community

THANKS for having you in 2024

ZHANG Xin

Speaker of the Ocean Speaking Town Hall
Scientific Advisor to the Junior Blue Pioneers Training Program
Research Sciencist of Institute of Oceanography, CAS

"The Institute of Oceanography, CAS has always been partners. Marine public education, should be carried out in cooperation with the common goal to promote the development of marine science with the needs of the nation and society."

LIN Xin

Vice Principal in Science of Songbai Elementary School, Xiamen
Member of the Administrative Committee of the 70.8 Ocean Media Lab
Associate Professor of the College of Ocean and Earth Sciences, Xiamen University

"Since 2020, I have successively participated in the marine public education of Xiamen University, and witnessed its whole process of from offline to online, and then to a hybrid combination. Science public education needs to bring together the strength of scientific institutes, primary and secondary schools, and all sectors of society. We need a broad "social classroom" with the integration of all resources."

WANG Zhi

Invited speaker for the 2024 RV *TKK* "Teacher at Sea"program
Organizer in chief of the 2024 RV *TKK* "XMU @ Sea" Undergraduate Training Cruise Open Day
Associate Professor of the College of Ocean and Earth Sciences, Xiamen University

"I am always keen for marine public education, and have gone all out in every related activity. In this process, my team have gradually improved and upgraded the "explanation-show-participation" system with multi-disciplinary knowledge, and look forward to presenting a magical ocean world to more teenagers and the public."

TANG Jinming

Editor of 70.8 Ocean Media Lab
PhD Student of the College of Ocean and Earth Sciences, Xiamen University

"Public education is not only about the numbers and formulas in the laboratory, or the interpretation of research results, but also the translation of complex scientific knowledge into language that is easy for the general public to understand, so that more people can realize the impact of the ocean on the future of mankind."

RAO Yuming

Instructor of the Junior Blue Pioneers Training Program
PhD Student of the College of Ocean and Earth Sciences, Xiamen University

"I cherish the opportunity to participate in the program open to high school students. They not only successfully completed their courses, but also independently formed a teaching manual for peers, so that we heard from their voices, which is a process of learning and growing together."

HE Shifan

Trainee of the Ocean Media Training Camp
Master student of the College of Environment & Ecology, Xiamen University

"I knew 70.8 Marine Media Lab before I'm a student here. It further broadens my horizons through various activities now. Full of challenges as they are, the activities are valuable experiences. I hope that more peers will devote themselves to public education, planting the seeds of science in the hearts of more people."

Outreach events during the 9th Young Scientist Forum of Earth Science

◉ "Only One Earth for All of Us"Art Exhibition

The National Maritime Museum of China, French Embassy in China, French National Center for Scientific Research, French Institute of Development, Central Academy of Fine Arts School of Experimental Art and Science and Technology and Xiamen Huarui Lepton School were invited to contribute, as well as the organizers of the Forum and students from several middle schools in Xiamen. The exhibition was open to all forum participants.

◉ Teenagers' Exploration Workshop Themed on "Sustainable Development"

6 speeches were given by scholars from institutes such as the Research Center for Eco-environmental Science, CAS, Lanzhou University, Zhejiang University and Xiamen University. In the Exploration Workshop, students focused on topics like water resources, phytoplankton and ecological balance, and thought about solutions to sustainable development problems through training, discussion and summary. A series of online outreach works were presented. Application and achievements of earth science from specific cases were demonstrated in WeChat tweets, which narrowed the distance between science and the public from diverse perspectives.

Junior Blue Pioneers Training Program

Junior Blue Pioneers Training Program has been held for three sessions since 2022, training more than 60 high school students all over the world. Themed on "Science for Sustainable Development", the 2024 Program organized activities such as face-to-face salons, sea sampling, experiments, and field visits. Participants were inspired to launch a series of ocean-related activities in the communities and schools after trainings, giving full play to the future potential of the young Blue students.

2024 RV *TKK* "Teacher at Sea" Program

At the 15th anniversary of the NSFC "Open Research Cruise" Project, MEL jointly organized the Program with Fujian Media Group, forming a special working group on public education including scientists from Xiamen University, Shanghai Ocean University, Nanjing University of Information Science and Technology, Southern University of Science and Technology, and vice principals of primary and middle schools. Taking the RV *TKK* as a "classroom," the program offered an online class about ocean investigation for students from elementary and middle schools.

40+ Media involved

15,949,000 viewers

236,000 comments

13th Xiamen University Ocean Sciences Day

Bright, clear skies illuminated Xiamen University's 13th Annual Ocean Sciences Day, as roughly 10,000 visitors descended on the Xiang'an Campus, home of the university's ocean science program. Seventy different booths hosted by various NGOs, students, departments, and laboratories offered guests a dizzying array of choices – all related to ocean science and marine stewardship. New to this year's event was the "Sustainable Garden" which highlighted sustainable lifestyle choices and showcased the fusion of art and science. As visitors stopped by each booth and interacted with the people manning it, the teaching and learning flowed in both directions as researchers and NGO staffed learned as much from the guests as the guests did from the "experts." This type of two-way exchange is extremely important as it allows all of society, researchers and non, to move more effectively toward a cleaner, healthier ocean.

MEL Advancing Science Through Innovation

© ZHQU Kuanbo

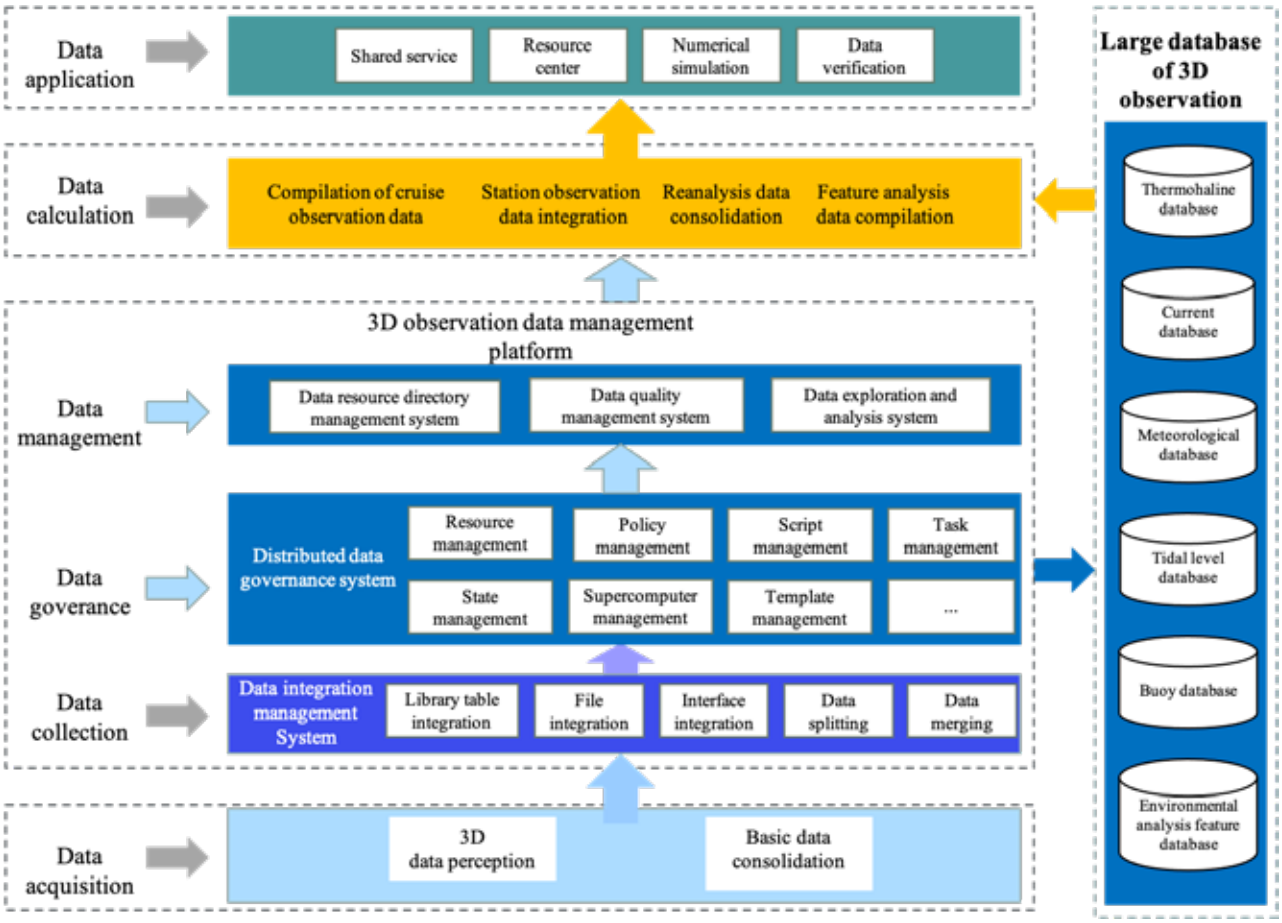
Center of Major Equipment and Technology (COMET)

MEL formed the Center of Major Equipment and Technology (COMET) in 2008 with a total of 5 central platforms and 13 functional laboratories. COMET integrates all large-scale equipment, fully provides open services to researchers, and has built a good instrument operation management system to solve challenges such as the application of large-scale instruments in the process of innovative research and high maintenance costs and operating costs. Thanks to COMET, instruments in MEL can run smoothly and provide better technical services and support for scientific research.

COMET
Center of Major Equipment and Technology

A New 3D Observation Large Database and Service System

The COMET ocean observation technology and data center, based on the ocean 3D observation system, serves the major strategic needs of scientific research and national defense security. The center has set up a professional technical team, opened up the service chain of instruments, observations, data, and applications, provided high-quality standardized data products, and started to build a new 3D observation large database and service system. By 2024, the data integration task of 20 cruises and 50 fixed stations has been completed, and relevant work has been advanced in an orderly manner.



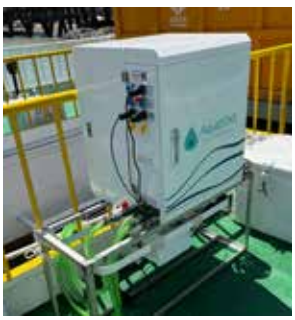
3D Observation Large Database and Service System

Ocean Instrument Development and Application Center (Ocean-IDEA)

The Ocean Instrument Development and Application Center (Ocean-IDEA) at MEL advances oceanographic instrumentation through core technology research and innovation in areas like observation platforms, biogeochemical sensors, underwater machine vision and fidelity bio-chemical sampling techniques. Collaborating with research teams, Ocean-IDEA designs pioneering sensors and equipment, bolstering Xiamen University's oceanography and fostering a top domestic innovation hub. Ocean-IDEA offers end-to-end services for ocean instrument research, development, and deployment, covering design, simulation testing (including fluid, mechanical, and pressure analyses), circuit development, hardware integration, software programming, and information system.

Scope 1: Ocean Observation Platforms

Ocean-IDEA designs, integrates sensors, develops data acquisition and communication systems, and establishes data management frameworks for a variety of observation platforms, including moorings, cabled platforms, seabed system, shore-based stations, ships, wells and unmanned ships.



Scope 2: Biogeochemical Sensors and Instruments

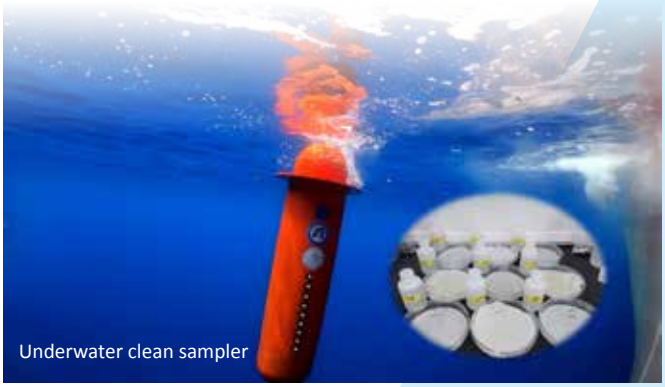
The development of wet chemical, optical, and electrochemical sensors and instruments for the precise measurement of biogeochemical parameters, and bio-optical-based biosensors and instruments for advanced ecological analysis

pH sensor (Gen. 4)

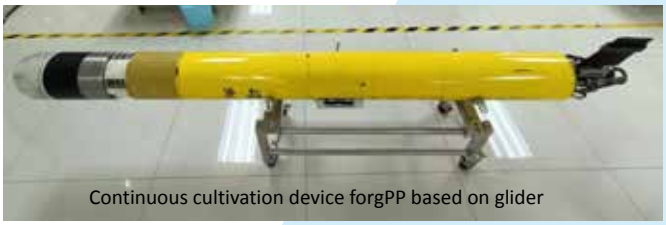
Phytoplankton optical detector(POD)

Scope 3: Biogeochemical Samplers and Experimental Instruments

The development of underwater *in-situ* fidelity sampling techniques and trace sample collection equipment, and measurement methods and instruments for biogeochemical rates, leveraging underwater in-situ continuous cultivation techniques and marker tracer technologies.



Underwater clean sampler



Continuous cultivation device forgPP based on glider

Scope 4: Underwater Machine Vision

The development of *in-situ* imaging technology and equipment for various marine species, as well as deep learning technologies based on underwater biological vision data augmentation, biometric recognition, and behavior analysis, to face the needs of ocean observation and intelligent fishery.

Underwater camera with anti-Biofouling (R&D lab at D-SMART)

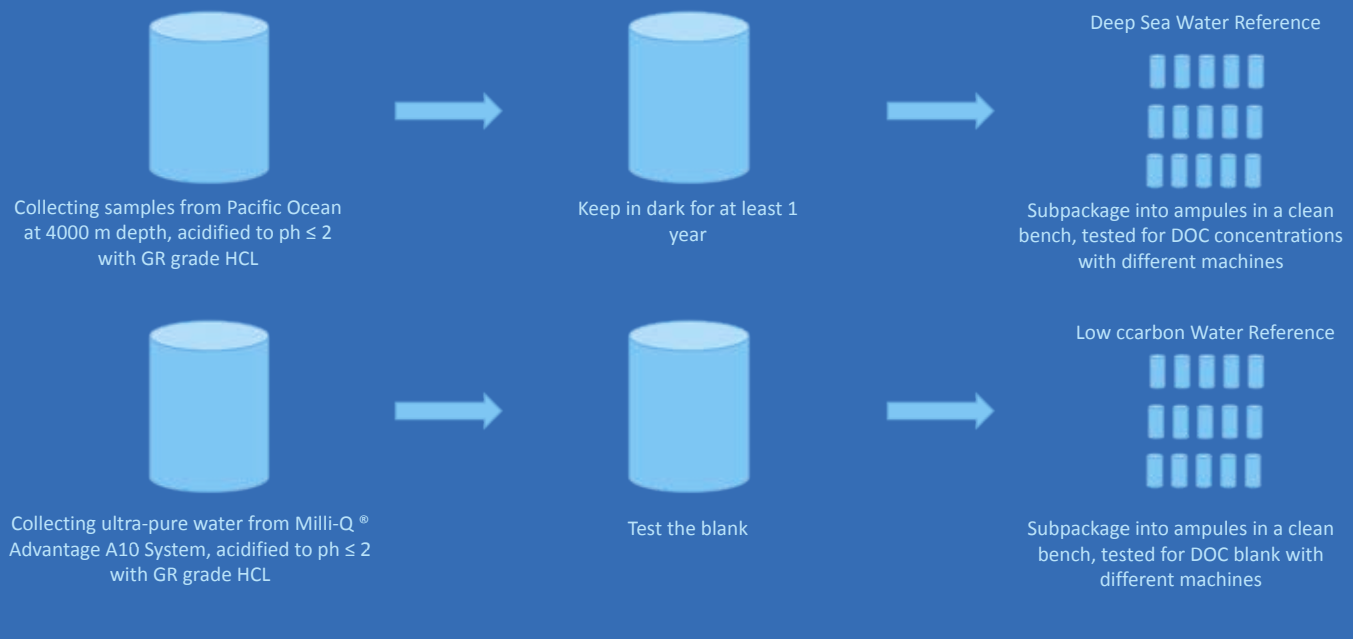
Machine vision for fish diversity monitoring

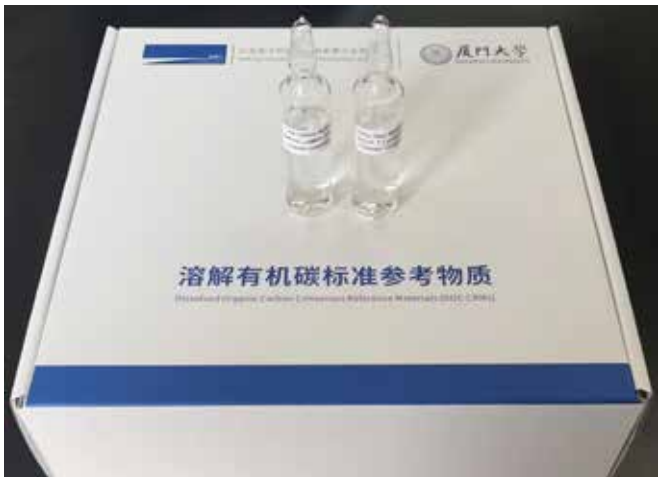
Dissolved Organic Carbon Consensus Reference Materials, DOC-CRMs

After numerous attempts, MEL has successfully developed a natural seawater CRM for DOC , which is now being used in daily analytical work. Water samples collected from 4000 m depth in the Northwest Pacific Ocean were acidified to pH ≈2, aged at room temperature for two years, subpackaged in a Class 100 clean bench and then sealed. 12 deep seawater reference materials were randomly selected for homogeneity testing, and the average concentration value and relative standard deviation (RSD) were 40.0 µmol C/L and 1.3%, respectively, indicating that the uniformity met the required standards. In a stability test conducted over nearly a year, the average concentration value and RSD of MEL CRM were 40.5 µmol C/L and 2.0%, respectively, demonstrating a better stability compared with the international reference material At present, we invite several domestic scientific research institutions to verify this batch of reference materials, and look forward to comparison with international researchers.

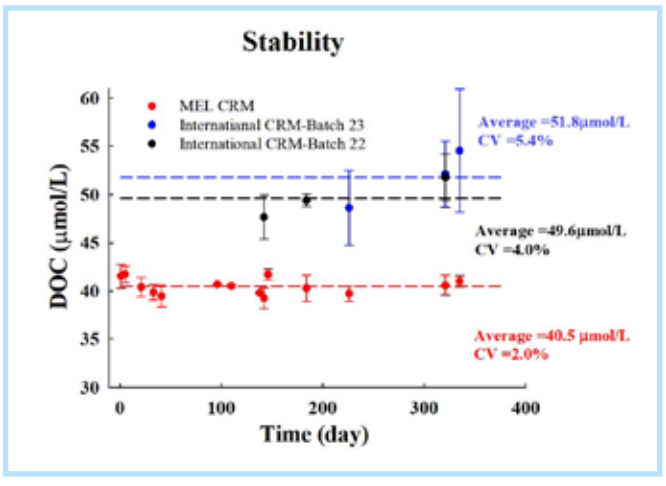
MEL has now established a standardized procedure for the production of DOC-CRM, including sample collection, preparation, analysis, and testing. MEL also plans to explore the development of CRMs for dissolved organic nitrogen and dissolved organic phosphorus.

Preparation for Dissolved Organic Carbon Consensus Reference Materials, DOC-CRMs





MEL's natural sea water reference material



Stability test between MEL's and international CRMs

MC-ICP-MS

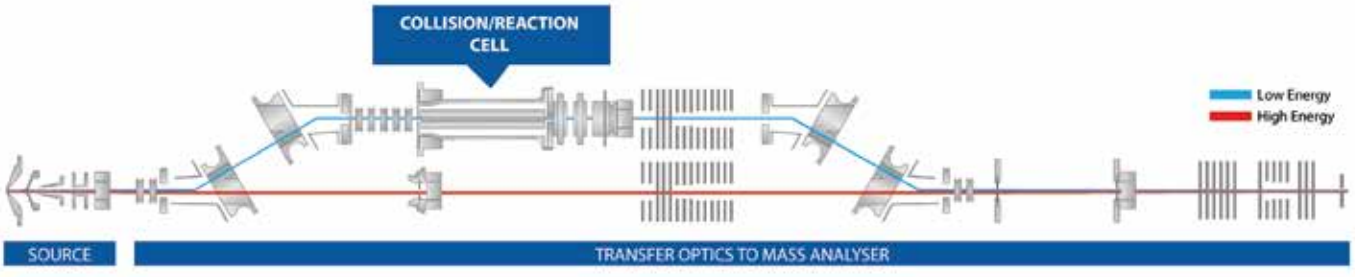
The application of non-traditional stable isotope systems such as Li, Mg, Si, S, K, Ca, Ti, V, Cr, Fe, Ni, Cu, Zn, Se, Sr, Nb, Cd, Ba, Hg, and Pb in paleoceanography and marine biogeochemistry has been spurred by the advancement of the Multi-Collector ICP-MS (MC-ICP-MS) over the last two decades.

The newly purchased Sapphire is a dual path high resolution MC-ICP-MS, incorporating both a “high energy” ion path (traditional MC-ICP-MS) and a separate “low energy” ion path (collision/reaction cell). The “dual path” design not only eliminates the polyatomic interference of the argon ion source in a lower resolution mode, but also provides an effective solution to mass discrimination problems potentially caused by RF multipole devices associated with reaction cell. Thus, the instrument is capable of performing precise and accurate isotope analysis while meeting the higher sensitivity requirement.

Based on the major scientific topic, the mechanism of biological pump carbon fixation and carbon storage and the evolution trend of carbon sink of the northwest Pacific, MEL will utilize Sapphire to improve existing isotopic systems (e. g., Si, Sr, Nb, Ba, Th, Pa, U) and develop new trace element isotope systems (e. g., Fe, Ni, Cu, Zn, Pb, etc.) analytical methods to reveal the isotopic composition of dissolved and particulate trace elements and significantly improve our understanding of the biogeochemical processes of trace elements in this oligotrophic ocean and its relationships to the global climate changes.

The Sapphire has installed and commissioned since 2024.

Pic. 1 Sapphire (www.nu-ins.com)



Pic. 2 Dual Path Transfer Optics

The time series sediment trap facilitates research on carbon sequestration in the Western Pacific

Time series sediment trap platforms can be deployed in aquatic environments to collect natural settling particles over an extended duration, offering exceptional performance for biogeochemical studies encompassing radionuclide analysis, paleoproxy investigations, and carbon cycle analysis. They also prove beneficial for environmental monitoring and pollution assessment. In collaboration with the COMET project and scientists from the "Regulation and Evolution Trends of Nitrogen, Phosphorus, and Iron in the Northwest Pacific Biological Carbon Pump (PIN-Pump)" project, a time-series sediment trap anchor system was successfully deployed in the North Pacific Ocean on August 5. This effectively captures settling particles at three depths (500 m, 1000 m, and 5000 m) using a cable that extends up to 5800 m long. Moreover, it is equipped with advanced instruments such as 17 sets of acoustic Doppler current profilers, single-point current meters, and temperature-salinity-depth recorders, enabling continuous long-term fixed-point observations of hydrodynamic conditions. By conducting comprehensive analyses of both biological and chemical composition of sinking particles along with an examination of hydrodynamic characteristics, this study aims to systematically elucidate spatiotemporal variations in carbon export flux while uncovering underlying controlling mechanisms that govern carbon sequestration efficiency. This research provides a crucial scientific foundation for developing oceanic solutions towards achieving carbon neutrality. The deployment of the first set of deep-sea sediment traps and mooring systems by MEL represents a significant advance in research on oceanic carbon sequestration and biogeochemical studies thereby contributing to scholarly understanding in this field.

© CHEN Zhaozhang

© CHEN Zhaozhang

HiSea Satellites

HiSea-1

In 2024, HiSea-1 (SAR satellites) has paid more attention to typical oceanic and atmospheric phenomena. SAR satellites are highly sensitive to sea surface roughness, with various oceanic and atmospheric phenomena significantly affecting it, resulting in distinct bright and dark features in SAR images. Based on images from the Hisea-1 and Sentinel-1 satellites, we developed a SAR semantic segmentation dataset covering 12 typical oceanic and atmospheric phenomena. These phenomena include atmospheric fronts (AF), oceanic fronts (OF), rainfall (RF), icebergs (IB), sea ice (SI), pure ocean waves (POW), wind streaks (WS), low wind areas (LWA), biological slicks (BS), microscale convection cells (MCC), internal waves (IWs), and ocean eddies (Eddy). Furthermore, we proposed an improved Segformer model for the automatic detection and segmentation of these typical phenomena in SAR sea surface images.

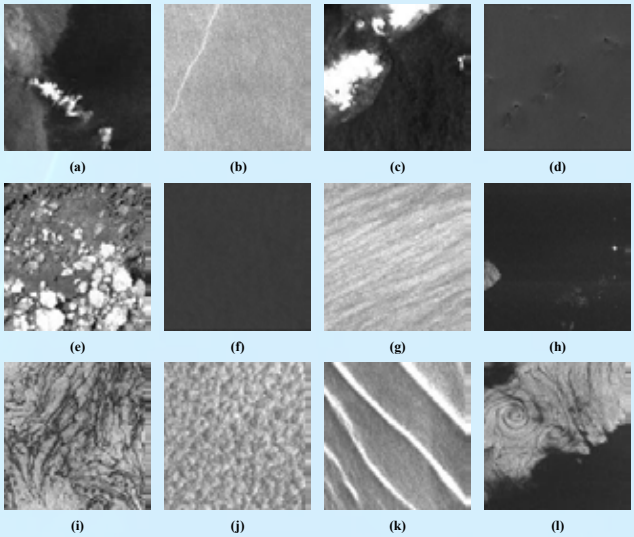


Fig. 1 Typical oceanic and atmospheric phenomena in SAR images (a) Atmospheric front; (b) Ocean front; (c) Rainfall; (d) Iceberg; (e) Sea ice; (f) Pure ocean waves; (g) Wind streaks; (h) Low wind speed area; (i) Biological slicks; (j) Micro-convective cells; (k) Ocean internal waves; (l) Ocean Eddies

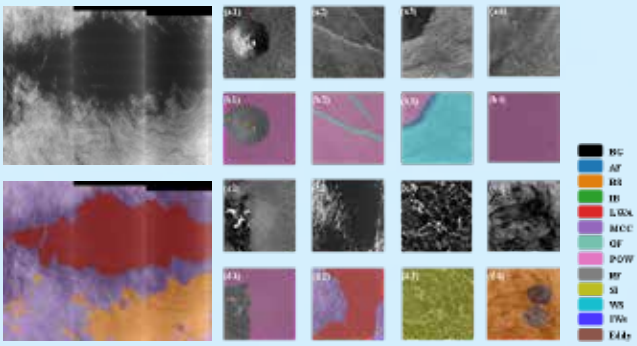
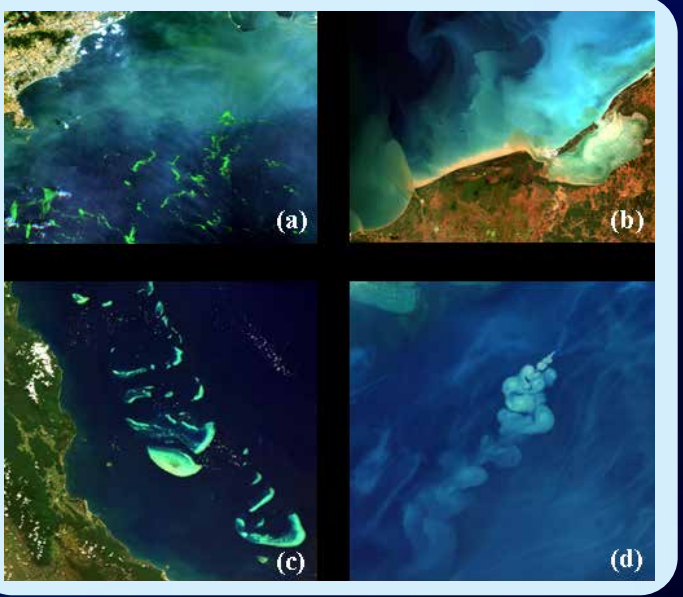


Fig. 2 Segmentation results of SAR images



Four HiSea-2 images over China, Mexico, and Australia (a) Patchy distribution of Ulva prolifera in the Yellow Sea, China. (b) Varying water quality of offshore waters near Carmen City, Mexico. (c) Part of the Great Barrier Reef's coral reefs. (d) Carmen vortex with symmetrical shedding of a ship's trails in the Beibu Gulf

HiSea-2

In 2024, HiSea-2 monitored aquatic ecosystems in nearshore waters, capturing and illustrating many detailed features. The patchy distribution of Ulva prolifera in the Yellow Sea was captured under high spatial resolution (20 m), which helps to calculate more accurately the area covered by Ulva prolifera. The offshore waters of Mexico showed complex and variable water colors that indicate wide variations of water quality in this area caused by outflow and resuspension of sediments. The rich and varying water and bottom properties associated with the Great Barrier Reef's coral reefs were also shot and explored, as well as the adjacent nearshore waters. In addition to the conventional observation of ocean color, the presence of the Carmen vortex at the stern due to flow instability suggests that the HiSea-2 can also be applied to the detection and study of the vortex and fine-scale eddies.

National Observation and Research Station for the Taiwan Strait Marine Ecosystem

福建台湾海峡海洋生态系统
国家野外科学观测研究站
National Observation and Research Station for the Taiwan Strait Marine Ecosystem

T-SMART has conducted quarterly cruises in the upwelling of Taiwan Strait, Dongshan Bay and Zhangjiang Estuary in 2024. Quadrat surveys has been carried out for mangroves, salt marshs, flora and fauna in Zhangjiang Estuary. Over 36 GB of data and 1300 hours of coral video were collected.

T-SMART conducted a series of outreach activities this year. 3 sessions of the Sufeng Forum is worth noting with their focuses on the restoration of coral species, turtle research, and estuary-bay ecology.

The 2nd International Advisory Committee (IAC) Meeting of T-SMART was held in March, forming a Strategic Development Plan for 2024-2030.

Cooperation: A new page of marine ecology protection and education

The Taikoo (Xiamen) Aircraft Engineering Co., Ltd, on behalf of Swire Group, signed a donation agreement with Xiamen University, pledging to donate RMB 5.46 million to launch the Marine Ecology Conservation and Education Project of D-SMART to support long-term monitoring and research in Dongshan Bay, and restoration of coral species in the related areas. Moreover, the project will strengthen communication and cooperation in marine science and promote public education in ocean science.


Two parties signed the donation agreement © MEL

Ecological Environment Data Sharing Platform and officially launched for trail

MEL PEOPLE

28 New members

2 Faculty

2 Research scientists

5 Outstanding postdoctoral fellows

14 Research assistants

5 Admin staf

Awards and Recognitions

- MEL was awarded Outstanding Groups and Institutions in the Education Sector by Ministry of Education of China

- DAI Minhan was awarded American Geophysical Union (AGU) Fellow and was given Ambassador Award
- LU Yonglong received the Jubilee Medal "300 Years of the Russian Academy of Sciences"
- JIAO Nianzhi and DAI Minhan was elected as Founding Fellows of the Ecological Society of China. LU Yonglong was elected as Fellow of the Ecological Society of China
- JIAO Nianzhi was given Outstanding Contribution Award for Innovation and Development of Ecological Environment Protection Industry by China Association of Environmental Protection Industry
- The Group of Excellence on"Ocean metabolism and elemental cycles" was awarded the NSFC Science Fund for Innovative Research Groups
- CAO Ling and WANG Chuanchao were granted funding under the NSFC Fund for Distinguished Young Scientists
- WAN Xianhui received the National High-level Talents Award
- YANG Jinyu and ZHANG Zengkai were awarded under the Fujian "One Hundred Talents" Program
- WANG Weilei was given the "ZENG Chengkui Marine Science and Technology Award for Young Scientist" by Chinese Society for Oceanography and Limnology
- LI Jianghui and LIU Zhiyu were given the Distinguished Young Scholar of China Frontiers of Engineering by Chinese Academy of Engineering
- CAO Ling was promoted to Nanqiang Distinguished Professor of Xiamen University
- LIU Baomin was promoted to Senior Engineer

- Research on "Biological carbon pump estimate based on multidecadal hydrographic data" won "Top 10 Science and Technology Advances in Oceanology and Limnology" by Chinese Society for Oceanography and Limnology, and "Top 10 Science and Technology Advances in Oceanology" of China by Chinese Society for Oceanography

  Team Members: **WANG Weilei**, François Primean, FU Weiwei, TANG Jinming

- Research on "Analysis and application of novel antimicrobial peptides" won Fujian Province 1st Class of Science and Technology Award, 2022.

  Team Members: **WANG Kejian**, PENG Hui, CHEN Fangyi, HUANG Zhensheng, GUO Qing

- Research on "Driving factors and global changes of marine nitrification processes" won Fujian Province 2nd Class of Science and Technology Award, 2022

  Team Members: KAO Shu-ji, **WAN Xianhui**, ZHENG Zhenzhen, XU Min, **YANG Jinyu**

- Co-research on "Detection of low concentration biogenic elements in high base water samples" won Guangxi Province 3rd Class of Science and Technology Award, 2023

  Team Members: **MA Jian, YUAN Dongxing, LIU Baomin**, LIANG Ying, ZHANG Min, XU Jin, SU Haitao

- Co-research on "Innovative Technology and Demonstration of Coral Reef Ecological Restoration Grounded in Environmental Adaptability Theory" won Hainan Province 1st Class of Science and Technology Award, 2023

  Team Members: ZHOU Zhi, WU Zhongjie, LI Zhiyong, **LIN Senjie**, ZHENG Xinqing, WU Chuanliang, TANG Jia, LIU Zhaoqun

Faculty

Dr. WAN Xianhui
Professor

Dr. WAN Xianhui received his PhD from Xiamen University in 2017. He then worked as a research scientist at Xiamen University, USA from 2018 to 2020 before starting his postdoctoral research at Princeton University from 2020 to 2024. In June 2024, he returned to Xiamen University as a faculty member, working on exploring the impact of anthropogenic forcing and natural variabilities on the marine nitrogen cycle.

Dr. WEN Zuozhu
Associate Professor

Dr. WEN Zuozhu obtained his PhD from Xiamen University in 2019 and conducted postdoctoral research at Xiamen University and the Helmholtz Centre for Ocean Research in Kiel, Germany (2020-2024). He joined MEL in May 2024. His research focuses on biological nitrogen fixation in the marine nitrogen cycle, investigating the diversity and functions of nitrogen-fixing organisms, and exploring the critical role of biological nitrogen fixation in the marine biological carbon pump under global change.

MEL Postdoctoral Fellow

CHENG Shuo
Marine ecological protection and integrated management

JIANG Weimin
Decadal to Multidecadal Variability

LIU Lingke
Crustacean innate immunology

CHEN Lin
Fish genomics, genetic breeding, adaptive evolution

Research Scientist

CHANG Tainyi
Mobile genetic elements, viral diversity and evolution, single cell genomics

YU Dan
Transformation process and export of nitrogen and their controlling mechanisms across the river-estuary continuum

XUE Jiao
Ice nucleation properties of marine aerosols

Research Assistant


DING Yanyan


GAO Peiyuan


HUANG Xin


LI Chenglong


LIAO Nengjian


LIU Yang


MA Yu


QIAO Peiyang


WANG Na


WANG Yingwen


WU Lilin


XUE Chengwen


ZHANG Jimen


ZHAO Mengke


YU Xinran

Admin Staff


CHEN Wenqian


GU kejing


HU Jingyun


LI Weifeng


SUN Xiaodi

Publications

5

Books and chapters

393

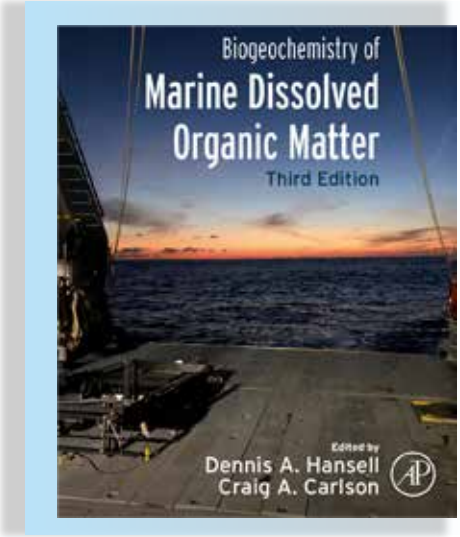
Papers Published

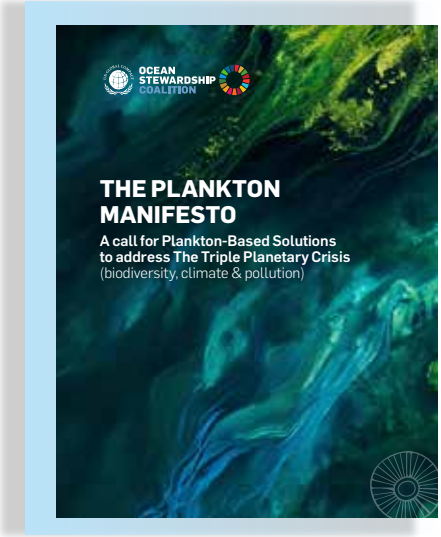
72

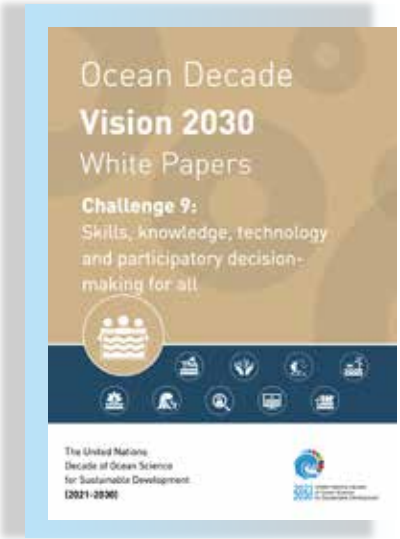
Patents

6

Software Copyrights







- **DAI Minhan (Section lead)**. 2024. Dissolved Organic Carbon in the South China Sea. In: Biogeochemistry of Marine Dissolved Organic Matter (Third Edition). Dennis A. Hansell, Craig A. Carlson (Eds). Academic Press. p: 739-767

  Working group: LI Xiaolin, ZHANG Yao, MENG Feifei, WANG Zhixuan

- **DAI Minhan, LIN Xin, WANG Guihua (Members of core editorial board)**. 2024. The Plank Manifesto. United Nations Global Compact. 19 pages

- **LIN Xin (Working group expert member)**. 2024. Ocean Decade Vision 2030 White Papers - Challenge 9: Skills, Knowledge, Technology, and Participatory Decision-Making for All. Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization. 27 pages

- **Office of the 1st Aquaculture Germplasm Resources Census**. 2024. List of Aquaculture Germplasm Resources in China. China Aquaculture Press. 468 pages

  Editorial Board Members: **LIU Tao**, etc.

- **ZHANG Yu, SONG Zhongchang**. 2024. Introduction to Marine Acoustics. Science Press. 222 pages

期刊论文

Adedipe, DT; Chen, C*; Lai, RWS; Xu, SP; Luo, Q; Zhou, GJ; Boxall, A; Brooks, BW; Doblin, MA; Wang, XH; Wang, JY; Leung, KMY*. Occurrence and potential risks of pharmaceutical contamination in global Estuaries: A critical review and analysis. ***ENVIRONMENT INTERNATIONAL***. 2024, 192, 109031

An, LN; Liu, X*; Xu, FP; Fan, XY; Wang, PX; Yin, WF; Huang, BQ. Different responses of plankton community to mesoscale eddies in the western equatorial Pacific Ocean. ***DEEP-SEA RESEARCH PART I-OCEANOGRAPHIC RESEARCH PAPERS***. 2024, 203, 104219

Bai, YL; Feng, MS; Zhao, J; Wang, JY; Ke, QZ; Jiang, Z; Jiang, PX; Chen, SJ; Chen, LY; Liu, W; Jiang, TS; Li, YC; Tian, GP; Zhou, T; Xu, P*. Machine vision-assisted genomic prediction and genome-wide association of spleen-related traits in large yellow croaker infected with visceral white-nodules disease. ***FISH & SHELLFISH IMMUNOLOGY***. 2024, 154, 109948

Bai, YQ; Zhang, WB; Zheng, WB; Meng, XZ; Duan, YY; Zhang, C; Chen, FY*; Wang, KJ*. A 14-amino acid cationic peptide Bolespleenin$_{334-347}$ from the marine fish mudskipper *Boleophthalmus pectinirostris* exhibiting potent antimicrobial activity and therapeutic potential. ***BIOCHEMICAL PHARMACOLOGY***. 2024, 226, 116344

Boamah, GA*; Huang, ZK; Ke, CH; You, WW; Ayisi, CL; Amenyogbe, E; Droepenu, E. Preliminary analysis of pathways and their implications during salinity stress in abalone. ***COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY D-GENOMICS & PROTEOMICS***. 2024, 50, 101224

Buesseler, KO*; Bianchi, D; Chai, F; Cullen, JT; Estapa, M; Hawco, N; John, S; Mcgillicuddy , DJ Jr; Morris, PJ*; Nawaz, S; Nishioka, J; Pham, A; Ramakrishna, K; Siegel, DA; Smith, SR; Steinberg, D; Turk-Kubo, KA; Twining, BS; Webb, RM; Wells, M; White, A. Next steps for assessing ocean iron fertilization for marine carbon dioxide removal. ***FRONTIERS IN CLIMATE***. 2024, 6, 1430957

Cai, SJ; Liu, WR; Tong, ZY; Lin, LZ; Ou, LJ; Xiao, WP*; Huang, BQ*. Salinity threshold for phosphorus limitation in an estuary-coast continuum. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1437405

Cao, AX; Liu, Q; Zhang, J*; Shiller, AM; Cai, YH; Zhang, RF; Gilbert, M; Guo, XH; Liu, ZY. Dissolved rare earth elements in the North Pacific Subtropical Gyre: Lithogenic sources and water mass mixing control. ***GEOCHIMICA ET COSMOCHIMICA ACTA***. 2024, 372: 42-61

Cao, HJ*; Freilich, M; Song, XZ; Jing, ZY; Fox-Kemper, B; Qiu, B; Hetland, RD; Chai, F; Ruiz, S; Chen, D. Isopycnal submesoscale stirring crucially sustaining subsurface chlorophyll maximum in ocean cyclonic eddies. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2023GL105793

Cao, L; Qiu, YQ; Xue, L*; Zhang, YY; Zhang, SW; Wu, N; Yuan, D; Li, QL; Zhao, Z; Wang, N; Zhou, Y; Yang, W; Li, CQ; Liu, Y*. Sea surface carbon dioxide during early summer at the Tuandao nearshore time series site. ***MARINE ENVIRONMENTAL RESEARCH***. 2024, 201, 106699

Cao, RX; Lao, QB; Huang, C; Han, JJ; Jin, GZ; Lu, X; Cai, MG; Chen, CQ; Chen, FJ*. Source apportionment of organic carbon and black carbon in the surface sediments of the Pearl River Estuary and its adjacent South China Sea: insight from stable carbon and nitrogen isotopes. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1473466

Cao, YJ; Xu, C; Li, JH; Zhou, T; Lin, LY*; Chen, BW. Underwater gas leakage flow detection and classification based on multibeam forward-looking sonar. ***JOURNAL OF MARINE SCIENCE AND APPLICATION***. 2024, 23: 674-687

Cao, ZY; Liu, ZY*; Wang, D; Wang, JN; Lin, HY; Zhang, FT. Scaling the diurnal mixing/mixed layer depth in the

tropical ocean: A case study in the South China Sea. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2024JC021296

Chen, B; Tan, EH*; Zou, WB; Han, LL; Tian, L; Kao, SJ*. The external/internal sources and sinks of greenhouse gases (CO_2, CH_4, N_2O) in the Pearl River Estuary and adjacent coastal waters in summer. ***WATER RESEARCH***. 2024, 249, 120913

Chen, BH; Zhang, MZ; Lin, D; Ye, JN; Tang, K*. *Roseihalotalea indica* gen. nov., sp. nov., a halophilic Bacteroidetes from mesopelagic Southwest Indian Ocean with higher carbohydrate metabolic potential. ***ANTONIE VAN LEEUWENHOEK INTERNATIONAL JOURNAL OF GENERAL AND MOLECULAR MICROBIOLOGY***. 2024, 117, 66

Chen, CX; Ai, CX; Cheng, WZ; Huang, HY; Fang, GJ; Hou, YL; Deng, XJ; Li, SQ; Huang, TT; Chen, YG; Xu, P*; Mao, Y*. Impact of dietary protein and lipid levels and growth rates on the intestinal microbiota of kuruma shrimp (*Penaeus japonicus*). ***AQUACULTURE INTERNATIONAL***. 2025, 33, 81

Chen, CX; Ai, CX; Cheng, WZ; Huang, HY; Hou, YL; Deng, XJ; Li, SQ; Liu, Y; Xu, P*; Mao, Y*. Impact of dietary variations on kuruma shrimp (*Penaeus japonicus*) assessed through individual-based rearing and insights into individual differences. ***ANIMALS***. 2024, 14, 2267

Chen, DY; Wang, L; Wei, J; Jiao, TH; Chen, QM; Oyama, M; Chen, QS; Chen, X; Chen, XM*. Metal-organic framework-based multienzyme cascade bioreactor for sensitive detection of methyl parathion. ***FOOD CHEMISTRY***. 2024, 442, 138389

Chen, JC; Gao, G*; Liu, XJ*. The characteristics of *PtHSP40* gene family in *Phaeodactylum tricornutum* and its response to environmental stresses. ***MARINE ENVIRONMENTAL RESEARCH***. 2024, 199, 106625

Chen, JW; Jia, YY; Sun, Y*; Liu, K; Zhou, CH; Liu, C; Li, DH; Liu, GL; Zhang, CS; Yang, T; Huang, L; Zhuang, YY; Wang, DZ; Xu, DY; Zhong, QL; Guo, Y; Li, AD; Seim, I; Jiang, L; Wang, LS; Lee, SMY; Liu, YJ; Wang, DT; Zhang, GQ; Liu, SS; Wei, XF; Yue, Z; Zh. Global marine microbial diversity and its potential in bioprospecting. ***NATURE***. 2024, 633: 371-379

Chen, LD; Wu, RK; Xu, BQ; Gong, ZB*; Yuan, DX*. Multielement electrochemical vapor generation system coupled with atomic fluorescence spectrometer for simultaneous measurement of trace levels of As and Hg in coastal seawater samples. ***ANALYTICA CHIMICA ACTA***. 2024, 1330, 343301

Chen, LD; Zhong, ZY; Wu, RK; Lin, QL; Gong, ZB*; Yuan, DX*. On-site monitoring of dissolved Sb species in natural waters by an automatic system using flow injection coupled with hydride generation atomic fluorescence spectrometer. ***TALANTA***. 2024, 274, 126037

Chen, LY; Li, D; Shen, YW; Li, Z; Hao, HH; Ke, CH; Meng, Z; Feng, DQ*. Microbiota characterization of the green mussel *Perna viridis* at the tissue scale and its relationship with the environment. ***FRONTIERS IN MICROBIOLOGY***. 2024, 15, 1366305

Chen, Q; Lonborg, C; Chen, F; Zhang, R; Cai, RH; Li, YY; He, C; Shi, Q; Jiao, NZ*; Zheng, Q*. Bottom-up and top-down controls on *Alteromonas macleodii* lead to different dissolved organic matter compositions. ***ISME COMMUNICATIONS***. 2024, 4, ycae010

Chen, RS; Yan, JJ; Li, S; Wang, KJ; Chen, FY*. Characterization of a new peritrophin homolog from *Scylla paramamosain* and its role in molting and immune defense. ***AQUACULTURE***. 2025, 594, 741457

Chen, RY; Wu, BZ; Li, ZM; Wang, SL*. Impacts of ENSO on tropical Pacific chlorophyll biomass under historical and RCP8.5 scenarios. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2023JC020720

Chen, S; Xie, ZX; Yan, KQ; Chen, JW; Li, DX; Wu, PF; Peng, L; Lin, L; Dong, CM; Zhao, ZH; Fan, GY; Liu, SQ; Herndl, GJ*; Wang, DZ*. Functional vertical connectivity of microbial communities in the ocean. ***SCIENCE ADVANCES***. 2024, 10, eadj8184

Chen, WJ; Wang, XY; Wells, ML; Gao, KS*. The copepod *Acartia spinicauda* feeds less and dies more under the influences of solar ultraviolet radiation and elevated pCO_2. ***JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY B-BIOLOGY***. 2024, 260, 113020

Chen, XX; Li, MC; Zhang, ZK*. Climate change challenges coastal blue carbon restoration in China. ***JOURNAL OF ENVIRONMENTAL MANAGEMENT***. 2025, 373, 123502

Chen, YH; Jian, X*. Spatial heterogeneity of sediments on a topographically diverse descending plate at convergent margins: An example from the outer slope of the Mariana Trench. ***MARINE GEOLOGY***. 2025, 479, 107430

Chen, YW; Yang, JYT*; Tang, JM; Hong, HZ; Kao, SJ; Dai, MH; Shi, DL*. Changes in isotope fractionation during nitrate assimilation by marine eukaryotic and prokaryotic algae under different pH and CO_2 conditions. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 1045-1055

Chen, Z; Yuan, ZW; Luo, WX; Wu, X; Pan, JL; Yin, YQ; Shao, HC; Xu, K; Li, WZ; Hu, YL; Wang, Z; Gao, KS; Chen, XW*. UV-A radiation increases biomass yield by enhancing energy flow and carbon assimilation in the edible cyanobacterium *Nostoc sphaeroides*. ***APPLIED AND ENVIRONMENTAL MICROBIOLOGY***. 2024, 90, e02110-23

Chen, ZY*; Li, CH; Zhang, SW; Jiang, YW; Wang, AJ. Effects of stratification on wind-driven upwelling over a coastal valley. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2024JC021063

Cheng, DD; Liu, HT*; Qian, WX; Yao, R; Wang, XH. Migration characteristics of microplastics in riparian soils and groundwater. ***ENVIRONMENTAL MONITORING AND ASSESSMENT***. 2024, 196, 796

Cheng, LM; Xu, XM; Wang, MH*; Wang, DZ*. Rapid adaption but genetic diversity loss of a globally distributed diatom in the warmer ocean. ***GLOBAL CHANGE BIOLOGY***. 2024, 30, e17602

Cheng, P*. Dispersal of the changjiang river water in East Asian shelf seas. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2024JC021351

Cheng, YL; Cai, PH*; Chen, HY; Yuan, LT; Jiang, XY; Zhang, SA; Chen, YJ; Luo, YM; Sohrin, Y. Nitrate and silicate fluxes at the sediment-water interface of the deep North Pacific Ocean illuminated by $^{226}Ra/^{230}Th$ disequilibria. ***GEOCHIMICA ET COSMOCHIMICA ACTA***. 2024, 383: 81-91

Cong, HT; Yan, XQ; Yang, LK*; Jiang, Y*; Wang, C; Zhan, DP; Li, Y; Dai, MH. Coupling electrochemical alkalinization and mineral dissolution for ambient removal of both influent CO_2 and dissolved nitrite in seawater. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY LETTERS***. 2024, 11: 546-552

Cui, JX; Dai, YR; Lai, YC; Tan, YZ; Liu, T*. Effects of abscisic acid on the physiological and biochemical responses of *Saccharina japonica* under high-ttemperature stress. ***INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES***. 2024, 25, 11581

Dai, Y; Shen, YW*; Ke, CH; Luo, X; Huang, MQ; Huang, HQ; You, WW*. Carryover effects of *embryonic* hypoxia exposure on adult fitness of the Pacific abalone. ***ENVIRONMENTAL RESEARCH***. 2024, 260, 119628

Dai, Y; Shen, YW; Liu, YB; Xia, WW; Hong, JW; Gan, Y; Huang, J; Luo, X; Ke, CH*; You, WW*. A high throughput method to assess the hypoxia tolerance of abalone based on adhesion duration. ***AQUACULTURE***. 2024, 590, 741004

Deng, WC; Chen, SY; Chen, SQ; Xing, BP; Chan, ZH; Zhang, Y*; Chen, B; Chen, GC*. Impacts of eutrophication on microbial community structure in sediment, seawater, and phyllosphere of seagrass ecosystems. ***FRONTIERS IN MICROBIOLOGY***. 2024, 15, 1449545

Deutsch, C*; Inomura, K; Luo, YW; Wang, YP. Projecting global biological N_2 fixation under climate warming across land and ocean. ***TRENDS IN MICROBIOLOGY***. 2024, 32: 546-553

Dong, CJ; Chen, QR; Chen, JH; Dong, L; Chen, YJ; Jiao, NZ*; Tang, K*. Investigating organic sulfur in estuarine and offshore environments: A combined field and cultivation approach. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 926, 171599

Dong, ER; Zhang, JH; Su, XC; Gao, ZY; Yang, C; Wang, ZY; Fang, NX*; Zhang, Y*. Acoustic soft metacollimator by broadband digital phase encoding. ***PHYSICAL REVIEW APPLIED***. 2024, 22, 14065

Du, D; Lu, YL*; Yang, SJ; Wang, R; Wang, CC; Yu, MZ; Chen, CC; Zhang, M. Biomagnification and health risks of perflfluoroalkyl acids (PFAAs) in seafood from the Yangtze river estuary of China. ***ENVIRONMENTAL POLLUTION***. 2024, 341, 122930

Du, HH; Chen, PY; Lin, XP; Zheng, JY; Liu, HT; Wang, XH*. Adsorption of metals on aged microplastics in intensive mariculture areas: Aggravating the potential ecological risks to marine organisms. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 946, 173964

Du, MG; Jin, SL; Wu, SQ; Liao, YZ; Wang, GZ*. Hydrographic proxies for submarine groundwater discharge in the Jiulong River estuary and global perspectives. ***WATER RESEARCH***. 2024, 260, 121854

Du, PX; Zhu, KY; Qiao, H; Zhang, JL; Meng, HL; Huang, ZX; Yu, Y; Xie, SH; Allen, E; Xiong, JX; Zhang, BS; Chang, X; Ren, XY; Xu, YR; Zhou, Q; Han, S; Jin, L*; Wei, PP*; Wang, CC*; Wen, SQ*. Ancient genome of the Chinese Emperor Wu of Northern Zhou. ***CURRENT BIOLOGY***. 2024, 34, DOI:10.1016/j.cub.2024.02.059

Duan, YW; Zhang, ZK*; Li, YZ; Wang, SY; Yang, CH; Lu, Y. Global corporate tax competition leads to unintended yet non-negligible climate impacts. ***NATURE CLIMATE CHANGE***. 2024, 14: 314-315

Duan, YW; Zhang, ZK*; Li, YZ; Wang, SY; Yang, CH; Lu, Y. Global corporate tax competition challenges climate change mitigation. ***NATURE CLIMATE CHANGE***. 2024, 14: 353-356

Fan, BX; Li, YF*. China's conservation and restoration of coastal wetlands offset much of the reclamation-induced blue carbon losses. ***GLOBAL CHANGE BIOLOGY***. 2024, 30, e17039

Feng, Y; Ge, JK; Show, PL; Song, C; Wu, LM; Ma, ZL; Gao, G*. Using high CO_2 concentrations to culture microalgae for lipid and fatty acid production: Synthesis based on a meta-analysis. ***AQUACULTURE***. 2025, 594, 741386

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***. 2024, 30, DOI:10.1111/gcb.17018

Fu, JQ; Liang, Y; Shen, MH; Lü, WG; Luo, X; You, WW*; Ke, CH*. Survival and immune responses of two populations of *Babylonia areolata* and their hybrids under pathogenic *Vibrio* challenge. ***AQUACULTURE***. 2024, 584, 740646

Fu, JQ; Nie, LW; Xia, GY; Lue, WA; Liu, HT; Liang, Y; You, WW; Ke, CH; Luo, X*; Shen, MH*. Changes in low salinity and hypoxia tolerance in F1 hybrids of the ivory shell, *Babylonia areolata*. ***AQUACULTURE REPORTS***. 2024, 36, 102131

Fu, QQ; Huang, RP; Li, FT; Beardall, J; Hutchins, DA; Liu, JW; Gao, KS*. Warming and UV radiation alleviate the effect of virus infection on the microalga *Emiliania huxleyi*. ***PLANT CELL AND ENVIRONMENT***. 2024, DOI:10.1111/pce.15262

Fu, YJ; Qu, ZS; Wang, Y; Sun, P; Jiao, NZ; Xu, DP*. Biogeographical and biodiversity patterns of planktonic microeukaryotes along the tropical western to eastern Pacific Ocean transect revealed by metabarcoding. ***MICROBIOLOGY SPECTRUM***. 2024, 12, e02424-23

Gan, BF; Wang, K; Zhang, BB; Jia, CZ; Lin, X; Zhao, J*; Ding, SX*. Dynamic microbiome diversity shaping the adaptation of sponge holobionts in coastal waters. ***MICROBIOLOGY SPECTRUM***. 2024, 12, DOI:10.1128/spectrum.01448-24

Gao, J; Wang, ZM; Deng, WJ; Sa, B; Chen, XX; Cai, RH; Yan, Y; Jiao, NZ; Leung, ELH; Liu, D*; Yan, W*. Improved resolution of microbial diversity in deep-sea surface sediments using PacBio long-read 16S rRNA gene sequencing. ***MSPHERE***. 2024, 9, e00770-24

Gao, L; Xiong, YL; Fu, FX; Hutchins, DA; Gao, KS; Gao, G. Marine heatwaves alter competition between the cultured macroalga *Gracilariopsis lemaneiformis* and the harmful bloom alga *Skeletonema costatum*. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 947, 174345

Geng, BX; Shu, YQ; Hu, JT; Li, SY; Liu, N; Xiu, P*; Wang, DX*. Influences of tides on shelf circulation in the northeastern South China Sea during summer. ***JOURNAL OF MARINE SYSTEMS***. 2024, 243, 103964

Gong, JC*; Yin, ZC; Lei, Y; Lu, X*; Zhang, Q*; Cai, CL; Chai, QM; Chen, HP; Chen, RJ; Chen, WH; Cheng, J; Chi, XY; Dai, HC; Dong, ZF; Geng, GN; Hu, JL; Hu, S; Huang, CR; Li, TT; Li, W; Li, XM; Lin, YS; Liu, J; Ma, JH; Qin, Y; Tang, WQ; Tong, D; Wang, JX;. The 2023 report of the synergetic roadmap on carbon neutrality and clean air for China: Carbon reduction, pollution mitigation, greening, and growth. ***ENVIRONMENTAL SCIENCE AND ECOTECHNOLOGY***. 2025, 23, 100517

Goranov, AI*; Chen, HM; Duan, JS; Myneni, SCB; Hatcher, PG*. Potentially massive and global non-pyrogenic production of condensed black carbon through biomass oxidation. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2024, 58: 2750-2761

Gouretski, V*; Cheng, LJ*; Du, J; Xing, XG; Chai, F; Tan, ZT. A consistent ocean oxygen profile dataset with new quality control and bias assessment. ***EARTH SYSTEM SCIENCE DATA***. 2024, 16: 5503-5530

Gu, LD; Ding, YZ; Zhou, Y; Zhang, Y; Wang, DL*; Liu, JW*. Selective hemin binding by a non-G-quadruplex aptamer with higher affinity and better peroxidase-like activity. ***ANGEWANDTE CHEMIE-INTERNATIONAL EDITION***. 2024, 63, e202314450

Gu, LD; Zhang, Y; Wang, DL; Liu, JW*. Light-Up Sensing citrate using a capture-selected DNA aptamer. ***ADVANCED SENSOR RESEARCH***. 2024, 3, 2300167

Gu, LD; Zheng, JJ; Zhang, Y; Wang, DL; Liu, JW*. Selection and characterization of DNA aptamers for cytidine and uridine. ***CHEMBIOCHEM***. 2024, 25, e202300656

Gu, YF; Lin, SJ; Mo, YY; Li, L; Ma, ML; Li, JS; Lin, ST; Yuan, HT; Zhu, CM; Luo, H; Zhang, WJ*. Niche features and assembly mechanisms of microeukaryotic generalists and specialists along a north-south gradient of a subtropical coastal sea. ***MARINE ECOLOGY PROGRESS SERIES***. 2024, 742: 35-57

Guo, BX; Liu, YQ*; Zhong, KX; Shi, Q; He, C; Zheng, Q; Cai, RH. Potential transformation of organic matter by microbes in cryoconite, Tibetan Plateau. ***SCIENCE CHINA-EARTH SCIENCES***. 2024, 67: 1978-1989

Guo, MX; Xing, XG; Xiu, P*; Dall'Olmo, G; Chen, WF; Chai, F. Efficient biological carbon export to the mesopelagic ocean induced by submesoscale fronts. ***NATURE COMMUNICATIONS***. 2024, 15, 580

Guo, X; Yang, XY*; Deng, Q; Lin, HY; Wang, DX*. Rhythms of the Agulhas Current within the framework of energetic anisotropy. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2024JC021044

Han, GX; Song, S; Du, D; Cui, HT; Lu, YL; Wang, R. Simulating the multi-media fate of perfluorooctane sulfonate (PFOS) and its precursors in the Bohai coastal region of China. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 957, 177772

Han, LL; Ge, LH; Tan, EH; Zou, WB; Tian, L; Li, P; Xu, MN*; Kao, SJ. Model the evolutionary pattern of N species and pool size in groundwater continuum by utilizing measured source and sink rates of nitrate and ammonium. ***JOURNAL OF HAZARDOUS MATERIALS***. 2024, 480, 136046

Han, ZF; Wang, ZX; Rittschof, D; Huang, ZK; Chen, LY; Hao, HH; Yao, SS; Su, P; Huang, MQ; Zhang, YY*; Ke, CH*; Feng, DQ*. New genes helped acorn barnacles adapt to a sessile lifestyle. ***NATURE GENETICS***. 2024, 56: 970-981

He, CF; Fucich, D; Sosa, A; Wang, HL; Kan, JJ; Liu, JH; Xu, YL; Jiao, NZ; Gonsior, M; Chen, F*. Deep metagenomic sequencing unveils novel SAR202 lineages and their vertical adaptation in the ocean. ***COMMUNICATIONS BIOLOGY***. 2024, 7, 853

He, JM; Huang, YL; Li, L; Lin, ST; Ma, ML; Wang, YJ; Lin, SJ*. Novel plastid genome characteristics in *Fugacium kawagutii* and the trend of accelerated evolution of plastid proteins in dinoflagellates. ***GENOME BIOLOGY AND EVOLUTION***. 2024, 16, evad237

Hong, QQ; Cheng, YL; Qu, Y; Wei, L; Liu, YM; Gao, JF; Cai, PH; Chen, TY*. Overlooked shelf sediment reductive sinks of dissolved rhenium and uranium in the modern ocean. ***NATURE COMMUNICATIONS***. 2024, 15, 3966

Hu, C; Yu, LQ; Chen, XW; Liu, JH; Zhang, Y; Batt, J; Xiao, XL; Shi, Q; Zhang, R; Luo, TW; Jiao, NZ*; Xu, DP*. Adaptive strategies of high and low nucleic acid prokaryotes in response to declining resource availability and selective grazing by protozoa. ***SCIENCE CHINA-EARTH SCIENCES***. 2024, 67: 1872-1884

Hu, ZY; Lyu, K*; Hu, JY. Modulations of the South China Sea ocean circulation by the summer monsoon intraseasonal oscillation inferred from satellite observations. ***REMOTE SENSING***. 2024, 16, 1195

Huang, DK; Dai, MY; Bao, HY*; Qiao, J; Wang, H; Li, KY; Zhong, QQ; Zhang, FL; Yu, T*. Rates of sedimentary organic carbon preservation in the Bering Sea and Chukchi Sea, and their response to climate change over the past 75 years. ***PALAEOGEOGRAPHY PALAEOCLIMATOLOGY PALAEOECOLOGY***. 2024, 648, 112297

Huang, QT; Gong, HB; Wang, GQ; Hu, WY; Wang, WL; Pan, SQ; Xu, J; Liu, GK*; Tian, ZQ*. Positively charged silver and gold nanoparticles with controllable size distribution for SERS detection of negatively charged molecules. ***LANGMUIR***. 2024, 40: 1305-1315

Huang, QT; Guo, HY; Gong, HB; Hu, WY; Ma, H; Ren, B; Tian, ZQ*; Liu, GK*. Unveiling electrostatic interaction modulated sensitive and selective SERS detection for negatively charged molecules. ***JOURNAL OF PHYSICAL CHEMISTRY LETTERS***. 2024, 15: 9144-9152

Huang, QT; Zuo, YD; Zhu, Z; Yang, L*; Tian, ZQ; Liu, GK*. Exploring the impact of dissolved organic matter on nitrate detection: Developing a lab experiment using standard ultraviolet spectrophotometry. ***JOURNAL OF CHEMICAL EDUCATION***. 2024, 101: 2030-2038

Huang, RP; Zhang, P; Zhang, X; Chen, SC; Sun, JZ; Jiang, XW; Zhang, D; Li, H; Yi, XQ; Qu, LM; Wang, TF; Gao, KS; Adams, J; Gao, G; Lin, X*; Hall-Spencer, J. Ocean acidification alters microeukaryotic and bacterial food web interactions in a eutrophic subtropical mesocosm. ***ENVIRONMENTAL RESEARCH***. 2024, 257, 119084

Huang, SY; Huo, YL; Sun, H; Lv, SP; Zhao, YH; Lin, KN; Chen, YJ; Zhang, YB*. Sources of particulate bound mercury in the northwest Pacific constrained by Hg isotopes. ***ACS EARTH AND SPACE CHEMISTRY***. 2024, 8: 1519-1529

Huang, YB*; Fassbender, AJ. Biological production of distinct carbon pools drives particle export efficiency in the Southern Ocean. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2023GL107511

Huang, YB; Weng, ZY; Li, S; Zhang, SY; Chen, HM; Luo, QJ; Yang, R; Liu, T*; Wang, TG; Zhang, P; Chen, JJ*. The photosynthetic performance and photoprotective role of carotenoids response to light stress in intertidal red algae *Neoporphyra haitanensis*. ***JOURNAL OF PHYCOLOGY***. 2024, 60: 942-955

Huang, YN; Zhang, C; Liu, XL; Chen, X*. Photoluminescence sensing of lead halide perovskite nanocrystals and their two-dimensional structural materials. ***CHEMOSENSORS***. 2024, 12, 114

Huang, YP; Lin, FY; Li, FM; Jin, JW; Guo, ZY; Tian, DJ; Xie, RJ*; Chen, X*. Photoluminescence enhancement in silica-confined ligand-free perovskite nanocrystals by suppression of silanol-induced traps and phase impurities. ***ANGEWANDTE CHEMIE-INTERNATIONAL EDITION***. 2024, 63, e202402520

Huang, YX*. Cascades and Kolmogorov's lognormal scaling in two-dimensional bacterial turbulence. ***PHYSICS OF FLUIDS***. 2024, 36, 65149

Jeong, H; Byeon, E; Lee, JS*; Kim, HS; Sayed, AEH; Bo, J; Wang, MH; Wang, DZ; Park, HG; Lee, JS*. Single and combined effects of increased temperature and methylmercury on different stages of the marine rotifer *Brachionus plicatilis*. ***JOURNAL OF HAZARDOUS MATERIALS***. 2024, 466, 133448

Jia, XL; Chen, WZ; Liu, T*; Chen, ZP. Organellar genomes of *Sargassum hemiphyllum* var. chinense provide insight into the characteristics of phaeophyceae. ***INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES***. 2024, 25, 8584

Jian, JT; Zhang, HY; Liu, LK*; Liu, HP*. An autophagy-related gene ATG14 promotes WSSV infection by facilitating autophagy in *Cherax quadricarinatus*. ***AQUACULTURE***. 2025, 595, 741689

Jiang, HB; Hutchins, DA; Zhang, HR; Feng, YY; Zhang, RF; Sun, WW; Ma, WT; Bai, Y; Wells, M; He, D; Jiao, NZ; Wang, YT*; Chai, F. Complexities of regulating climate by promoting marine primary production with ocean iron fertilization. ***EARTH-SCIENCE REVIEWS***. 2024, 249, 104675

Jiang, MJ; Hall-Spencer, JM; Gao, L; Ma, ZL; Gao, G*. Nitrogen availability regulates the effects of a simulated marine heatwave on carbon sequestration and phycosphere bacteria of a marine crop. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 339-354

Jiang, YH; Zhao, F; Shi, XJ; Cao, L; Zeng, C*. Fronts affect fish community structure in the Yangtze River estuary and its adjacent area. ***JOURNAL OF SEA RESEARCH***. 2024, 199, 102507

Jin, PC; Zhang, Y; Du, YL; Chen, XJ; Kindong, R; Xue, HJ; Chai, F; Yu, W*. Eddy impacts on abundance and habitat distribution of a large predatory squid off Peru. ***MARINE ENVIRONMENTAL RESEARCH***. 2024, 195, 106368

Jing, SS; Liu, LK*; Liu, HP*. Insect cells of Spodoptera frugiperda support WSSV gene replication but not progeny virion assembly. ***DEVELOPMENTAL AND COMPARATIVE IMMUNOLOGY***. 2024, 156, 105160

Kahkashan, S; Li, ZQ*; Jalali, B; Wang, XH; Inam, A; Saleem, M; Aftab, J; Ji, ZQ; Bai, YC; Ran, LH; Li, HL; Chen, JF*. Distribution and sources of organic matter in surface sediments of the Karachi Coast, Pakistan. ***JOURNAL OF OCEAN UNIVERSITY OF CHINA***. 2024, 23: 1561-1571

Kang, PH; Ma, LY; Zhang, H; Dai, X; Liu, J; Chen, WF; Tang, TT*. Amino acid carbon isotope profiles provide insight into lability and origins of particulate organic matter. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 1247-1259

Kim, MS; Lee, YH; Lee, Y; Jeong, H; Wang, MH; Wang, DZ; Lee, JS*. Multigenerational effects of elevated temperature on host-microbiota interactions in the marine water flea *Diaphanosoma celebensis* exposed to micro- and nanoplastics. ***JOURNAL OF HAZARDOUS MATERIALS***. 2024, 465, 132877

Lee, YS; Kim, DH; Lee, JS*; Kim, HS; Maszczyk, P; Wang, MH; Yang, Z; Wang, DZ; Lee, JS*. Combined exposure to hypoxia and nanoplastics leads to negative synergistic oxidative stress-mediated effects in the water flea Daphnia magna. ***MARINE POLLUTION BULLETIN***. 2024, 202, 116306

Lee, ZP*; Wang, DS; Zheng, ZH; Wang, LL; Xu, PM; Li, X; Qiao, HY; Wu, XL; Jian, CL; Dai, MH; Shang, SL; Bao, YH. SmallSat for monitoring aquatic ecosystem of coastal and inland waters: the experience of HiSea-II. ***IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING***. 2024, 62, 1002010

Lee, ZP*; Wang, TH; Zhao, LT; Wang, DS; Ye, XM; Shang, SL; Yu, XL*. Cross-satellite atmospheric correction for consistent remote sensing reflectance from multiple ocean color satellites: Concept and demonstrations. ***JOURNAL OF REMOTE SENSING***. 2024, 4, 302

Lei, HJ; Lu, YL*; Wang, P; Xie, XW; Li, JL; An, XP; Liang, Z; Sun, B; Wang, C. Shift from legacy to emerging per- and polyfluoroalkyl substances for watershed management along the coast of China. ***ENVIRONMENTAL POLLUTION***. 2024, 363, 125153

Lei, SP; Bu, DZ; Guo, XH*; Xu, Y; Yang, Y; An, SQ; Li, Y; Pang, JY; Zhou, KB. Mitigation of hypoxia and ocean acidification on the inner East China Sea shelf impacted by the 2023 summer drought. ***MARINE POLLUTION BULLETIN***. 2024, 207, 116830

Li, A; Shao, TT; Zhang, Z; Fang, WW; Li, WJ; Xu, JR; Jiang, YJ; Shu, C*. Improvement in spatiotemporal Chl-a data in the South China Sea using the random-forest-based geo-imputation method and ocean dynamics data. ***JOURNAL OF MARINE SCIENCE AND ENGINEERING***. 2024, 12, 13

Li, D; Wang, LP*; Jiang, F; Zeng, X; Xu, QZ; Zhang, XL; Zheng, Q; Shao, ZZ*. Unveiling the microbial diversity across the northern Ninety East Ridge in the Indian Ocean. ***FRONTIERS IN MICROBIOLOGY***. 2024, 15, 1436735

Li, D; Wang, LP; Jiang, F; Zeng, X; Xu, QZ; Zhang, XL; Zheng, Q; Shao, ZZ*. Prokaryotic community structure and key taxa in the Arabian Sea's oxygen minimum zone. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1380819

Li, DL; Wu, WL*; Liu, HP*. Cq Profilin enhances WSSV infection by promoting viral intracellular transport through binding to both viral nucleocapsid and actin cytoskeleton. ***DEVELOPMENTAL AND COMPARATIVE IMMUNOLOGY***. 2025, 162, 105281

Li, FF; Yang, J; Li, JQ*; Lin, XF*. Adaptive strategies and underlying response mechanisms of ciliates to salinity change with note on fluctuation properties. ***MICROORGANISMS***. 2024, 12, 1957

Li, GB; Hong, HZ; Lin, WF; Ji, QX*. Substrate competition of diazotrophic nitrous oxide assimilation over dinitrogen fixation. ***JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES***. 2024, 129, e2024JG008187

Li, GL; Feng, LC*; Zhuang, W; Liu, F; Zhang, RH; Sui, CJ. Differences in spring precipitation over southern China associated with multiyear La Niña events. ***ACTA OCEANOLOGICA SINICA***. 2024, 43: 1-10

Li, HF; Chen, JW; Yu, LY; Fan, GY; Li, TC; Li, L; Yuan, HT; Wang, JT; Wang, C; Li, DH; Lin, SJ*. *In situ* community transcriptomics illuminates CO_2-fixation potentials and supporting roles of phagotrophy and proton pump in plankton in a subtropical marginal sea. ***MICROBIOLOGY SPECTRUM***. 2024, 12, e02177-23

Li, HQ; Gao, ZY; Song, ZC; Su, YN; Hui, JG; Ou, WZ; Zhang, JH; Zhang, Y*. Investigation on the contribution of swim bladder to hearing in crucian carp (*Carassius carassius*). ***JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA***. 2024, 155: 2492-2502

Li, HQ; Wang, S; Zheng, SL; Fang, TY; Shu, HL; Xu, Y; Guo, XH; Achterberg, EP; Zhan, LY; Ma, J*. Underway mapping of coastal seawater pH using an automated shipboard analyzer with spectrophotometric detection. ***TALANTA***. 2024, 278, 126532

Li, J; Zhao, P*; Chen, DL; Zhao, Y; Wen, ZP; Zhang, C. Development mechanisms of cyclonic vorticity under two distinct large-scale weather patterns associated with summer heavy rainfall over North China. ***CLIMATE DYNAMICS***. 2024, 62: 10579-10597

Li, JH*. Offshore carbon capture, utilization, and storage. ***JOURNAL OF MARINE SCIENCE AND APPLICATION***. 2024, 23: 525-528

Li, JQ; Yu, ZY; Zheng, QY; Chen, WH; Lin, XF*. How antibiotic exposure affect predator-prey interactions by population dynamics in ciliates. ***AQUATIC TOXICOLOGY***. 2024, 267, 106814

Li, JS; Li, WZ; Huang, YL; Bu, HL; Zhang, KD; Lin, SJ. Phosphorus limitation intensifies heat-stress effects on the potential mutualistic capacity in the coral-derived Symbiodinium. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 945, 173912

Li, JS; Wu, SS; Zhang, KD*; Sun, XQ; Lin, WW; Wang, C; Lin, SJ*. Clustered regularly interspaced short palindromic repeat/CRISPR-associated protein and its utility all at sea: status, challenges, and prospects. ***MICROORGANISMS***. 2024, 12, 118

Li, Q; Liu, C; Wang, SQ; Liu, YW; Ma, XX; Li, YY; Li, WL; Wang, XH*. Decade-long historical shifts in legacy and emerging per- and polyfluoroalkyl substances (PFAS) in surface sediments of China's marginal seas: Ongoing production and ecological risks. ***ENVIRONMENTAL RESEARCH***. 2024, 263, 119978

Li, SS; Li, HL; Tang, TT; Wang, SL*. The ballast effect of terrigenous lithogenic particles from rivers and its influence on POC fluxes in the ocean. ***GLOBAL BIOGEOCHEMICAL CYCLES***. 2024, 38, e2024GB008155

Li, SW; Wang, R; Ma, H; Tu, Z; Qiu, LM; Chen, HD; Jiang, L; Geng, YZ; Liu, H; Wang, JF; Shen, Q; Jin, L; Li, CX*; Wang, CC*; Wei, XT*. Ancient genomic time transect unravels the population dynamics of Neolithic middle Yellow River farmers. ***SCIENCE BULLETIN***. 2024, 69: 3365-3370

Li, T; Xiang, ZY; Li, YF*. POIs-based public preferences mapping on imbalanced supply-demand of recreation services can support sustainable coastal beach management. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1288112

Li, W; Chen, JC; Feng, Y; Li, X; Gao, G*. Production and ecological function of fucoidans from marine algae in a changing ocean. ***INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES***. 2024, 283, 137944

Li, W; Li, X; Song, C; Gao, G*. Carbon removal, sequestration and release by mariculture in an important aquaculture area, China. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 927, 172272

Li, XM; Yu, JY*; Ding, RQ; Hu, JY; Tuo, PF. Asymmetric efficacies between warm and cold pacific meridional modes in inducing ENSO. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2024GL108924

Li, YC; Wu, SS*; Chen, HW; Xiao, WP; Li, C; Peng, ZQ; Li, Z; Liu, J; Lin, L; Zeng, XH*. Inorganic salt starvation improves the polysaccharide production and CO2 fixation by Porphyridium purpureum. ***BIOPROCESS AND BIOSYSTEMS ENGINEERING***. 2024, 47: 1017-1026

Lian, DM; Liu, X*; Laws, EA; Liu, TT; Wang, JX; Shang, SL; Lee, ZP*. A trapezoidal relationship between solar radiation and chlorophyll concentrations at the center of the South Pacific Gyre. ***PROGRESS IN OCEANOGRAPHY***. 2024, 225, 103281

Liang, MQ*; Yin, QZ*; Sun, Y; Zhang, C; Berger, A; Lyu, A; Liu, W; Wu, ZP. Distinct response of Asian summer monsoon circulation and precipitation to orbital forcing during six Heinrich events. ***QUATERNARY SCIENCE REVIEWS***. 2024, 344, 108946

Liang, Z; Lu, YL*; Cao, ZW; Huang, XY; Lei, HJ; Li, JL; Wu, ZY; An, XP; Wang, P. Co-emissions of fluoride ion, fluorinated greenhouse gases, and per- and polyfluoroalkyl substances (PFAS) from different fluorochemical production processes. ***ENVIRONMENTAL POLLUTION***. 2024, 360, 124609

Liao, JM; Lu, YL*; Liu, YY; Sun, B; Zhang, KY; Wang, C; Lei, HJ; Cao, ZW. How heatwaves impact microalgae in the presence of environmentally relevant PFAS concentration: Metabolic shifts and challenges posed. ***JOURNAL OF HAZARDOUS MATERIALS***. 2025, 484, 136640

Liao, JM; Sun, B; Wang, C; Cao, ZW; Wu, ZY; An, XP; Liang, Z'; Huang, XY; Lu, YL*. Uptake and cellular responses of Microcystis aeruginosa to PFOS in various environmental conditions. ***ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY***. 2024, 272, 116041

Lin, SH; Luo, Q; Zhang, M; Lyu, MX; Huang, MQ; Ke, CH*; Gao, XL*. Selective preferences and behavioral adaptation strategy of Pacific abalone in response to

different water flow velocities. ***GLOBAL ECOLOGY AND CONSERVATION***. 2024, 50, e02823

Lin, ST; Li, L; Zhou, Z; Yuan, HT; Saad, OS; Tang, J; Cai, WQ; Yu, KF; Lin, SJ*. Higher genotypic diversity and distinct assembly mechanism of free-living Symbiodiniaceae assemblages than sympatric coral-endosymbiotic assemblages in a tropical coral reef. ***MICROBIOLOGY SPECTRUM***. 2024, 12, e00514-24

Lin, ZL; Cheng, YL; Lian, EG; Wu, T; Wei, L; Shi, XM; Jiang, XY; Yuan, LT; Yang, SY; Cai, PH*. Regeneration of sedimentary phosphorus and iron in a large seasonally hypoxic estuary deciphered by $^{224}Ra/^{228}Th$ disequilibria. ***MARINE CHEMISTRY***. 2024, 259, 104354

Lin, ZL; Gao, AK; Zhang, Y*. A numerical study of flow past a wall-mounted dolphin dorsal fin at low reynolds numbers. ***BIOMIMETICS***. 2024, 9, 682

Ling, Y*; Zhang, MS; Liu, GK; Wu, DY; Tang, J*. Plasmonic-mediated S-C arylation and S-S coupling on nanostructured silver electrodes monitored by in situ surface-enhanced Raman spectroscopy. ***JOURNAL OF COLLOID AND INTERFACE SCIENCE***. 2024, 668: 154-160

Liu, C; Ma, XX; Wang, SQ; Li, Q; Cheng, P; Hou, W; Li, YY; Li, WL; Wang, XH. Fractionation and tidal characteristics of per- and polyfluoroalkyl substances in the estuarine maximum turbidity zone. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 957, 177646

Liu, HR; Browning, TJ; Laws, EA; Huang, YB; Wang, L; Shang, YW; Xing, XG; Zhou, KB; Jiang, ZP; Liu, X*; Huang, BQ; Dai, MH. Stimulation of small phytoplankton drives enhanced sinking particle formation in a subtropical ocean eddy. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 834-847

Liu, HR; Yuan, ZW; Gosnell, KJ; Liu, T; Tammen, JK; Wen, ZZ; Engel, A; Liu, X; Huang, BQ; Kao, SJ; Achterberg, EP; Browning, TJ*. Patterns of (micro)nutrient limitation across the South Pacific Ocean. ***COMMUNICATIONS EARTH & ENVIRONMENT***. 2024, 5, 596

Liu, HY; Jie, DM*; Liu, LD; Gao, GZ; Li, DH; Li, NN. A comparison of phytolith assemblages in surface soils along the 400-mm and 600-mm mean annual precipitation isohyets in Northeast China. ***JOURNAL OF SOILS AND SEDIMENTS***. 2024, 24: 3208-3222

Liu, HY; Jie, DM*; Liu, LD; Gao, GZ; Li, DH; Li, NN. Topsoil phytolith assemblages are related to precipitation via different vegetation types in Northeast China. ***FLORA***. 2024, 316, 152530

Liu, JL; Li, JH*; Liu, CS. AIS-based kinematic anomaly classification for maritime surveillance. ***OCEAN ENGINEERING***. 2024, 305, 118026

Liu, JY; Yin, ZH; Yu, WC; Luo, X; Ke, CH*; You, WW*. The taste characteristics and metabolite variations of two Pacific abalone strains with different glycogen contents. ***LWT-FOOD SCIENCE AND TECHNOLOGY***. 2024, 195, 115820

Liu, KL; Xu, ZM; Liu, X; Huang, BQ; Liu, HB; Chen, BZ*. Modelling global mesozooplankton biomass using machine learning. ***PROGRESS IN OCEANOGRAPHY***. 2024, 229, 103371

Liu, L; Gao, X; Dong, CJ; Wang, HY; Chen, XF; Ma, XY; Liu, SJ; Chen, QR; Lin, D; Jiao, NZ; Tang, K*. Enantioselective transformation of phytoplankton-derived dihydroxypropanesulfonate by marine bacteria. ***ISME JOURNAL***. 2024, 18, wrae084

Liu, LK; Jian, JT; Jing, SS; Gao, RL; Chi, XD; Tian, G; Liu, HP*. The crustacean DNA virus tegument protein VP26 binds to SNAP29 to inhibit SNARE complex assembly and autophagic degradation. ***JOURNAL OF VIROLOGY***. 2024, 98, e01408-23

Liu, LK; Yang, LL; Jiang, Q; Wu, WL; Liu, HP*. Proteomic analysis of global protein acetylation in response to WSSV infection in a crustacean *Cherax quadricarinatus*. ***AQUACULTURE***. 2025, 596, 741754

Liu, MY; Zheng, HW; Li, HL; Chen, FJ; Lou, LH; Wang, WM; Zhang, HF; Chen, CQ; Ye, JD; Yan, M; Leung, KMY*; Cai, MG*. Field evidence and modeling

validation of biogeochemical controls on the deposition of persistent organic pollutants in the deep ocean. ***JOURNAL OF HAZARDOUS MATERIALS***. 2024, 480, 136395

Liu, SD; Li, JH*; Xu, W. Active acoustic measurement of sound speed for quantifying underwater gaseous bubble emissions. ***APPLIED ACOUSTICS***. 2024, 224, 110132

Liu, SJ; Chen, QR; Hou, CC; Dong, CJ; Qiu, XY; Tang, K*. Recovery of 1559 metagenome-assembled genomes from the East China Sea's low-oxygen region. ***SCIENTIFIC DATA***. 2024, 11, 994

Liu, SJ; Chen, QR; Liu, L; Dong, CJ; Qiu, XY; Tang, K*. Organic matter composition fluctuations disrupt free-living bacterial communities more than particle-associated bacterial communities in coastal waters. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 949, 174845

Liu, SJ; Hou, CC; Dong, CJ; Zhao, D; Chen, QR; Yang, JYT; Tang, K*. Integrated multi-omics analyses reveal microbial community resilience to fluctuating low oxygen in the East China sea. ***ENVIRONMENTAL RESEARCH***. 2024, 261, 119764

Liu, YJ; Zhu, XD*. Tracking mangrove light use efficiency using normalized difference red edge index. ***ECOLOGICAL INDICATORS***. 2024, 168, 112774

Liu, YQ*; Jiao, NZ; Ji, MK; Liu, KS; Xu, BQ; Guo, BX; Yao, TD. Human activity over natural inputs determines the bacterial community in an ice core from the Muztag ata glacier. ***SCIENCE CHINA-EARTH SCIENCES***. 2024, 67: 1489-1499

Liu, YW; Smith, WJ; Gebrewold, M; Simpson, SL; Wang, XH; Ahmed, W*. Development of a triplex RT-qPCR assay for simultaneous quantification of Japanese encephalitis, Murray Valley encephalitis, and West Nile viruses for environmental surveillance. ***MICROBIOLOGY SPECTRUM***. 2024, 12, e01364-24

Liu, ZY*; Gu, SF*; Zou, SJ; Zhang, SQ; Yu, YY; He, CF. Wind-steered Eastern Pathway of the Atlantic Meridional Overturning Circulation. ***NATURE GEOSCIENCE***. 2024, 17: 353-360

Lonborg, C*; Carreira, C; Abril, G; Agusti, S; Amaral, V; Andersson, A; Aristegui, J; Bhadury, P; Bif, MB; Borges, AV; Bouillon, S; Calleja, ML; Cotovicz , LC Jr; Cozzi, S; Doval, M; Duarte, CM; Eyre, B; Fichot, CG; García-Martín, EE; Garzon-Garcia, A; Gi. A global database of dissolved organic matter (DOM) concentration measurements in coastal waters (CoastDOM v1). ***EARTH SYSTEM SCIENCE DATA***. 2024, 16: 1107-1119

Lu, CS; Jiang, ZR; Wang, X; Li, KY; Lin, GY; Yang, YQ; Lin, YH; Zheng, GY; Xie, BS; Liu, XY*. Wearable respiratory function detection system based on dynamic humidity sensing: Principle and experimental comparison of lung function detection. ***ACTA PHYSICA SINICA***. 2024, 73, 38701

Lu, CS; Wang, X; Liu, XY*. Flexible meso electronics and photonics based on Ccocoon silk and applications. ***ACS BIOMATERIALS SCIENCE & ENGINEERING***. 2024, 10: 2784-2804

Lu, XY; Wang, CY; Tang, H; Qin, YF; Cui, L; Wang, X*; Liu, GK*; Ren, B*. Patch-based convolutional encoder: A deep learning algorithm for spectral classification balancing the local and global information. ***ANALYTICAL CHEMISTRY***. 2024, 96: 2866-2873

Lu, XY; Wu, HP; Ma, H*; Li, H; Li, J; Liu, YT; Pan, ZY; Xie, Y; Wang, L; Ren, B*; Liu, GK*. Deep learning-assisted spectrum-structure correlation: State-of-the-art and perspectives. ***ANALYTICAL CHEMISTRY***. 2024, 96: 7959-7975

Lu, Y; Li, Q; Zhao, D; Zhang, Y. Important role of Marine Group II Euryarchaeota in organic carbon cycling in the South China Sea. ***SCIENCE BULLETIN***. 2024, DOI:10.1016/j.scib.2024.11.034

Luo, Q; Gao, XL*; Zhang, M; Lin, SH; Huang, HY; Huang, MQ; Ke, CH*. Behavioral and physiological responses of nocturnal marine shellfish to predation pressure.

APPLIED ANIMAL BEHAVIOUR SCIENCE. 2024, 274, 106265

Luo, Q; Zhang, M; Lyu, MX; Ke, CH; Gao, XL*. Structure and function of vasa gene in gonadal gametogenesis of Pacific abalone. ***INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES***. 2024, 277, 134449

Luo, SH; Pan, SQ; Chen, GY; Xie, Y; Ren, B; Liu, GK*; Tian, ZQ*. Revealing the denoising principle of zero-Shot N2N-based algorithm from 1D spectrum to 2D image. ***ANALYTICAL CHEMISTRY***. 2024, 96: 4086-4092

Luo, SH; Zhao, XJ; Cao, MF; Xu, J; Wang, WL; Lu, XY; Huang, QT; Yue, XX; Liu, GK*; Yang, L*; Ren, B*; Tian, ZQ*. Signal2Signal: Pushing the spatiotemporal resolution to the limit by single chemical hyperspectral imaging. ***ANALYTICAL CHEMISTRY***. 2024, 96: 6550-6557

Ma, H; Pan, SQ; Wang, WL; Yue, XX; Xi, XH; Yan, S; Wu, DY; Wang, X*; Liu, GK*; Ren, B*. Surface-enhanced Raman spectroscopy: Current understanding, challenges, and opportunities. ***ACS NANO***. 2024, 18: 14000-14019

Ma, LQ; Bai, YQ; Wang, WL; Pei, SX; Zhang, GY*. Complete genome sequence of a novel Prescottella sp. R16 isolate from deep-sea sediments in the western Pacific. ***FRONTIERS IN GENETICS***. 2024, 15, 1356956

Ma, ML; You, YC; Huang, YL; Sun, XQ; Li, JS; Li, L; Wang, YJ; Lin, SJ*. Proton-pumping rhodopsin of the coral symbiont Breviolum minutum and its potential role in coping with phosphorus deficiency in future warmer ocean. ***CORAL REEFS***. 2024, 43: 867-879

Ma, XY; Chen, GX; Chu, XQ*; Xiu, P. Vertical structure and seasonal variability of chlorophyll concentrations in the Southern Tropical Indian Ocean revealed by biogeochemical Argo data. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2024JC021130

Ma, YX*; Cheng, WT; Huang, SD; Schmitt, FG; Lin, X; Huang, YX. Hidden turbulence in van Gogh's The Starry Night. ***PHYSICS OF FLUIDS***. 2024, 36, 95140

Ma, YX; Huang, YX; Hu, Jy. Spatiotemporal similarity of relative dispersion in the Gulf of Mexico. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1446297

Meng, LS*; Yan, C; Lv, SN; Sun, HY; Xue, SH; Li, QK; Zhou, LF; Edwing, D; Edwing, K; Geng, XP; Wang, YR; Yan, XH*. Synthetic aperture radar for geosciences. ***REVIEWS OF GEOPHYSICS***. 2024, 62, e2023RG000821

Meng, LZ; Zhang, Y; Han, ZM; Yuan, YP; Zhang, ZK; Dai, MH*. Monetizing shipping emission reduction: Environmental benefit analysis of domestic emission control areas policy 2.0 in China. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 948, 174805

Meng, XZ; Duan, YY; Bai, YQ; Zhang, WB; Zhang, C; Chen, FY*; Wang, KJ*. The antimicrobial peptide Sparamosin26-54 exhibits antiviral activity against three aquatic enveloped viruses through lipid-binding-mediated virus lysis. ***AQUACULTURE***. 2024, 592, 741160

Meng, YB; Du, X; Jiao, NZ. “Gray carbon” in sewage treatment plants: A neglected carbon sink. ***OCEAN-LAND-ATOMOSPHERE RESEARCH***. 2024, 3, 0060

Miao, YC; Li, JH*; Li, YS*. A novel tracker of adaptive directional ridge separation and prediction for detecting whistles. ***IEEE JOURNAL OF OCEANIC ENGINEERING***. 2024, DOI:10.1109/JOE.2024.3403255

Nawaz, MZ; Tariq, A; Al-Ghanim, KA; Pugazhendhi, A; Dang, HY*. Genome-wide detection of novel *cis*-encoded small RNAs in psychrophilic bacterium *Psychrobacter aquaticus*. ***PROCESS BIOCHEMISTRY***. 2024, 144: 235-247

Ni, JY; Chen, MM; Shen, JM; Liu, L; Jiang, ZP; Zhou, KB; Li, XL; Dai, MH; Zhang, Y*. Elevated heterotrophic prokaryotic production supported by low nucleic acid prokaryotes at a cyclonic eddy edge in the Northwest Pacific. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2024JC021414

Ni, LF; Wu, JP; Dang, HY; Duarte, CM; Feng, K; Deng, Y; Zheng, DQ; Zhang, DD*. Stand age-related effects of

mangrove on archaeal methanogenesis in sediments: Community assembly and co-occurrence patterns. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 954, 176596

Ni, SL; Xu, MN*; Du, MG; Laws, EA; Kao, SJ*. Top-down control of ammonia oxidizers by grazing in the North Pacific. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2024GL108484

Patil, V; Huang, L; Liang, JR; Sun, L; Wang, DZ; Gao, YH*; Chen, CP*. The allelopathic potential of red macroalga *Pyropia haitanensis* solvent extracts on controlling bloom-forming microalgae: Insights into the inhibitory compounds. ***ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY***. 2024, 272, 116083

Patil, V; Sun, L; Mohite, V; Liang, JR; Wang, DZ; Gao, YH*; Chen, CP*. Effect of benthic and planktonic diatoms on the growth and biochemical composition of the commercial macroalga *Pyropia haitanensis*. ***MARINE POLLUTION BULLETIN***. 2024, 203, 116411

Peng, JW; Zhang, XY; Wang, JJ; Wei, J; Chen, QM; Chen, X; Chen, QS; Chen, XM*. An electrochemiluminescent dual-signal immunosensor based on a Ru (bpy)32+-doped silica nanoparticle/copper nanocluster composite for okadaic acid detection. ***FOOD CHEMISTRY***. 2024, 455, 139844

Peng, SX; Yu, XL; Lee, ZP; Lin, HY; Liu, X; Dai, MH; Shang, SL. Ocean's largest chlorophyll-rich tongue is extending westward (2002–2022). ***NATURE COMMUNICATIONS***. 2025, 16, 103

Peng, YZ; Duan, AM*; Shen, ZL; Yao, YY; Yang, XY; Hu, ZY; Yu, W. Projection of a winter ice-free Barents-Kara Sea by CMIP6 models with the CCHZ-DISO method. ***ATMOSPHERIC RESEARCH***. 2024, 310, 107631

Peng, YZ; Zhang, H; Zhang, Z; Tang, B; Shen, DD; Yin, G; Li, YM*; Chen, X; Hu, ZY*; Nazrollozoda, SH. Future challenges of terrestrial water storage over the arid regions of Central Asia. ***INTERNATIONAL JOURNAL OF APPLIED EARTH OBSERVATION AND GEOINFORMATION***. 2024, 132, 104026

Qian, J; Hu, TS; Xiong, HY; Cao, X; Liu, FJ; Gosnell, KJ; Xie, MW; Chen, R; Tan, QG*. Turbid waters and clearer standards: refining water quality criteria for coastal environments by encompassing metal bioavailability from suspended particles. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2024, 58: 5244-5254

Qian, WX; Liu, HT*; Liu, XY; Yao, R; Wu, Y; Wu, LB; Cheng, DD; Wang, XH. Spatial-temporal distribution and fluxes of microplastics in Jiulong River basin. ***JOURNAL OF OCEANOLOGY AND LIMNOLOGY***. 2024, DOI:10.1007/s00343-024-3238-2

Qian, YQ; Huang, LF; Yan, P; Wang, XH; Luo, YR*. Biofilms on plastic debris and the microbiome. ***MICROORGANISMS***. 2024, 12, 1362

Qiao, PY; Dong, Y; Gu, XX; Xu, L; Li, M; Chen, WD; Lin, L; Ni, XP; Chen, LZ*. Warming stimulates mangrove carbon sequestration in rising sea level at their northern limit: An in situ simulation. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 2138-2151

Qin, SJ; Yang, Y; Huang, YX; Mei, XY; Wang, LP; Liao, SJ*. Is a direct numerical simulation (DNS) of Navier-Stokes equations with small enough grid spacing and time-step definitely reliable/correct. ***JOURNAL OF OCEAN ENGINEERING AND SCIENCE***. 2024, 9: 293-310

Qin, W*; Wei, SP; Zheng, Y; Choi, E; Li, XP; Johnston, J; Wan, XH; Abrahamson, B; Flinkstrom, Z; Wang, BZ; Li, HY; Hou, L; Tao, Q; Chlouber, WW; Sun, X; Wells, M; Ngo, L; Hunt, KA; Urakawa, H; Tao, XY; Wang, DY; Yan, XY; Wang, DZ; Pan, CL; Weber, PK; Jian. Ammonia-oxidizing bacteria and archaea exhibit differential nitrogen source preferences. ***NATURE MICROBIOLOGY***. 2024, 9: 524-536

Qiu, XY; Chen, BH; Lin, D; Liu, GH; Su, ZY; Zhang, MZ; Tang, K*. *Cerasicoccus fimbriatus* sp. nov., isolated from the mid-ridge of the Southwest Indian Ocean. ***ANTONIE VAN LEEUWENHOEK INTERNATIONAL JOURNAL OF GENERAL AND MOLECULAR MICROBIOLOGY***. 2025, 118, 37

Qu, F; Wang, YT; Yu, D; Chen, NW*. High-frequency monitoring reveals phytoplankton succession patterns and the role of cryptophyte in a subtropical river reservoir. ***ALGAL RESEARCH-BIOMASS BIOFUELS AND BIOPRODUCTS***. 2024, 82, 103680

Qu, LY; Dahlgren, RA; Gan, SC; Ren, MX; Chen, NW; Guo, WD*. Spatial variation of anthropogenic disturbances within watersheds determines dissolved organic matter composition exported to oceans. ***WATER RESEARCH***. 2024, 262, 122084

Rao, YM; Gao, G; Berman-Frank, I; Bizic, M; Gao, KS*. Light-dependent methane production by a coccolithophorid may counteract its photosynthetic contribution to carbon dioxide sequestration. ***COMMUNICATIONS EARTH & ENVIRONMENT***. 2024, 5, 695

Ren, HY; Lu, WF*; Xiao, WP; Zhu, Q; Xiao, CB; Lai, ZG*. Intraseasonal response of marine planktonic ecosystem to summertime Madden-Julian Oscillation in the South China Sea: A model study. ***PROGRESS IN OCEANOGRAPHY***. 2024, 224, 103251

Ren, M*; Jones, B; Nie, XM; Lin, X; Meng, C. Carbonate microbialites and chemotrophic microbes: Insights from caves from south-east China. ***SEDIMENTOLOGY***. 2024, 71: 1558-1590

Resplandy, L*; Hogikyan, A; Müller, JD; Najjar, RG; Bange, HW; Bianchi, D; Weber, T; Cai, WJ; Doney, SC; Fennel, K; Gehlen, M; Hauck, J; Lacroix, F; Landschützer, P; Le Quéré, C; Roobaert, A; Schwinger, J; Berthet, S; Bopp, L; Chau, TTT; Dai, M; Gruber, N. A synthesis of global coastal ocean greenhouse gas fluxes. ***GLOBAL BIOGEOCHEMICAL CYCLES***. 2024, 38, e2023GB007803

Revel, M*; Tan, QG; Hursthouse, A; Heise, S. The development of a kinetic biotic ligand model to predict acute toxicity of Gadolinium for *Daphnia magna*. ***ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY***. 2025, 289, 117486

Robache, K; Schmitt, FG; Huang, YX. Scaling and intermittent properties of oceanic and atmospheric pCO_2 time series and their difference. ***NONLINEAR PROCESSES IN GEOPHYSICS***. 2024, DOI:10.5194/npg-2024-7

Saito, MA*; Alexander, H; Benway, HM; Boyd, PW; Gledhill, M; Kujawinski, EB; Levine, NM; Maheigan, M; Marchetti, A; Obernosterer, I; Santoro, AE; Shi, DL; Suzuki, K; Tagliabue, A; Twining, BS; Maldonado, MT. The dawn of the BioGeoSCAPES program Ocean Metabolism and Nutrient Cycles on a Changing Planet. ***OCEANOGRAPHY***. 2024, 37: 162-166

Sawangwong, P; Chen, N; Luo, X; Boamah, GA; Gwo, JC; Ke, CH; You, WW*. Effects of reproductive condition on haemocyte parameters in the Pacific abalone, *Haliotis* discus *hannai* during the spawning period. ***NEW ZEALAND JOURNAL OF MARINE AND FRESHWATER RESEARCH***. 2024, 59: 198-213

Schiksnis, C; Xu, M; Saito, MA; Mcilvin, M; Moran, D; Bian, XP; John, SG; Zheng, Q; Yang, NN; Fu, FX*; Hutchins, DA*. Proteomics analysis reveals differential acclimation of coastal and oceanic *Synechococcus* to climate warming and iron limitation. ***FRONTIERS IN MICROBIOLOGY***. 2024, 15, 1323499

Sellegri, K*; Simó, R*; Wang, BB*; Alpert, PA; Altieri, K; Burrows, S; Hopkins, FE; Koren, I; McCoy, IL; Ovadnevaite, J; Salter, M; Schmale, J. Influence of open ocean biogeochemistry on aerosol and clouds: Recent findings and perspectives. ***ELEMENTA-SCIENCE OF THE ANTHROPOCENE***. 2024, 12, 58

Shangguan, MJ*; Guo, YR; Liao, ZY. Shipborne single-photon fluorescence oceanic lidar: instrumentation and inversion. ***OPTICS EXPRESS***. 2024, 32: 10204-10218

Shangguan, MJ*; Liang, YY; Li, Y; Mo, YC. Time-multiplexing single-photon imaging lidar with single-pixel detector. ***APPLIED PHYSICS LETTERS***. 2024, 124, 51104

Shangguan, MJ*; Liao, ZY; Go, Y. Simultaneous sensing profiles of beam attenuation coefficient and volume scattering function at 180° using a single-photon underwater elastic-Raman lidar. ***OPTICS EXPRESS***. 2024, 32: 8189-8204

Shangguan, MJ*; Yang, ZF; Lin, ZF; Weng, ZW; Sun, JX. Full-day profiling of a beam attenuation coefficient using a single-photon underwater lidar with a large dynamic measurement range. ***OPTICS LETTERS***. 2024, 49: 626-629

Shangguan, MJ; Guo, XY; Lin, SM; Lee, ZP. Simultaneous column-averaged CO_2, temperature, and HDO measurement by absorption spectroscopy lidar: Algorithm. ***IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING***. 2024, 63, 4100112

Shen, H; Wan, XS; Zou, WB; Chen, MM; Hu, ZD; Tong, SW; Zhou, KB; Jiang, ZP; Zhang, Y; Dai, MH; Kao, SJ*. Physical optima for nitrogen fixation in cyclonic eddies in the Subtropical Northwestern Pacific. ***PROGRESS IN OCEANOGRAPHY***. 2024, 226, 103298

Shen, H; Wan, XS; Zou, WB; Dai, MH; Xu, MN*; Kao, SJ*. Light-driven integration of diazotroph-derived nitrogen in euphotic nitrogen cycle. ***NATURE COMMUNICATIONS***. 2024, 15, 9193

Shen, XT; Jian, X*; Zhang, W; Guan, P. Grain textural bias in detrital single-mineral provenance studies. ***SEDIMENTARY GEOLOGY***. 2024, 471, 106731

Shen, YW; Dai, Y; Yu, F; Peng, WZ; Liu, JY; You, WW; Luo, X; Ke, CH*; Chen, N*. The weak association between hypoxia tolerance and thermal tolerance increases the susceptibility of abalone to climate change. ***ENVIRONMENTAL RESEARCH***. 2025, 264, 120324

Shen, ZL; Duan, AM*; Zhou, W*; Peng, YZ; Li, JX. Reconciling roles of external forcing and internal variability in Arctic Sea ice change on different time scales. ***JOURNAL OF CLIMATE***. 2024, 37: 3577-3591

Shi, WA; Lin, HY*; Deng, Q; Hu, JY. Asymmetry of submesoscale instabilities in anticyclonic and cyclonic eddies. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2023GL106853

Shi, XJ; Jiang, YH; Cao, L; Zeng, C*. Development of environmental DNA metabarcoding primers for marine mollusks and comparison with published primers. ***BMC ECOLOGY AND EVOLUTION***. 2024, 24, 73

Shu, HL; Shen, Y; Wang, HW; Sun, XQ; Ma, J; Lin, X*. Biogenic phosphonate utilization by globally distributed diatom *Thalassiosira pseudonana*. ***MICROORGANISMS***. 2024, 12, 761

Song, LP; Lee, Z*P; Shang, SL; Wu, JH. Sensitivity of a carbon-based primary production model on satellite ocean color products. ***REMOTE SENSING OF ENVIRONMENT***. 2024, 311, 114304

Su, GY*; Guo, ZL; Hu, YX; Zheng, Q; Zopfi, J; Lehmann, MF; Jiao, NZ*. Tidal control on aerobic methane oxidation and mitigation of methane emissions from coastal mangrove sediments. ***ENVIRONMENTAL RESEARCH***. 2024, 263, 120049

Su, ZY; Xu, Y; Xiao, YH; Chen, BH; Qiu, XY; Ye, JN; Tang, K*. *Mesobacterium hydrothermale* sp. nov., isolated from shallow-sea hydrothermal systems off Kueishantao Island. ***ANTONIE VAN LEEUWENHOEK INTERNATIONAL JOURNAL OF GENERAL AND MOLECULAR MICROBIOLOGY***. 2024, 117, 93

Sullivan, MR*; Primeau, FW; Hagstrom, GI; Wang, WL; Martiny, AC. Integrating trait-based stoichiometry in a biogeochemical inverse model reveals links between phytoplankton physiology and global carbon export. ***GLOBAL BIOGEOCHEMICAL CYCLES***. 2024, 38, e2023GB007986

Sun, H; Chen, FY; Hao, H; Xiong, M; Peng, H; An, Z; Wang, KJ. Beneficial effects of AMP Scyhepc on the gut microbiota contribute to the potential growth of Larimichthys crocea. ***BLUE BIOTECHNOLOGY***. 2024, 1, 11

Sun, H; Chen, FY; Zheng, WB; Huang, YX; Peng, H; Hao, H; Wang, KJ*. Impact of captivity and natural habitats on gut microbiome in *Epinephelus akaara* across seasons. ***BMC MICROBIOLOGY***. 2024, 24, 239

Sun, H; Wang, LX; Chen, FY; Meng, XY; Zheng, WB; Peng, H; Hao, H; Chen, HY; Wang, KJ*. The modulation of intestinal commensal bacteria possibly contributes to the growth and immunity promotion in *Epinephelus akaara* after feeding the antimicrobial peptide Scy-hepc. ***ANIMAL MICROBIOME***. 2024, 6, 54

Sun, JZ; Zhang, D; Yi, XQ; Beardall, J; Gao, KS*. Ocean deoxygenation dampens resistance of diatoms to ocean acidification in darkness. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1387552

Sun, LY; Shu, HM; Kou, YL; Dang, HY*; Ai, CX*. Beneficial effects of the butanoic acid derivative tributyrin on the growth, immunity and intestinal health of large mouth bass (*Micropterus salmoides*). ***AQUACULTURE***. 2024, 590, 741007

Sun, P*; Wang, Y; Huang, X; Xu, SS; Logares, R; Huang, YB; Xu, DP; Huang, BQ*. Cracking the dynamic code of the deep: Unexpected seasonal patterns of active protistan-bacterial microbiomes in the mesopelagic zone of the South China Sea. ***PROGRESS IN OCEANOGRAPHY***. 2024, 225, 103280

Sun, RX; Fang, YW; Li, YZ; Wei, J; Jiao, TH; Chen, QS; Guo, ZY; Chen, X; Chen, XM*. Molecularly imprinted polymers-coated magnetic covalent organic frameworks for efficient solid-phase extraction of sulfonamides in fish. ***FOOD CHEMISTRY***. 2025, 462, 141007

Sun, YF; Sheng, HX; Rädecker, N; Lan, Y; Tong, HY; Huang, LT; Jiang, L; Diaz-Pulido, G; Zou, BB; Zhang, YY; Kao, SJ; Qian, PY*; Huang, H*. Symbiodiniaceae algal symbionts of *Pocillopora damicornis* larvae provide more carbon to their coral host under elevated levels of acidification and temperature. ***COMMUNICATIONS BIOLOGY***. 2024, 7, 1528

Tan, EH*; Chen, B; Han, LL; Zou, WB; Yan, XL; Huang, ZX; Han, Y; Zheng, ZZ; Zheng, LW; Xu, M; Yang, JYT; Bao, HY; Kao, SJ*. Labile organic matter favors a low N_2O yield during nitrogen removal in estuarine sediments. ***MARINE POLLUTION BULLETIN***. 2024, 209, 117190

Tang, B; Hu, WT*; Duan, AM; Liu, YM; Bao, W; Xin, Y; Yang, XY. Impacts of future changes in heavy precipitation and extreme drought on the economy over South China and Indochina. ***ADVANCES IN ATMOSPHERIC SCIENCES***. 2024, 41: 1184-1200

Tian, DJ; Xu, H; Yang, LO; Zhou, JJ; Lin, FY; Liu, XL; Tan, K*; Xie, RJ*; Chen, X*. Tunable emission of low-dimensional organic metal halides by stoichiometric ratio and metal center. ***INORGANIC CHEMISTRY***. 2024, 63: 4738-4746

Tong, ZY; Ma, LQ; Cai, SJ; Chen, ZY; Wang, L; Xiang, MW; Huang, R; Wu, ML; Xiao, WP*; Huang, BQ. Reduced phytoplankton biomass in a subtropical plume-upwelling system induced by typhoons Bailu and Podul. ***PROGRESS IN OCEANOGRAPHY***. 2024, 229, 103375

Tong, ZY; Wang, CY; Lin, LZ; Ma, LQ*; Huang, BQ. Nutrient depletion and phytoplankton shifts driven by the Pearl River plume in the Taiwan Strait. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1485670

Tu, JB; Wu, JX*; Fan, DD; Liu, ZY; Zhang, QJ; Smyth, W*. Shear instability and turbulent mixing by Kuroshio intrusion into the Changjiang river plume. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2024GL110957

Wan, XS*; Sheng, HX; Shen, H; Zou, WB; Tang, JM; Qin, W; Dai, MH; Kao, SJ; Ward, BB. Significance of urea in sustaining nitrite production by ammonia oxidizers in the oligotrophic ocean. ***GLOBAL BIOGEOCHEMICAL CYCLES***. 2024, 38, e2023GB007996

Wang, C; Li, JS; Li, SH; Lin, SJ*. Effects and mechanisms of glyphosate as phosphorus nutrient on element stoichiometry and metabolism in the diatom *Phaeodactylum tricornutum*. ***APPLIED AND***

ENVIRONMENTAL MICROBIOLOGY. 2024, 90, e02131-23

Wang, C; Zhang, H; Wang, JT; Sprecher, B; Lin, SJ*. Glyphosate (Roundup) as phosphorus nutrient enhances carbon and nitrogen accumulation and up-regulates phosphorus metabolisms in the haptophyte *Isochrysis galbana*. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 913, 169715

Wang, CY; Cai, SJ; Tong, ZY; Chen, JX; Lin, LZ; Xiao, WP*; Liu, X; Huang, BQ. Unveiling differential thermal sensitivities in marine phytoplankton within the China Seas. ***LIMNOLOGY AND OCEANOGRAPHY LETTERS***. 2024, 9: 583-592

Wang, FF; Wang, J; Cao, TT; Ji, XW; Yan, J; Ding, SM; Chen, NW*. Seasonal hypoxia enhances sediment iron-bound phosphorus release in a subtropical river reservoir. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 936, 173261

Wang, JL; Zhang, ZK; Chen, DB; Guan, DB*. Embodied CO_2 emissions of equity portfolios for Chinese asset managers. ***SCIENTIFIC DATA***. 2024, 11, 640

Wang, L; Jian, X*; Mei, HW; Shen, XT; Fu, HJ. Clay composition heterogeneity in sediments from mountainous catchments with contrasting bedrock lithology in SE China coast. ***CATENA***. 2024, 247, 108470

Wang, N; Gao, KS*. Ocean acidification and food availability impacts on the metabolism and grazing in a cosmopolitan herbivorous protist Oxyrrhis marina. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1371296

Wang, P*; Wang, J; Du, YS; Yu, WC; Zhou, Q; Tian, L; Yuan, LJ; Pan, W; Wei, W; Qin, YJ; Ma, ZX. Manganese mineralization constrained by redox conditions in the Cryogenian Nanhua Basin, South China and its implications for nitrogen and carbon cycling. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1469283

Wang, Q*; Chen, J; He, YK; Wang, DX; Xiu, P*. Warming of the lower ocean layer modulated by vertical advection prior to typhoon arrival. ***CLIMATE DYNAMICS***. 2024, 62, DOI:10.1007/s00382-024-07157-7

Wang, Q; Zhang, Y*; Chai, F*; Zhang, Y*J; Zampieri, L. Development of a total variation diminishing (TVD) sea ice transport scheme and its application in an ocean (SCHISM v5.11) and sea ice (Icepack v1.3.4) coupled model on unstructured grids. ***GEOSCIENTIFIC MODEL DEVELOPMENT***. 2024, 17: 7067-7081

Wang, QL; Duan, AM*; Zhang, C; Peng, YZ; Xiao, CY. A connection from Siberian snow cover to Arctic stratospheric ozone. ***ATMOSPHERIC RESEARCH***. 2024, 307, 107507

Wang, R; Lu, YL*; Song, S; Yang, SJ; Cui, HT. Emission estimation and health risk evaluation of aquaculture drugs commonly used in China. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 954, 175923

Wang, SL; Mao, ZC; Zhang, B*; Yu, XL; Zhao, FQ; Song, XF; Dou, CY; Zhang, FF; Li, JS. Evaluation of SDGSAT-1 MII data in total suspended matter estimation in clear to extremely turbid rivers. ***INTERNATIONAL JOURNAL OF DIGITAL EARTH***. 2024, 17, 2413104

Wang, TT; Lin, CH; Zhang, H; Li, JY; Wang, LF; Luo, YH; Liu, J; Shen, JH; Tang, TT*. Kinetic isotope effect of decomposing fatty acids in the continental shelf sediment of the northern South China Sea. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1438092

Wang, WL; Ma, H; Huang, QT; Luo, SH; Ren, B; Tian, ZQ; Liu, GK*. Unveiling the exceptional evolution of solute aggregates: From micro to trace, solution to interface. ***AGGREGATE***. 2024, 5, e589

Wang, X; Lu, CS; Jiang, ZR; Shao, GW*; Cao, JZ; Liu, XY*. Meso hybridized silk fibroin watchband for wearable biopotential sensing and AI gesture signaling. ***ADVANCED SCIENCE***. 2024, DOI:10.1002/advs.202410702

Wang, X; Lu, YL*; Chen, CC; Yi, XJ; Cui, HT. Total-factor energy efficiency of ten major global energy-consuming countries. ***JOURNAL OF ENVIRONMENTAL***

SCIENCES. 2024, 137: 41-52

Wang, X; Qiu, W; Lu, CS; Jiang, ZR; Hou, C; Li, YR; Wang, Y; Du, HM; Zhou, J*; Liu, XY*. Fabrication of flexible and conductive microneedle array electrodes from silk fibroin by mesoscopic engineering. ***ADVANCED FUNCTIONAL MATERIALS***. 2024, 34, 2311535

Wang, XM; Ul Arifeen, MZ; Hou, SW*; Zheng, Q*. Depth-dependent microbial metagenomes sampled in the northeastern Indian Ocean. ***SCIENTIFIC DATA***. 2024, 11, 88

Wang, XX; Zhu, XD*. Salinity stress and atmospheric dryness co-limit evapotranspiration in a subtropical monsoonal estuarine mangrove wetland. ***ENVIRONMENTAL RESEARCH LETTERS***. 2024, 19, 114067

Wang, Y; Fu, HH; Hu, LZ; Geng, XP*; Shang, SP*; He, ZG; Xie, YS; Wei, GM. Automatic estimation of tropical cyclone centers from wide-swath Synthetic-Aperture Radar images of miniaturized satellites. ***APPLIED SCIENCES-BASEL***. 2024, 14, 7047

Wang, Y; Hu, YX; Liu, YT; Chen, Q; Xu, JX; Zhang, F; Mao, JH; Shi, Q; He, C; Cai, RH; Lonborg, C; Liu, LH; Guo, AX; Jiao, NZ*; Zheng, Q*. Heavy metal induced shifts in microbial community composition and interactions with dissolved organic matter in coastal sediments. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 927, 172003

Wang, Y; Wang, FF; Fang, Y; Fu, YQ; Chen, NW*. Storm-induced nitrogen transport via surface runoff, interflow and groundwater in a pomelo agricultural watershed, southeast China. ***ENVIRONMENTAL POLLUTION***. 2024, 346, 123629

Wang, Y; Yu, YQ; Luo, X; Tan, QG; Fu, YQ; Zheng, CH; Wang, DL*; Chen, NW*. Prioritizing ecological restoration in hydrologically sensitive areas to improve groundwater quality. ***WATER RESEARCH***. 2024, 252, 121247

Wang, YC; Xu, C; Lin, QR; Xiao, WP*; Huang, BQ; Lu, WF; Chen, NW; Chen, JX*. Modeling of algal blooms: Advances, applications and prospects. ***OCEAN & COASTAL MANAGEMENT***. 2024, 255, 107250

Wang, YM; Guo, XH; Wang, GZ; Wang, LF; Huang, T; Li, Y; Wang, Z; Dai, MH*. Assessment of nutrient cycling in an intensive mariculture system. ***MARINE POLLUTION BULLETIN***. 2024, 209, 117085

Wang, YR; Wu, ZL; Lu, WF; Yu, SJ; Li, SH; Meng, LS; Geng, XP*; Yan, XH*. Remote sensing estimations of the seawater partial pressure of CO_2 using sea surface roughness derived from Synthetic Aperture Radar. ***IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING***. 2024, 62, 4204913

Wang, YW; Li, YX; Li, MY; Jiao, NZ*; Zheng, Q; Yu, RD; Zhang, EQ; Liu, D*. Alkaline earth metal ions affect the dissolution of kaolinite-bearing olivine and its carbon storage effects. ***APPLIED CLAY SCIENCE***. 2024, 255, 107394

Wang, YW; Yang, S*; Wang, X; Xiang, HM; Lu, CS; Liu, XY*. Stretchable, stable, and structural color reversible enabled by mesoscopic regulation and design for flexible photonic crystal mechanical sensors. ***COLLOIDS AND SURFACES A-PHYSICOCHEMICAL AND ENGINEERING ASPECTS***. 2024, 689, 133672

Wang, ZX; Cao, ZM*; Liu, ZQ; Zhai, WD; Luo, YH; Lin, YX; Roberts, E; Gan, JP; Dai, MH*. Pacific Ocean-originated anthropogenic carbon and its long-term variations in the South China Sea. ***SCIENCE ADVANCES***. 2024, 10, eadn9171

Wei, ZY; Li, XJ; Ai, CX*; Dang, HY*. Characterization and genomic analyses of dsDNA vibriophage vB_VpaM_XM1, representing a new viral family. ***MARINE DRUGS***. 2024, 22, 429

Wen, ZZ; Jiang, RT; He, TL; Browning, TJ; Hong, HZ; Kao, SJ; Yang, JYT; Shi, DL*. Effects of CO_2 on the nitrogen isotopic composition of marine diazotrophic cyanobacteria. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2024GL110599

Weng, ZW; Sun, Jiaxin; Yang ZF; Luo, ZQ; Shangguan, MJ. Measurement of inherent optical properties of water based on multiple scattering profiles using underwater off-axis single-photon lidar. ***OPTICS EXPRESS***. 2024, 32: 48035-48055

Wu, CH*; Sun, XM; Li, GW; Huang, LQ; Jiao, HJ; Li, ZW; Jian, X; Mason, CC; Rodríguez-López, JP. Cretaceous mountain building processes triggered the aridification and drainage evolution in east Asia. ***GEOLOGICAL SOCIETY OF AMERICA BULLETIN***. 2024, 136: 1863-1877

Wu, JH*; Lee, ZP*; Goes, J; Gomes, HD; Wei, JW. Evaluation of three contrasting models in estimating primary production from ocean color remote sensing using long-term time-series data at oceanic and coastal sites. ***REMOTE SENSING OF ENVIRONMENT***. 2024, 302, 113983

Wu, RJ; Wu, YC; Zhai, R; Gao, KS; Xu, JT*. Ocean acidification and desalination increase the growth and photosynthesis of the diatom *Skeletonema costatum* isolated from the coastal water of the Yellow Sea. ***MARINE ENVIRONMENTAL RESEARCH***. 2024, 197, 106450

Wu, SP; Gu, XX; Peng, XF; Chen, LZ*. Comparative analysis of water-use strategies in three subtropical mangrove species: a study of sap flow and gas exchange monitoring. ***TREE PHYSIOLOGY***. 2024, 44, tpae102

Wu, SQ; Yan, XL; Tang, JM; Tan, EH; Luo, L; Tong, SW; Zheng, ZZ; Huang, YF; Xu, MN; Kao, SJ*. Nitrogen cycling in China marginal seas: Progress and challenges. ***MARINE CHEMISTRY***. 2024, 265-266, 104421

Wu, ZT; Yu, D; Yu, QB; Liu, Q; Zhang, MZ; Dahlgren, RA; Middelburg, JJ; Qu, LY; Li, QL; Guo, WD*; Chen, NW*. Greenhouse gas emissions (CO_2-CH_4-N_2O) along a large reservoir-downstream river continuum: The role of seasonal hypoxia. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 1015-1029

Wu, ZY; Cao, ZW; Huang, XY; Lu, YL*; Wang, P; Liang, Z; An, XP. Anthropogenic sources and air mass transport affect spatial and seasonal variations of ambient halocarbons in southeastern China. ***JOURNAL OF ENVIRONMENTAL SCIENCES***. 2025, 152: 340-352

Xi, XH; Zhang, Y; Yan, S*; Wang, PS; Ma, H; Ren, M; Liu, GK; Lei, Y*; Ren, B; Wang, X*. Rapid and accurate identification of dyes on ancient textiles by SERS with a negligibly invasive approach. ***JOURNAL OF RAMAN SPECTROSCOPY***. 2024, 55: 1281-1288

Xia, ZY*; Chen, XC; Wang, CC*; Deng, QY*. Tracing the fine-scale demographic history and recent admixture in Hmong-Mien speakers. ***AMERICAN JOURNAL OF BIOLOGICAL ANTHROPOLOGY***. 2024, 184, e24945

Xiang, WJ; Song, ZC*; Gao, ZY; Yang, WY; Zhang, BY; Yang, HJ; Tu, JQ; Li, BY; Zhang, HR; Zhang, Y*. Application of the robust autoencoder to reduce reverberation and facilitate underwater target tracking. ***APPLIED ACOUSTICS***. 2025, 228, 110303

Xiang, ZY; Li, YF*; Zhang, Z. Global conservation priorities of coastal habitats towards extreme sea level rise risks. ***JOURNAL OF CLEANER PRODUCTION***. 2024, 473, 143455

Xiao, CY; Duan, AM*; Wu, GX; Tang, YH; Peng, YZ; Hu, D. Interannual variability of August precipitation in China associated with the Antarctic sea ice anomaly. ***JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES***. 2024, 129, e2023JD040236

Xiao, CY; Duan, AM*; Yao, YY; Tang, YH; Wang, QL. Role of the subtropical southern Indian Ocean in the interannual variability of Antarctic summer sea ice. ***ATMOSPHERIC RESEARCH***. 2024, 311, 107723

Xiao, J; Chen, TY; Zeng, QT; Pei, JX; Li, QL*; Lin, KD; Sun, Q*. Application of osmotic pump coupled solid phase extraction samplers for the on-site sampling and enrichment of pharmaceuticals and personal care products in wastewater treatment plants. ***ENVIRONMENTAL TECHNOLOGY & INNOVATION***. 2024, 36, 103869

Xie, JY; Lee, ZP*; Li, X; Wang, DS; Zhang, CY; Wu, YF; Yu, XL; Zheng, ZH. Estimation of sea surface temperature from Landsat-8 measurements via neural networks. ***IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING***. 2024, 17: 16306-16315

Xie, TX; Cao, ZM; Hamzah, F; Schlosser, P; Dai, MH*. Nutrient vertical flux in the Indonesian seas as constrained by non-atmospheric helium-3. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2024GL111420

Xie, XW; Lu, YL*; Lei, HJ; Cheng, JH; An, XP; Wang, WQ; Jiang, XD; Xie, JL; Xiong, YT; Wu, T. Bioaccumulation and trophic transfer of per- and polyfluoroalkyl substances in a subtropical mangrove estuary food web. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 927, 172094

Xin, Y; Hu, WT*; Duan, AM; Tang, B; Tang, YH. Mechanism for compound daytime-nighttime heatwaves in the Barents-Kara Sea during the boreal autumn and their relationship with sea ice variability. ***WEATHER AND CLIMATE EXTREMES***. 2024, 45, 100712

Xu, Chao; Xiang, Mingwang; Chen, Bingzhang; Huang, Yibin*; Qiu, Guoqiang; Zhang, Yuchen; Wang, Haili; Huang, Bangqin*. Constraining the twilight zone remineralization in the South China Sea basin: Insights from the multi-method intercomparison. ***PROGRESS IN OCEANOGRAPHY***. 2024, 228, 103316

Xu, DJ; Xiong, HY; Wu, QL; Xiao, WZ; Simpson, SL; Tan, QG; Chen, R; Xie, MW*. Sediment ballet: Unveiling the dynamics of metal bioavailability in sediments following resuspension and reequilibration. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2024, DOI:10.1021/acs.est.4c08327

Xu, J; Zhang, S; Luo, SH; Xiong, CR; Zhu, MH; Chang, J; Zou, B; Ren, B; Tian, ZQ; Liu, GK*. Rapid sample pretreatment facilitating SERS detection of trace weak organic acids/bases in complex matrices. ***ANALYTICAL CHEMISTRY***. 2024, 96: 9399-9407

Xu, JX; Wang, Y; Liu, L; Wang, XM; Xiao, SC; Chen, JX; Jiao, NZ; Zheng, Q*. Biogeography and dynamics of prokaryotic and microeukaryotic community assembly across 2600 km in the coastal and shelf ecosystems of the China Seas. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 948, 174883

Xu, Y; Wang, CC*. Language evolution in China. ***NATURE HUMAN BEHAVIOUR***. 2024, 8: 1008-1009

Xu, ZF; Ge, LH; Zou, WB; Lv, BC; Yang, J; Chai, ZJ; Guo, XY; Zhu, XC; Kao, SJ*. The underestimated role of manganese in modulating the nutrient structure in a eutrophic seasonally-stratified reservoir. ***WATER RESEARCH***. 2024, 260, 121940

Xue, J; Zhang, T; Park, K; Yan, JP; Yoon, YJ; Park, J*; Wang, BB*. Diverse sources and aging change the mixing state and ice nucleation properties of aerosol particles over the western Pacific and Southern Ocean. ***ATMOSPHERIC CHEMISTRY AND PHYSICS***. 2024, 24: 7731-7754

Yan, WL; Gu, LD*; Yue, XL; Zhong, HW; Wang, DL*. Distribution of protoporphyrin IX during *Prorocentrum donghaiense* blooms and its relationship with particle-attached and free-living bacterial communities. ***ENVIRONMENTAL RESEARCH***. 2024, 263, 120255

Yan, XL*; Guo, XL; Yao, AQ; Bao, HY; Li, DW; Huang, JC; Wu, JW; Kao, SJ. Deciphering the effects of hydrological, biogeochemical and anthropogenic factors on nitrogen species in a subtropical watershed using multiple isotopes. ***JOURNAL OF HYDROLOGY***. 2024, 630, 130736

Yang Y; Huang, RX; Liang, XS; Liu, ZY, Hu, JY; Zhao, YH; Fu, GQ. The causal relation within air–sea interaction as inferred from observations. ***JOURNAL OF CLIMATE***. 2024, 37: 6713-6727

Yang, DY; Zeng, S; Wang, Z; Zhang, YJ; Yang, DZ; Glasby, CJ*; Hwang, JS*; Cai, LZ*. Molecular systematics of Perinereis and an investigation of the status and relationships of the cultured species *Perinereis wilsoni* Glasby & Hsieh, 2006 (Annelida, Nereididae).

ZOOSYSTEMATICS AND EVOLUTION. 2024, 100: 1297-1314

Yang, LO; Tian, DJ; Liu, XL; Lin, FY; Ye, M; Wang, YR*; Chen, X*. Oxygen sensing performance modulation using luminescent ionic copper iodide clusters based on Mn(II) crystal field intensity. ***SENSORS AND ACTUATORS B-CHEMICAL***. 2024, 418, 136252

Yang, Y*; Brockmann, P; Galdino, C; Schindler, U; Gazeau, F. An update of data compilation on the biological response to ocean acidification and overview of the OA-ICC data portal. ***EARTH SYSTEM SCIENCE DATA***. 2024, 16: 3771-3780

Ye, JD; Liu, MY; Chen, LX; Jing, LK; Qi, HY; Wu, BZ; Wang, WM; Zheng, HW; Zhang, ZF; Huang, JJ; Shi, JW; Chen, XK; Xiao, WP; Wang, SL; Li, YF; Cai, MG*. Air-sea exchange of PAHs in the Taiwan Strait: Seasonal dynamics and regulation mechanisms revealed by machine learning approach. ***JOURNAL OF HAZARDOUS MATERIALS***. 2024, 474, 134792

Ye, MC; Zhang, JL; Xiao, MT; Huang, JL; Zhou, YY; Beardall, J; Raven, JA; Gao, G; Liang, X; Wu, FH; Peng, BY; Xu, LY; Lu, YC; Liang, SM; Wang, YP; Zhang, H; Li, JY; Cheng, L; Ruan, ZX; Xia, JR; Jin, P*. Multi-omics analyses reveal the signatures of metabolite transfers across trophic levels in a high-CO_2 ocean. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 1667-1682

Ye, SH; Jian, X*; Fu, L; Zhang, W; Shen, XT; Guan, P. Detrital muscovite $^{40}Ar/^{39}Ar$ geochronology and provenance of Cenozoic deposits in the Qaidam basin, northern Tibetan Plateau and comparison with detrital zircon and apatite records. ***MARINE AND PETROLEUM GEOLOGY***. 2024, 169, 107068

Yi, J; You, EM; Liu, GK; Tian, ZQ*. AI-nano-driven surface-enhanced Raman spectroscopy for marketable technologies. ***NATURE NANOTECHNOLOGY***. 2024, 19: 1758-1762

Yi, XJ; Lu, YL*; He, GZ. Aluminum demand and low carbon development scenarios for major countries by 2050. ***JOURNAL OF CLEANER PRODUCTION***. 2024, 475, 143647

Yi, YB; Li, SL*; Zhong, J; Wang, K; Merder, J; Bao, HY; Qi, YL; He, D; Xu, S; Dittmar, T*; Liu, CQ. Assessing the impacts of reservoirs on riverine dissolved organic matter: Insights from the largest reservoir in the Pearl River. ***JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES***. 2024, 129, e2024JG008199

You, XL; Sun, LM*; Chen, XZ; Li, YT; Zheng, J; Yuan, DX; Wu, JJ; Sun, SY. Mercury distribution and transfer in mangrove forests in urban areas under simulated rising sea levels. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1444302

Yu, C; Yu, MS; Ma, RJ; Wei, SZ; Jin, M; Jiao, NZ; Zheng, Q; Zhang, R*; Feng, XJ*. A novel *Alteromonas* phage with tail fiber containing six potential iron-binding domains. ***MICROBIOLOGY SPECTRUM***. 2024, DOI:10.1128/spectrum.00934-24

Yu, FL; Huang, ZQ*; Zhou, LF; Zhang, HK; Huang, YX. Multi-temporal InSAR evidence of non-tidal ocean loading effects from Chaoshan coastal plain, China. ***INTERNATIONAL JOURNAL OF APPLIED EARTH OBSERVATION AND GEOINFORMATION***. 2024, 132, 104031

Yu, QB; Li, SB; Chen, NW*. Urbanization and greenhouse gas emissions from municipal wastewater in coastal provinces of China: Spatiotemporal patterns, driving factors, and mitigation strategies. ***ENVIRONMENTAL RESEARCH***. 2024, 259, 119398

Yu, XR; Wen, ZZ; Jiang, RT; Yang, JYT; Cao, ZM; Hong, HZ; Zhou, YT*; Shi, DL*. Assessing N_2 fixation flux and its controlling factors in the (sub)tropical western North Pacific through high-resolution observations. ***LIMNOLOGY AND OCEANOGRAPHY LETTERS***. 2024, 9: 716-724

Yu, XX; Gutang, Q; Wang, YX; Wang, SJ; Li, YS; Li, YY; Liu, WH; Wang, XH*. Microplastic and associated emerging contaminants in marine fish from the South China Sea: Exposure and human risks. ***JOURNAL OF HAZARDOUS MATERIALS***. 2024, 480, 136200

Yu, Y; Yang, XM; Liu, DY; Du, PX; Meng, HL; Huang, ZX; Xiong, JX; Ding, Y; Ren, XY; Allen, E; Wang, H; Han, S; Jin, L*; Wang, CC*; Wen, SQ*. Ancient genomic analysis of a Chinese hereditary elite from the Northern and Southern Dynasties. ***JOURNAL OF GENETICS AND GENOMICS***. 2024, DOI:10.1016/j.jgg.2024.07.009

Yu, Y; Zhang, Y; Liang, ZY; Li, JQ; Lin, XF*. Taxonomy of Two New Peritrich Ciliates (Protozoa: Ciliophora) from Inland Saltwaters of China. ***JOURNAL OF OCEAN UNIVERSITY OF CHINA***. 2024, 23: 811-821

Yuan, HT; Li, L; Wang, YJ; Lin, SJ*. Succession of diversity, assembly mechanisms, and activities of the microeukaryotic community throughout *Scrippsiella acuminata* (Dinophyceae) bloom phases. ***HARMFUL ALGAE***. 2024, 134, 102626

Yuan, W; Song, S*; Lu, YL; Shi, YJ; Yang, SJ; Wu, Q; Wu, YQ; Jia, D; Sun, J. Legacy and alternative per-and polyfluoroalkyl substances (PFASs) in the Bohai Bay Rim: Occurrence, partitioning behavior, risk assessment, and emission scenario analysis. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 912, 168837

Yuan, ZW; Achterberg, EP; Engel, A; Dai, MH; Browning, TJ*. Switches between nitrogen limitation and nitrogen-phosphorus co-limitation in the subtropical North Atlantic Ocean. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 1005-1013

Yue, XX; Yan, S; Gao, TC; Pu, SH; Tang, H; Pei, XD; Tian, ZQ; Wang, X*; Ren, B*; Liu, GK*. SERS performance factor: A convenient parameter for the enhancement evaluation of SERS substrates. ***ANALYTICAL CHEMISTRY***. 2024, 96: 17517-17525

Zang, L; Liu, YQ*; Jiao, NZ; Zhong, KX; Song, XY; Yang, YL; Cai, LL; Liu, KS; Mao, GN; Ji, MK; Zhang, R*. Salinity as a key factor affecting viral activity and life strategies in alpine lakes. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 961-975

Zeb, R; Yin, XH; Chen, FY; Wang, KJ*. Chronic exposure to environmental concentrations of benzo[a]pyrene causes multifaceted toxic effects of developmental compromise, redox imbalance, and modulated transcriptional profiles in the early life stages of marine medaka (*Oryzias melastigma*). ***AQUATIC TOXICOLOGY***. 2024, 273, 107016

Zeng, JJ; Qu, A; Deng, YC; Jiang, PX; Zhao, J; Wang, JY; Liu, Y; Liu, W; Ke, QZ; Pu, F; Li, YX; Xu, P*. High-intensity exercise training in large yellow croaker is a compromise between disease resistance and fish welfare. ***AQUACULTURE***. 2024, 590, 741043

Zeng, MH; Chen, LM; Hou, XC; Jin, JW; Yao, QH; Ye, TX; Guo, ZY*; Chen, X*M*; Chen, X*. Metal-assisted core-shell plasmonic nanoparticles for small molecule biothiol analysis and enantioselective recognition. ***NANOSCALE***. 2024, 16: 5232-5241

Zeng, MH; Yao, QH; Zheng, F; Jin, JW; Zhang, YY*; Ye, TX; Chen, X*M; Guo, ZY*; Chen, X*. Mimicking chirality floralform heterostructure: A multivariate metal-based nanoparticles with highly charge transformation interface and multivariate recognition. ***SENSORS AND ACTUATORS B-CHEMICAL***. 2024, 419, 136379

Zeng, MH; Zhang, C; Yao, QH; Jin, JW; Ye, TX; Chen, X*M; Guo, ZY*; Chen, X*. Multifunction nanoenzyme-assisted ion-selective and oxidation catalysis SERS biosensors for point-of-care nitrite testing. ***SENSORS AND ACTUATORS B-CHEMICAL***. 2024, 405, 135352

Zhan, XQ; Bao, HY*; Niggemann, J; Zhao, WQ; Chen, NW; Huang, DK; Du, MG; Yi, YB; Dittmar, T; Kao, SJ. Beyond Hydrology: Exploring the factors influencing the seasonal variation of the molecular composition of riverine dissolved organic matter. ***JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES***. 2024, 129, e2024JG008014

Zhang, C; Chen, FY*; Bai, YQ; Dong, XX; Meng, XZ; Wang, KJ*. A novel antimicrobial peptide Spasin141-165 identified from *Scylla paramamosain* exhibiting protection against *Aeromonas hydrophila* infection. ***AQUACULTURE***. 2024, 591, 741137

Zhang, CY*; Ding, WX; Zhang, LY. Impacts of missing buoy data on LSTM-based coastal chlorophyll-a forecasting. ***WATER***. 2024, 16, 3046

Zhang, D; Song, JJ; Gao, Y; Peng, Y; Hu, JY; Schmitt, FG; Huang, YX*. Scale-to-scale energy flux in the oceanic global circulation models. ***FRONTIERS IN MARINE SCIENCE***. 2024, 11, 1307751

Zhang, EQ; Li, YX; Wang, YW; Liu, D; Cong, Y; Liu, JH; Tang, KX; Jiao, NZ; Zheng, Q. Synergistic CO_2 removal via enhanced olivine weathering and diatom growth in the ocean. ***OCEAN-LAND-ATOMOSPHERE RESEARCH***. 2024, 3, 47

Zhang, GH; Jie, DM*; Gao, GZ; Li, DH; Li, NN; Wang, JY; Niu, HH; Meng, M; Liu, Y. Lateral migration differs between phytolith morphotypes on sand dune surfaces. ***EUROPEAN JOURNAL OF SOIL SCIENCE***. 2024, 75, e13579

Zhang, H; Wang, X; Qu, M; Yu, HY; Yin, JP; Liu, XC; Liu, YH; Zhang, B; Zhang, YH; Wei, ZL; Yang, FF; Wang, JT; Shi, CC; Fan, GY; Sun, J; Long, LJ; Hutchins, DA; Bowler, C; Lin, SJ*; Wang, DZ*; Lin, Q*. Genome of *Halimeda opuntia* reveals differentiation of subgenomes and molecular bases of multinucleation and calcification in algae. ***PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA***. 2024, 121, e2403222121

Zhang, HS; Zhai, WD*; Tang, K. Seasonal variations in air-sea CO_2 flux in the Bohai Sea and the temporal relationship between surface and bottom-water carbonate dynamics in a. ***CONTINENTAL SHELF RESEARCH***. 2024, 275, 105192

Zhang, HY; Li, R; Gu, BW; Kong, HJ; Xu, J; Zhang, R; Li, XL; Jiao, NZ; Xu, DP*. Dynamics of Haptophytes (Eukaryota, Hacrobia) Revealed *via* Short-Term Sampling in the South China Sea. ***JOURNAL OF OCEAN UNIVERSITY OF CHINA***. 2024, 23: 1677-1688

Zhang, JH; Zhou, N; Dong, ER; Zhang, C; Song, ZC; Liu, S; Yang, C; Su, XC; Wang, SJ; Zhang, Y*. Soft bio-metamaterials with high acoustic transparency and gradient refractive index for tunable acoustic beamformer. ***MATTER***. 2024, 7, DOI:10.1016/j.matt.2024.06.048

Zhang, JP; Wang, Y; Gan, Y; Hong, JW; Ke, JW; You, WW; Chen, YX; Luo, X*; Ke, CH*. Changes in water temperature: The effect of triploid performance in Pacific abalone (*Haliotis discus hannai*). ***AQUACULTURE***. 2024, 585, 740701

Zhang, JW*; Zhang, XB*; King, MA; Lyu, K. A model-based investigation of the recent rebound of shelf water salinity in the Ross Sea. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2023GL106697

Zhang, JY; Wang, CL*; Teng, XH*; Kemp, DB; Wang, ZX; Yang, H; Gai, CC; Zhang, YR; Zhong, Y; Jiang, XD; Zhang, Q; Zhang, WJ; Fan, XJ; Liu, QS*. Orbital modulation of an intensified hydrological cycle during the Paleocene-Eocene Thermal Maximum. ***EARTH AND PLANETARY SCIENCE LETTERS***. 2024, 635, 118693

Zhang, K; Zhou, KB; Cai, YH; Yuan, ZW; Chen, YJ; Xu, FP; Liu, X; Cao, ZM; Dai, MH*. Decoupled cycling of particulate cadmium and phosphorus in the subtropical Northwest Pacific. ***LIMNOLOGY AND OCEANOGRAPHY***. 2024, 69: 1941-1954

Zhang, KX; Chen, CZ; Long, DD; Wang, S; Li, JQ; Lin, XF*. Unveiling sedimentary microbial communities: Restored mangrove wetlands show higher heterogeneity and network stability than natural ones. ***ECOLOGICAL INDICATORS***. 2024, 166, 112274

Zhang, M; Gao, XL*; Luo, Q; Lin, SH; Lyu, M; Luo, X; Ke, CH; You, WW*. Risk assessment of persistent exposure to artificial light at night revealed altered behavior and metabolic patterns of marine nocturnal shellfish. ***ECOLOGICAL INDICATORS***. 2024, 160, 111807

Zhang, MZ; Yu, D; Yu, YQ; Yan, RF; Li, YS; Gong, WJ; Xiao, K; Li, SB; Chen, NW*. Drought reduces nitrogen supply and N_2O emission in coastal bays. ***WATER RESEARCH***. 2024, 266, 122362

Zhang, SB; Xia, XH*; Yu, LL; Liu, SD; Li, XK; Wang, JF; Zheng, Y; Han, LF; Tan, Q; Yang, ZF*. Biogeography and impact of nitrous oxide reducers in rivers across a broad environmental gradient on emission rates. ***ENVIRONMENTAL MICROBIOLOGY***. 2024, 26, e16622

Zhang, TL; Liu, JY; Xiang, YX; Liu, XM; Zhang, J; Zhang, L; Ying, Q; Wang, YT; Wang, YN; Chen, SL; Chai, F; Zheng, M*. Quantifying anthropogenic emission of iron in marine aerosol in the Northwest Pacific with shipborne online measurements. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 912, 169158

Zhang, WP; Wei, H; Zhang, SY; Zhang, SF; Zhou, Y; Sun, WJ; Lee, JS; Wang, MH; Wang, DZ*. Elevated temperature as the dominant stressor on the harmful algal bloom-causing dinoflagellate *Prorocentrum obtusidens* in a future ocean scenario. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 952, 175946

Zhang, WP; Zhang, SY; Zhou, Y; Sun, WJ; Zhang, SF; Lee, JS; Wang, MH*; Wang, DZ*. Divergent responses of an armored and an unarmored dinoflagellate to ocean acidification. ***HARMFUL ALGAE***. 2025, 141, 102772

Zhang, WW; Yang, XY*; Zhuang, W; Yan, XH. On the longitudinal shifts of the Agulhas retroflection point. ***ACTA OCEANOLOGICA SINICA***. 2024, 43: 16-29

Zhang, X; Sunda, WG; Hong, HZ*; Shi, DL*. Extreme plasticity in the photosystem composition of a low-light *Prochlorococcus ecotype* in response to iron and light. ***LIMNOLOGY AND OCEANOGRAPHY LETTERS***. 2024, DOI:10.1002/lol2.10441

Zhang, XH; Gao, G; Gao, ZQ; Gao, KS; Liu, DY*. The contribution of biophysical and biochemical CO_2 concentration mechanisms to the carbon fixation of the green macroalga *Ulva prolifera*. ***MARINE LIFE SCIENCE & TECHNOLOGY***. 2024, DOI:10.1007/s42995-024-00265-7

Zhang, XQ; He, B*; Bao, Q*; Liu, YM; Wu, GX; Duan, AM; Hu, WT; Sheng, C; Rao, J. The role of Arctic sea ice loss in the interdecadal trends of the East Asian summer monsoon in a warming climate. ***NPJ CLIMATE AND ATMOSPHERIC SCIENCE***. 2024, 7, 174

Zhang, YK; Gao, G; Xue, HJ; Gao, KS*. Reduced primary productivity and notable resilience of phytoplankton community in the coastal water of southern China under a marine heatwave. ***ENVIRONMENTAL RESEARCH***. 2025, 264, 120286

Zhang, YY*; Nair, S*; Zhang, ZH; Zhao, JL; Zhao, HS; Lu, LF; Chang, LR; Jiao, NZ. Adverse environmental perturbations may threaten kelp farming sustainability by exacerbating enterobacterales diseases. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2024, 58: 5796-5810

Zhang, Z; Luo, XZ*; Friess, DA; Wang, SH; Li, Y; Li, YF*. Stronger increases but greater variability in global mangrove productivity compared to that of adjacent terrestrial forests. ***NATURE ECOLOGY & EVOLUTION***. 2024, 8: 239-250

Zhang, ZY; Xia, XM; Chen, LZ; Liang, HD; Zhao, X; Liu, B; Cai, TL; Wang, XK; Chen, YN*. Geomorphological changes and sediment carbon accumulation at the bare mudflat-saltmarsh interface: The role of typhoons. ***GEOMORPHOLOGY***. 2024, 454, 109151

Zhao, HS; Zhang, ZH*; Nair, S; Li, HM; He, C; Shi, Q; Zheng, Q; Cai, RH; Luo, GM; Xie, SC; Jiao, NZ; Zhang, YY*. Overlooked vital role of persistent algae-bacteria interaction in ocean recalcitrant carbon sequestration and its response to ocean warming. ***GLOBAL CHANGE BIOLOGY***. 2024, 30, e17570

Zhao, JL; Nair, S; Zhang, ZH; Wang, ZM; Jiao, NZ; Zhang, YY*. Macroalgal virosphere assists with host-microbiome equilibrium regulation and affects prokaryotes in surrounding marine environments. ***ISME JOURNAL***. 2024, 18, wrae083

Zhao, LS; Xue, J; Wang, SK; Tian, P; Huang, MY; Bi, K*; Wang, BB*. Single particle characteristics and ice nucleation potential of particles collected during Asian dust storms in 2021. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 948, 174829

Zhao, ZH; Xu, MD; Huang, BQ; Lu, WF; Qi, HS; Cai, F*; Jiang, YW*. Physically modulated phytoplankton production and export at submesoscales in the oligotrophic South China Sea Basin. ***SCIENCE CHINA-EARTH SCIENCES***. 2024, 67: 2681-2698

Zheng, HY; Cheng, LJ*; Li, FL; Pan, YY; Zhu, CY. An observation-based estimate of Atlantic meridional freshwater transport. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2024GL110021

Zheng, JJ; Xiu, P*; Zeng, LL*; Zhu, XM; Ji, XL; Gao, S; Li, ZJ. Phytoplankton response to the record-breaking marine heatwave in the summer of 2020 in the South China Sea. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2024, 129, e2024JC021275

Zheng, Y; Wang, BZ; Gao, P; Yang, YY; Xu, B; Su, XQ; Ning, DL; Tao, Q; Li, Q; Zhao, F; Wang, DZ; Zhang, Y; Li, M; Winkler, MKH; Ingalls, AE; Zhou, JZ; Zhang, CL; Stahl, DA; Jiang, JD*; Martens-Habbena, W*; Qin, W*. Novel order-level lineage of ammonia-oxidizing archaea widespread in marine and terrestrial environments. ***ISME JOURNAL***. 2024, 18, wrad002

Zheng, Y; Wang, H; Liu, Y; Liu, PY; Zhu, BL; Zheng, YN; Li, JH; Chistoserdova, L; Ren, ZJ*; Zhao, F*. Electrochemically coupled CH_4 and CO_2 consumption driven by microbial processes. ***NATURE COMMUNICATIONS***. 2024, 15, 3097

Zheng, YC; Huang, JW; Feng, Y*; Xue, HJ; Xie, XH; Tian, HQ; Yao, YZ; Luo, L; Guo, XH; Liu, YL. The effects of seasonal wind regimes on the evolution of hypoxia in Chesapeake Bay: Results from a terrestrial-estuarine-ocean biogeochemical modeling system. ***PROGRESS IN OCEANOGRAPHY***. 2024, 222, 103207

Zhong, GB; Lin, Z; Liu, FJ; Xie, MW; Chen, R; Tan, QG*. Toxicokinetics and mussel watch: Addressing interspecies differences for coastal cadmium contamination assessment. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2024, 58: 14618-14628

Zhong, YP; Bai, XL; Laws, EA; Lu, WF; Huang, ZD; Xiao, WP; Chen, JX; Ma, LQ; Liu, X*; Huang, BQ. Phytoplankton community responses to the combined effects of internal waves and anticyclonic eddies shed from the Kuroshio intrusion. ***OCEAN DYNAMICS***. 2024, 74: 539-554

Zhou, JH; Li, YL*; Du, Y; Hong, Y; Lu, L; Lu, Y; Wang, WL; Wang, F. Indian Ocean intermediate water masses and their simulations by CMIP6 models. ***JOURNAL OF CLIMATE***. 2024, 37: 6285-6303

Zhou, P; Tian, L; Graham, N; Song, S; Zhao, RZ; Siddique, MS; Hu, Y; Cao, XY; Lu, YL*; Elimelech, M*; Yu, WZ*. Spatial patterns and environmental functions of dissolved organic matter in grassland soils of China. ***NATURE COMMUNICATIONS***. 2024, 15, 6356

Zhu, KY; He, HF; Tao, L; Ma, H; Yang, XM; Wang, R; Guo, JX*; Wang, CC*. Protocol for a comprehensive pipeline to study ancient human genomes. ***STAR PROTOCOLS***. 2024, 5, 102985

Zhu, Q*; Lee, Z. Offshore high chlorophyll eddies: Separating upwelling from nearshore migration from ocean color remote sensing. ***PROGRESS IN OCEANOGRAPHY***. 2024, 223, 103232

Zhu, XD*; Chen, JK; Li, LC; Li, MJ; Li, TT; Qin, ZC; Wang, F; Zhao, XS. Asynchronous methane and carbon dioxide fluxes drive temporal variability of mangrove blue carbon sequestration. ***GEOPHYSICAL RESEARCH LETTERS***. 2024, 51, e2023GL107235

Zhu, XD*; Ma, MH; Li, LC; Li, MJ. Impacts of intensive smooth cordgrass removal on net ecosystem exchange in a saltmarsh-mangrove ecotone of Southeast China. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2024, 934, 173202

Zhu, Y; Fang, TY; Ji, DW; Li, HL; Chen, JF*; Ma, J*. Recent advances and prospects in on-site spectrophotometric nutrient measurement in aquatic ecosystems. ***TRAC-TRENDS IN ANALYTICAL CHEMISTRY***. 2024, 175, 117723

Zhuang, YR; Liu, T; Lin, Q; Bai, Y; Ma, MY; Wang, MX; Liu, QY; Egan, S; Wang, GG*. Transcriptome analysis

reveals the rapid defense responses in a disease-resistant brown seaweed against a bacterial pathogen. ***AQUACULTURE***. 2024, 590, 741024

Zou, CZ; Yi, XQ; Li, H; Bizic, M; Berman-Frank, I; Gao, KS*. Correlation of methane production with physiological traits in Trichodesmium IMS 101 grown with methylphosphonate at different temperatures. ***FRONTIERS IN MICROBIOLOGY***. 2024, 15, 1396369

Zou, SJ*; Petit, T; Li, FL; Lozier, MS. Observation-based estimates of water mass transformation and formation in the Labrador Sea. ***JOURNAL OF PHYSICAL OCEANOGRAPHY***. 2024, 54: 1411-1429

Zou, SX; Lin, GY; Chen, AR; Huang, YL; Groeneveld, J; Steinke, S*; Giosan, L. Structure of the eastern Arabian Sea upper water column in the middle Miocene: Implications for the development of the South Asian monsoon. ***PALAEOGEOGRAPHY PALAEOCLIMATOLOGY PALAEOECOLOGY***. 2024, 645, 112217

Zou, Y; Fu, JQ; Liang, Y; Luo, X; Shen, MH; Huang, MQ; Chen, YX; You, WW*; Ke, CH*. Chromosome-level genome assembly of the ivory shell *Babylonia areolata*. ***SCIENTIFIC DATA***. 2024, 11, 1201

MEL's Home

2005-2007
Lingfeng Bulding

2007-2013
ZENG Chengkui Bulding

2013-
ZHOU Longquan Bulding

Editors-in-chief: SHI Dalin, ZHANG Yao, LIU Zhiyu, CAO Zhimian, MA Jian, LIN Mengmei
Editors: WANG Guanfei, LIU Yanran, GU Kejing, ZHU Jia, SHI Wei, SUN Xiaodi, YANG Tinglin, ZHANG Lili
Design: CHEN Lei
Cover Design: CHEN Lei, WANG Guanfei

State Key Laboratory of Marine Environmental Science (Xiamen University)
Zhou Long Quan Building, Xiang'an Campus, Xiang'an South Road, Xiamen 361102, China
Tel: 86-592-2187538 Fax: 86-592-2184101 Email: mel@xmu.edu.cn
Website: http://mel.xmu.edu.cn