
近海海洋环境科学国家重点实验室（厦门大学）
MEL
State Key Laboratory of Marine Environmental Science
(Xiamen University)
2023
ANNUAL REPORT

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

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© Coral reefs in the Great Barrier Reef by HiSea-II

Chasing the Light, Pursuing Transformation

2023 saw a global shift. Instead of focusing on the "individual," after nearly 3 years of isolation, the world became focused on "community". On our shared history and experiences. Blue Governance became the byword for not just ocean scientists but all those who care about the planet and life on it. Connection, sharing, and collaboration took on new meanings and a sense of urgency as new challenges and threats made themselves known.

At MEL, we met these challenges and threats with breakthroughs and an even stronger sense of determination. Conferences such as the 6th Xiamen Symposium on Marine Environmental Sciences, the 3rd Offshore Carbon Capture, Utilization and Storage Forum, and the International Digital Twins of the Ocean Summit (held in Asia for the first time) brought together a diversity of expertise to discuss ways to respond to new dangers, both seen and unseen.

Within MEL an influx of new blood brought new ideas and established MELers were recognized for their continued dedication to ocean science and ocean health. 47 government sponsored research projects were awarded to us while HONG Haizheng, SHEN Yuan, LI Jianghui, and ZHANG Zengkai were each awarded under national talent funding schemes. And JIAO Nianzhi, DAI Minhan, and WANG Kejian received individual recognition (Ocean Figure 2022, Ministry of Natural Resources of China; XMU Nanqiang Distinguished Contribution Award; 1st "Marine Biotechnology Award in Academia or Industry, Asia Pacific Marine Biotechnology Association, respectively) for their contributions to ocean science and society.

Outside of the lab, MELers ventured from China's offshore waters to the Indian, Atlantic, and Antarctic Ocean conducting research in our continued effort to monitor and respond to the changing ocean. The International Nutrient Inter-comparison Voyage 2023 gave us an opportunity to test our seawater nutrient measurement capabilities against those utilized by top marine institutions and we are pleased to report that our facilities are comparable to the best in the world for nutrient testing and analysis. A bit less further afield, MELers published 408 articles in a diverse array of research journals and 11 members were listed among the "Highly Cited Chinese Researchers" by Elsevier while 15 members listed among Stanford University's 2023 World's Top 2% Scientists.

After almost 3 years of virtual meetings and discussions, students and faculty alike welcomed the chance to collaborate in person once more. MEL PhD Fellowships, the Annual University Consortium on Aquatic Sciences (UCAS) Symposium, and the Summer Undergraduate

A Message from Director

Research Fellowship once again allowed ocean science students to mix with each other as well as established scientists to develop relationships that will last their entire careers. And the newly established HONG Huasheng Marine and Environmental Science and Education Award recognizes those who are not only excellent in the lab but also venture out of it, into the neighborhood, to engage, educate, and learn.

The community at large also relished their newly acquired release from isolation by supporting our science programs in droves. 10,000 guests visited us during our Annual Ocean Sciences Day, a marked increase from the past. At the same time, focused science engagement through the Junior Blue Pioneers and Ocean Lectures series also helped to build and strengthen connections between scientists, the public, and the ocean.

In some ways, change is inevitable. However, not all change is good. And in an era of increasingly negative changes, our survival depends on our recognition of our shared history. On our sense of community. Slowing down, or better yet, stopping climate change is difficult. But it remains possible yet. As long as we continue to work together toward this common goal, there is still hope.

Finally, I'd like to extend my greetings and heartfelt respect to those colleagues, friends, and families who have stuck with us through everything. All of you are the reason why MEL is as successful as it is. I hope this sense of community stays with us and guides as we move through 2024 and beyond. And that we continue to work together, moving toward a bright and sustainable future.

Prof. SHI Dalin
Director of MEL
December 31st, 2023

2023 Headlines

Care

For Our BETTER Development

◎ In **February**, ZHOU Zuyi, Chair of Fujian Provincial Council visited MEL.

◎ In **March**, DOU Xiankang, Director of the National Natural Science Foundation of China (NSFC) visited MEL.

◎ In **March**, WU Yan, Deputy Director of the Ministry of Education (MOE) of China visited MEL.

◎ In **July**, WENG Tiehui, MOE Deputy Director visited MEL.

◎ In **October**, LAN Yujie, NSFC Deputy Director visited MEL.

Recognition

Towards a HIGHER Peak

◎ In **March**, CHEN Xi, DAI Minhan, DANG Hongyue, GAO Kunshan, KAO Shuh-ji, HONG Huasheng, JI Rongrong, JIAO Nianzhi, LIN Senjie, LU Yonglong, and WANG Chuanchao were cited in the "Highly Cited Chinese Researchers" list compiled by Elsevier.

◎ In **April**, DAI Minhan was given the XMU Nanqiang Distinguished Contribution Award.

◎ In **June**, JIAO Nianzhi was elected an "Ocean Figure 2023" by the Ministry of Natural Resources of China.

◎ In **October**, WANG Kejian's research on the "Identification and product application of novel antimicrobial peptides" was given the 1st "Marine Biotechnology Award - Academia or Industry" by the Asia Pacific Marine Biotechnology Association.

◎ In **October**, CHAI Fei, CHEN Xi, DAI Minhan, DANG Hongyue, DUAN Anmin, GAO Guang, GAO Kunshan, JI Rongrong, JIAO Nianzhi, LI Zhongping, LU Yonglong, MA Jian, WANG Dazhi, XU Peng, and ZHANG Yao were listed among the World's Top 2% Scientists 2023 by Stanford University.

Research and Publications

Towards the FRONTIER

◎ In **January**, KAO Shuh-ji's research entitled "Epipelagic nitrous oxide production offsets carbon sequestration by the biological pump" was published in *Nature Geoscience*. In **December**, another article of him, "Particle-associated denitrification is the primary source of N_2O in oxic coastal waters" was published in *Nature Communications*.

◎ In **May**, *Methodology for Mangrove Restoration Carbon Project in Fujian Province* edited by CHEN Luzhen's team was referenced in the forest carbon sink system of Fujian Province. In **May**, WANG Kejian signed an agreement with Xiamen Jintai Biotechnology Co., Ltd., allowing use of his research to fuel their future products.

◎ In **June**, CAO Ling's article "Vulnerability of blue foods to human-induced environmental change" was published in *Nature Sustainability*. ZHANG Zengkai's article "Value chain carbon footprints of Chinese listed companies" was published in *Nature Communications*. *ELite in Chemical Oceanography* was published. DAI Minhan served as the Editor-in-Chief.

◎ In **August**, ZHANG Yao's article "Reduced nitrite accumulation at the primary nitrite maximum in the cyclonic eddies in the western North Pacific subtropical gyre" was published in *Science Advances*.

◎ In **December**, WANG Weilei's research on "Biological carbon pump estimate based on multidecadal hydrographic data" was published in *Nature*.

Insights

Towards a BLUE Future

◎ In **June**, DAI Minhan attended the Summer Davos and spoke on ocean issues.

◎ In **September**, the Surface Ocean-Lower Atmosphere Study (SOLAS), organized by the SOLAS International Project Office (IPO)-China, held a Scoping Workshop in Xiamen to discuss its science plan for the next decade and organization.

◎ In **November**, the Global Ocean Negative Carbon Emissions Program (ONCE), one of the UN Ocean Decade programs, held the 2nd ONCE Open Science Conference, releasing the ONCE-BCMS roadmap and the ONCE open course textbook.

Communication

Toward a HARMONIOUS World

◎ In **January**, the serial international conference, the Xiamen Symposium on Marine Environmental Sciences, celebrated its sixth iteration in Xiamen.

◎ In **June**, a MEL team participated in the International Nutrient Inter-comparison Voyage 2023, organized by the Commonwealth Scientific and Industrial Research Organization.

◎ In **July**, MEL hosted the Marine Environmental Science Interdisciplinary Symposium & Award Ceremony and HONG Huasheng Marine and Environmental Science and Education Award.

◎ In **July**, MEL co-hosted the Third Ocean Color Summer School of China.

◎ In **November**, MEL held the 3rd Offshore Carbon Capture, Utilization and Storage Forum.

◎ In **November**, the International Digital Twins of the Ocean 2023 were organized by MEL, who also co-sponsored the Sub-forum on Marine Technology and Engineering during the 2023 Maritime Silk Road International Conference on the Cooperation and Integration of Industry, Education, Research and Application.

◎ In **November**, the South China Sea Annual Meeting 2023 was held in Malaysia.

◎ In **November**, the China-ASEAN Seaweed Cooperation Forum took place in Xiamen, with MEL as one of its organizers.

Facilities

Towards a SMART Ocean

◎ The HiSea-1 and HiSea-2 satellites brought attention to the impact of natural calamities such as Super Typhoon Doksuri, demonstrating their application capabilities in emergency response and disaster prevention and mitigation.

◎ The National Observation and Research Station for the Taiwan Strait Marine Ecosystem executed quarterly cruise observations in the Taiwan Strait, Dongshan Bay, and Zhangjiang Estuary. A special cruise observing the upwelling in Dongshan Bay was also carried out. About 30 GB of observational data were collected. The Coral Ecosystem Cabled Observatory (CECO) recorded over 2500 hours of coral reef video.

◎ The R/V Tan Kah Kee conducted 9 research cruises, totaling 209 days at sea and sailing more than 25,423 nautical miles.

Figures at a Glance

PROJECTS

47
Newly Funded Projects

2
NSFC Major Project / Key Program

5
NSFC Joint Fund / Key Supported Projects

6
National Key Research and Development Programs

1
NSFC Fund for Excellent Young Scientists

15
NSFC General Programs / Young Scientist Fund Projects

6
Other National Programs

17
Other Programs

NEW MEMBERS

3
Faculty

2
Research scientists

10
Outstanding postdoctoral fellows

20
Research assistants

EDUCATION

411
Enrolled postgraduates

356
Enrolled doctoral students

88
Master's graduates

53
PhD graduates

© The colorful Ocean near the Eastern UK by HiSea-2

EXCHANGES AND COLLABORATIONS

15
Conferences, meetings, trainings hosted

187
Talks at national / international conferences

22
Newly appointed in journals

21
Newly appointed in organizations or associations

32
Visiting scholars

35.3%
International joint publications

CRUISES

80
Cruises

563
People

1806
Days at sea

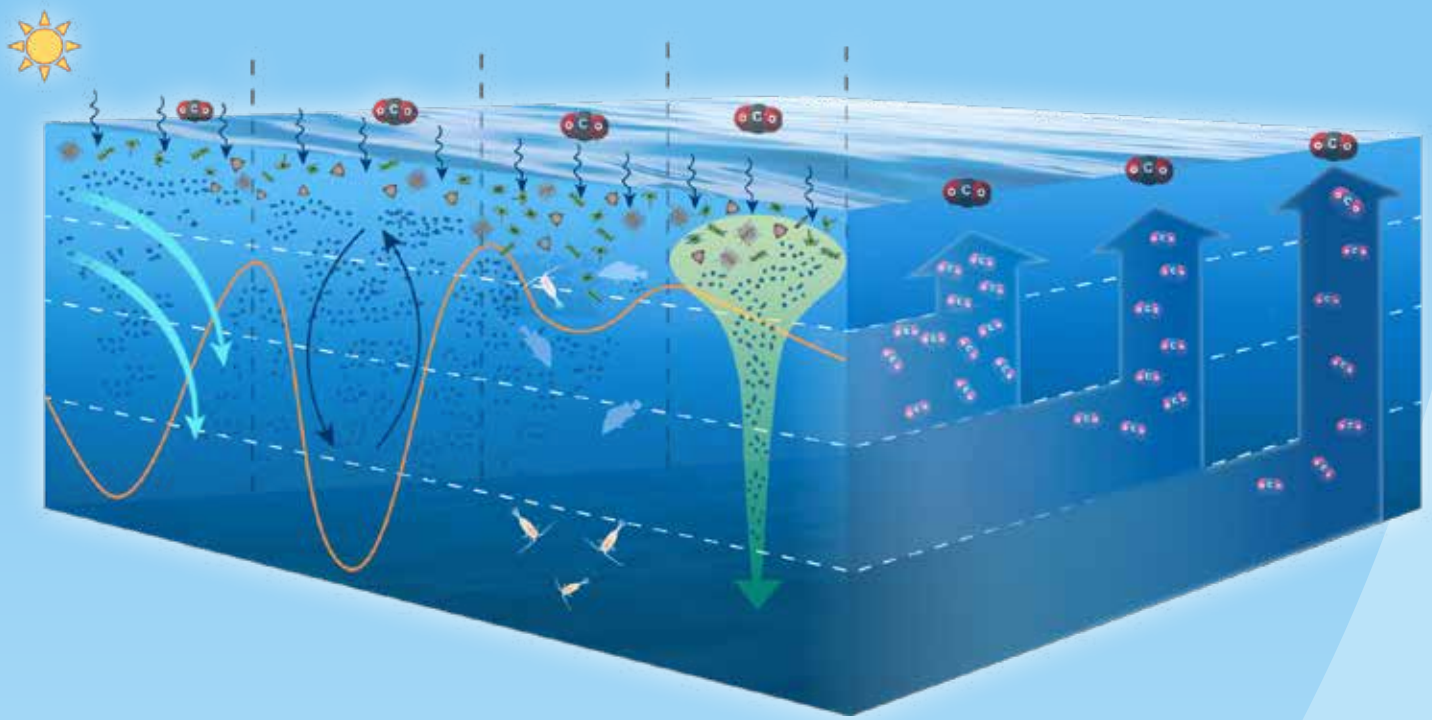
Ranging from the West Pacific, East Indian Ocean to the East China Sea, South China Sea, and the coastal area near Fujian.

408
Papers published

39
Patents

10
Software copyrights

Research Highlights



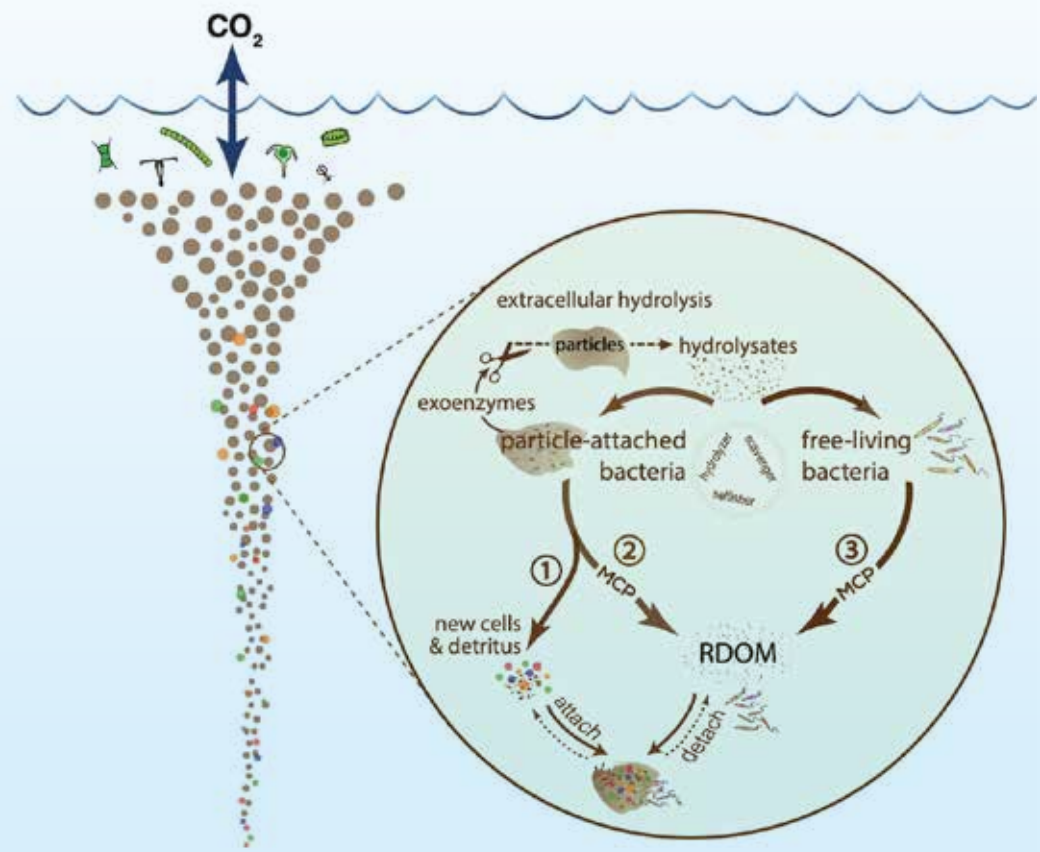
Important Contribution of Bacterial Carbon and Nitrogen to Sinking Particle Export

Bacteria attached to particles release exoenzymes that cleave large particles into small organic molecules. These hydrolyzed organics support the growth of attached bacteria, which synthesize new bacterial cell components that are incorporated into the sinking particles (pathway 1). As part of their metabolisms, the attached bacteria release numerous structurally complex exometabolites, including refractory dissolved organic molecules (RDOM) (e.g., carboxyl-rich alicyclic molecules) (pathway 2). The excess hydrolytes taken up by free-living bacteria can be transformed into RDOM via the classic microbial carbon pump (MCP) (pathway 3).

Photosynthesis in the surface ocean converts atmospheric CO_2 into organic particles, with the fraction sinking to depth representing a major part of the ocean's biological pump. Although sinking particles are known to be altered by attached-bacteria during transit, most prior organic geochemical data indicated only minor replacement of plankton-derived particles by bacterial material. This study exploits bacteria-specific biomarkers (d-amino acids) in a multi-year sediment trap in the Pacific Ocean (1,200 m) and suggests a different view. Major d-amino acids were consistently measured at abundance demonstrating widespread accumulation of bacterial material in sinking particles. Bacterial detritus was estimated to account for up to 19% of particulate organic carbon and up to 36% of particulate nitrogen, much higher than cell count-based values. The bacterial relative contribution increased with decreasing export production. The results indicate that bacterial material constitutes an underappreciated component of the biological pump, a role expected to rise as the ocean warms.

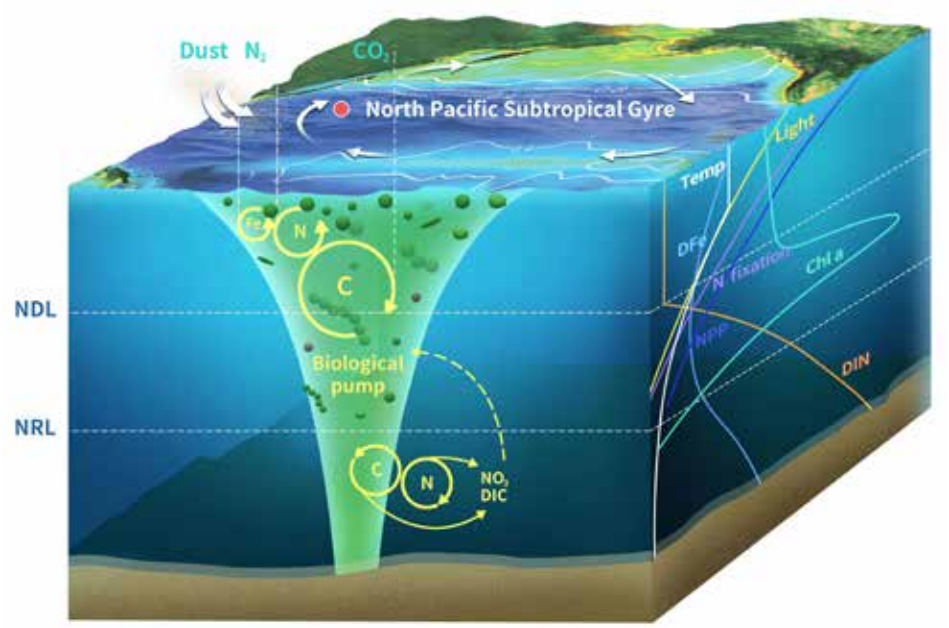
Reference:

Shen, Y*; Guilderson, TP; Chavez, FP; McCarthy, MD. Important Contribution of Bacterial Carbon and Nitrogen to Sinking Particle Export. *Geophysical Research Letters*. 2023. 50(11), e2022GL102485



Conceptual diagram illustrating three potential carbon sequestration pathways mediated by particle-associated bacteria in the ocean.

Upper Ocean Biogeochemistry of the Oligotrophic North Pacific Subtropical Gyre: From Nutrient Sources to Carbon Export



llustration of vertical nutrient and organic carbon profiles within the oligotrophic North Pacific Subtropical Ocean, elucidating the interplay of various nutrient sources including diazotroph-derived nitrogen that govern the intricate process of carbon sequestration in this expansive oceanic domain. Credit: ZHOU Hong .

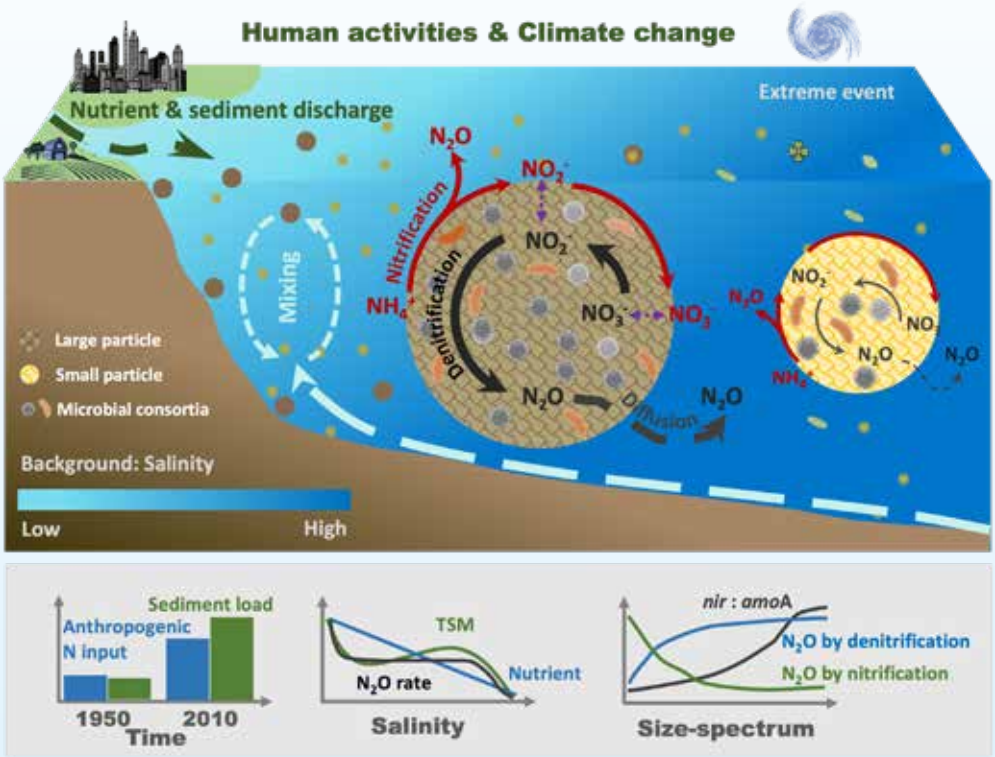
Subtropical gyres cover 26%–29% of the world's surface ocean and are conventionally regarded as ocean deserts due to their permanent stratification, depleted surface nutrients, and low biological productivity. Despite tremendous advances over the past three decades, particularly through the Hawaii Ocean Time-series and the Bermuda Atlantic Time-series Study, which have revolutionized our understanding of the biogeochemistry in oligotrophic marine ecosystems, the gyres remain understudied. We review current understanding of upper ocean biogeochemistry in the North Pacific Subtropical Gyre, considering other subtropical gyres for comparison. We focus our synthesis on spatial variability, which shows larger than expected dynamic ranges of properties such as nutrient concentrations, rates of N_2 fixation, and biological production. This review provides new insights into how nutrient sources drive community structure and export in upper subtropical gyres. We examine the euphotic zone (EZ) in subtropical gyres as a two-layered vertically structured system: a nutrient-depleted layer above the top of the nutricline in the well-lit upper ocean and a nutrient-replete layer below in the dimly lit waters. These layers vary in nutrient supply and stoichiometries and physical forcing, promoting differences in community structure and food webs, with direct impacts on the magnitude and composition of export production. We evaluate long-term variations in key biogeochemical parameters in both of these EZ layers. Finally, we identify major knowledge gaps and research challenges in these vast and unique systems that offer opportunities for future studies.

Reference:

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

Particle-associated Denitrification is the Primary Source of N_2O in Oxic Coastal Waters

The heavily human-perturbed coastal oceans are hotspots of nitrous oxide (N_2O) emission to the atmosphere. The processes underpinning the N_2O flux, however, remain poorly understood, leading to large uncertainties in assessing global N_2O budgets. Using a suite of nitrogen isotope labeling experiments, we show that multiple processes contribute to N_2O production throughout the estuarine-coastal gradient, sustaining intensive N_2O flux to the atmosphere. Unexpectedly, denitrification, rather than ammonia oxidation as previously assumed, constitutes the major source of N_2O in well-oxygenated coastal waters. Size-fractionated manipulation experiments with gene analysis further reveal niche partitioning of ammonia oxidizers and denitrifiers across the particle size spectrum; denitrification dominated on large particles and ammonia oxidizers on small particles. Total N_2O production rate increases with substrate and particle concentrations, suggesting a crucial interplay between nutrients and particles in controlling N_2O production. The controlling factors identified here may help understand climate feedback mechanisms between human activity and coastal oceans.



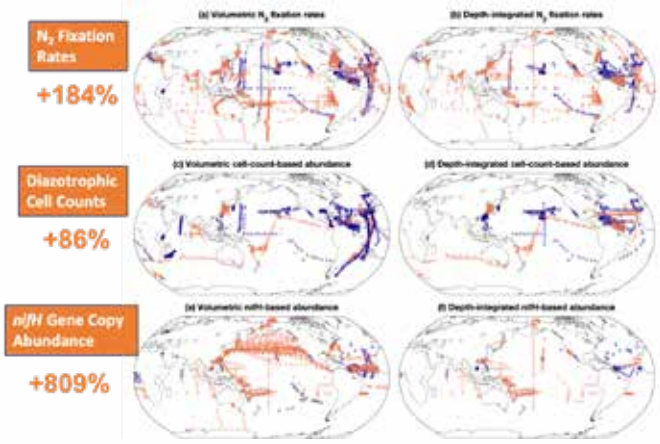
Conceptual summary of particle-associated N_2O production pathways in the eutrophic and turbid coastal water. The partial denitrification pathway contributes to a substantial source of N_2O in the well-oxygenated water, with the relative abundance of denitrifiers and contribution of particle-associated denitrification to N_2O increasing with particle size.

Reference:

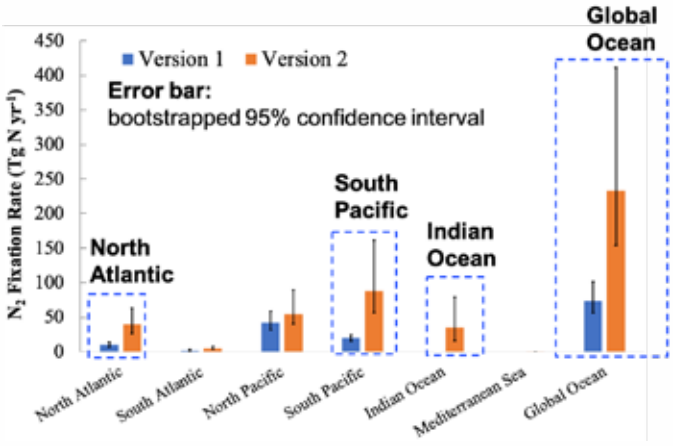
Wan, XS*; Sheng, HX; Liu, L; Shen, H; Tang, WY; Zou, WB; Xu, MN; Zheng, ZZ; Tan, E; Chen, MM; Zhang, Y; Ward, BB & Kao, SJ*. Particle-associated denitrification is the primary source of N_2O in oxic coastal waters. *Nature Communications*. 2023. 14, 8280

Global Oceanic Diazotroph Database Version 2 and Elevated Estimate of Globaloceanic N_2 Fixation

Marine diazotrophs convert dinitrogen (N_2) gas into bioavailable nitrogen (N), supporting life in the global ocean. In 2012, the first version of the global oceanic diazotroph database (version 1) was published. Here, we present an updated version of the database (version 2), significantly increasing the number of in situ diazotrophic measurements from 13 565 to 55 286. Data points for N_2 fixation rates, diazotrophic cell abundance, and nifH gene copy abundance have increased by 184%, 86%, and 809%, respectively. Version 2 includes two new data sheets for the nifH gene copy abundance of non-cyanobacterial diazotrophs and cell-specific N_2 fixation rates. The measurements of N_2 fixation rates approximately follow a log-normal distribution in both version 1 and version 2. However, version 2 considerably extends both the left and right tails of the distribution. Consequently, when estimating global oceanic N_2 fixation rates using the geometric means of different ocean basins, version 1 and version 2 yield similar rates (43–57 versus 45–63 Tg N yr^{-1}; ranges based on one geometric standard error). In contrast, when using arithmetic means, version 2 suggests a significantly higher rate of 223 ± 30 Tg N yr^{-1} (mean ± standard error; same hereafter) compared to version 1 (74 ± 7 Tg N yr^{-1}). Specifically, substantial rate increases are estimated for the South Pacific Ocean (88 ± 23 versus 20 ± 2 Tg N yr^{-1}), primarily driven by measurements in the southwestern subtropics, and for the North Atlantic Ocean (40 ± 9 versus 10 ± 2 Tg N yr^{-1}). Moreover, version 2 estimates the N2 fixation rate in the Indian Ocean to be 35 ± 14 Tg N yr^{-1}, which could not be estimated using version 1 due to limited data availability. Furthermore, a comparison of N_2 fixation rates obtained through different measurement methods at the same months, locations, and depths reveals that the conventional $^{15}N_2$ bubble method yields lower rates in 69 % cases compared to the new $^{15}N_2$ dissolution method. This updated version of the database can facilitate future studies in marine ecology and biogeochemistry.



A. Data distribution of the global oceanic diazotrophic database.



B. Estimates of N_2 fixation rates in ocean basins and in the global ocean. Blue and orange marks: based on the old and the new versions of the database, respectively.

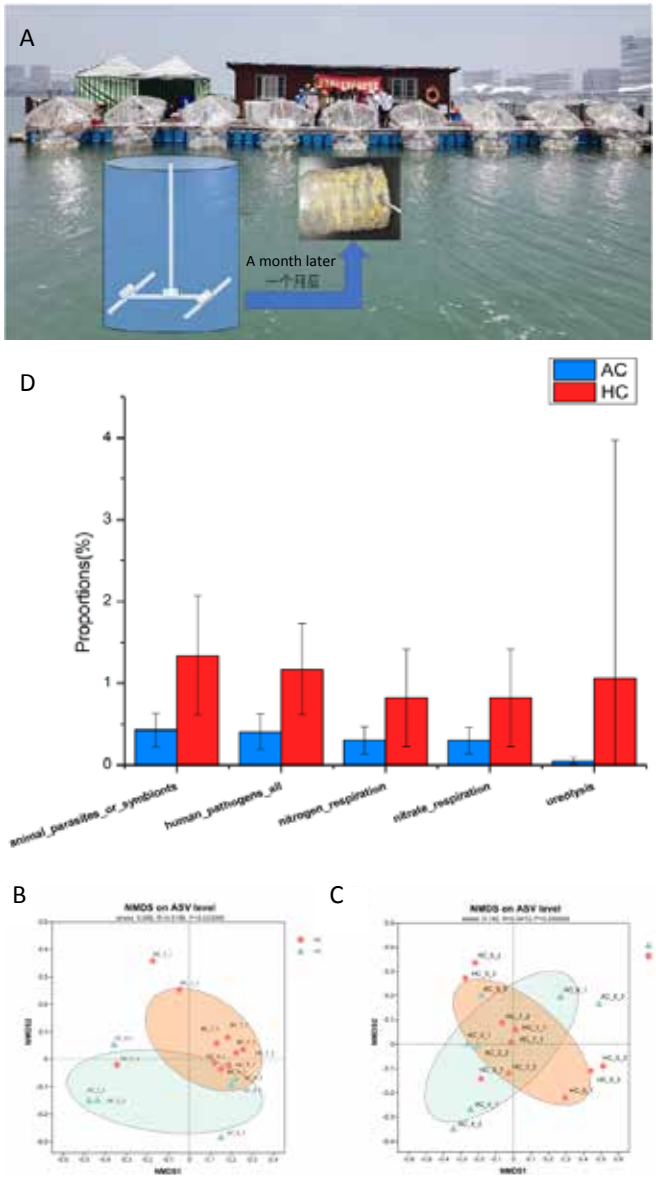
Reference:

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

Ocean Acidification has a Strong Effect on Communities Living on Plastic in Mesocosms

Plastic waste in the ocean is an urgent environmental concern and has given rise to a novel habitat, known as the "plastisphere." Under ocean acidification (OA), changes in plastisphere community composition may alter plastic degradation, deposition, and passage through food webs, but these have not been studied yet. This is the first study about the effects of simulated high CO_2 on the plastisphere using a mesocosm. We discovered that after 1 month the beta diversity of prokaryotic communities living on single-use plastic drinking bottles was significantly different under different carbon dioxide concentrations, with more pathogens at high CO_2. Based on function prediction analysis, the relative abundance of bacterial taxa involved in nitrogen and nitrate respiration and ureolysis was significantly higher under simulated high CO_2. We conclude that OA has significant effects on the plastisphere and its predicted functions.

We conducted a mesocosm experiment to examine how OA affects communities of prokaryotes and eukaryotes growing on single-use drinking bottles in subtropical eutrophic waters of the East China Sea. Based on 16S rDNA gene sequencing, simulated high CO_2 significantly altered the prokaryotic community, with the relative abundance of the phylum Planctomycetota increasing by 49%. Under high CO_2, prokaryotes in the plastisphere had enhanced nitrogen dissimilation and ureolysis, raising the possibility that OA may modify nutrient cycling in subtropical eutrophic waters. The relative abundance of pathogenic and animal parasite bacteria also increased under simulated high CO_2. Our results show that elevated CO_2 levels significantly affected several animal taxa based on 18S rDNA gene sequencing. For example, Mayorella amoebae were highly resistant, whereas Labyrinthula were sensitive to OA. Thus, OA may alter plastisphere food chains in subtropical eutrophic waters.



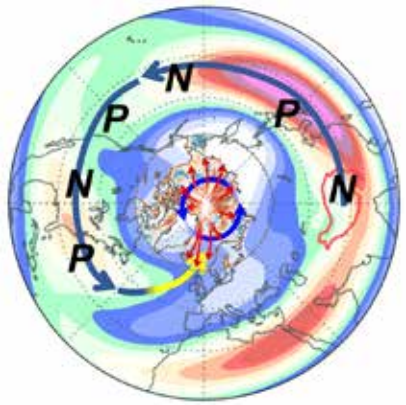
Schematic diagram of the mesocosm platform for the study of the effects of ocean acidification on the communities living on plastic surfaces (A); Non-metric multidimensional scaling (NMDS) analysis of the differences between prokaryotic (B) and eukaryotic (C) communities based on ASV (Amplicon Sequence Variant) under high CO_2 (HC) and ambient CO_2 (AC) conditions, with the degree of difference between prokaryotic HC and AC samples being more significant; The significantly different predicted functions (FAPROTAX) of the prokaryotic community under simulated HC and AC based on the Wilcoxon rank-sum test.

Reference:

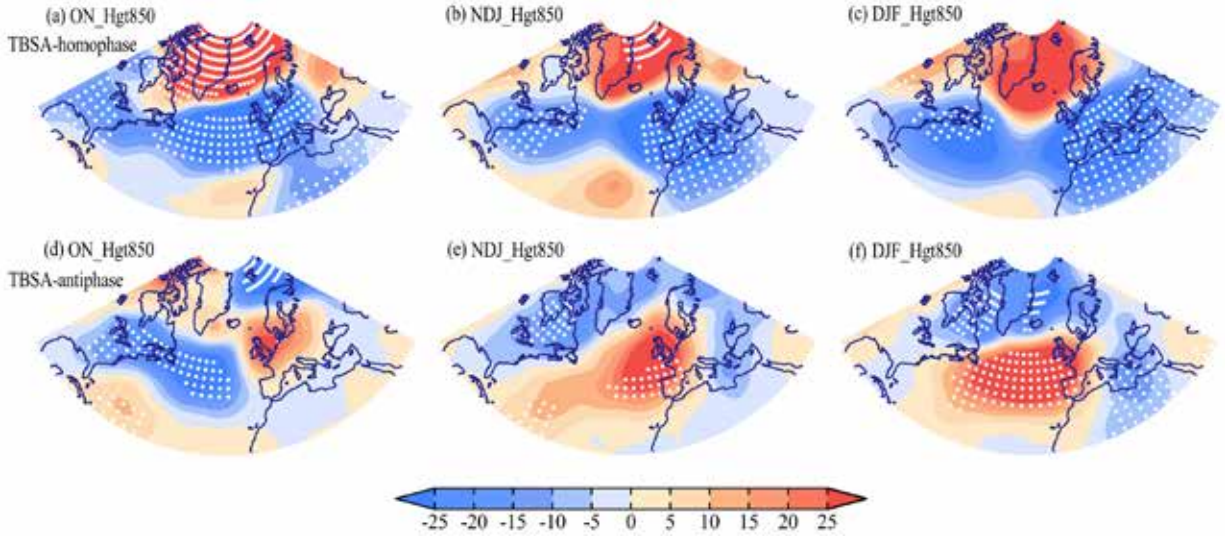
Zhang, X; Zhang, P; Deng, ZC; Huang, RP; Zhang, D; Tian, Y; Wang, N; Li, H; Wang, XY; Jiang, XW; Sun, JZ; Fu, QQ; Yi, XQ; Qu, LM; Zhou, C; Rao, YM; Zeng, XR; Hall-Spencer, JM; Gao, G; Gao, KS; Lin, X*. Ocean acidification has a strong effect on communities living on plastic in mesocosms. *Limnology and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

Snow Cover on the Tibetan Plateau and Lake Baikal Intensifies the North Atlantic Oscillation and Arctic Sea Ice variations

Here, we find a physical connection between the antiphase variation in the preceding autumn Tibetan Plateau (TP) and Lake Baikal snow cover anomalies (TBSA) and the following winter North Atlantic Oscillation (NAO) on interannual time scales during 1979–2021. The antiphase variation in TBSA, accounting for 44% of the total years, has a dipole structure in autumn, which prolonged into the following winter. The persistent antiphase TBSA associated diabatic forcing, disturbances and transient eddies favor a double wave train structure spanning the TP (east of Baikal) and North Atlantic from autumn to winter. Amid the wave train, the circulation anomalies over the North Atlantic extract more energy from the basic flow due to the seasonal increase in the westerly jet, which further evolves into the winter NAO pattern. Our results provide new insights into the formation and projection of winter NAO from the perspective of subtropical and extratropical Eurasia snow. Further study establishes a new indicator for Tibetan Plateau snow variability: the snow cover increment within late autumn. This new indicator improves the standard deviation by 72.6% and diabatic cooling by 89.7% over the entire Tibetan Plateau, which shows a robust link to the subsequent spring Arctic sea-ice concentration. Faster Tibetan Plateau snow cover increment leads to stronger Tibetan Plateau cooling and disturbance along the subtropical westerly jet, thereby inducing a Tibetan Plateau-Arctic wave train and a spring Arctic cyclonic anomaly. This cyclonic system favors the reduction in spring Arctic sea-ice by equatorward sea ice drift, implying a link between spring Arctic sea-ice and the new Tibetan Plateau snow indicator through the wave train and sea-ice dynamic processes.



Schematic of the impact of snow cover extent increment index (SCEII) on Arctic SIC anomalies. The signs "*P*" and "*N*" refer to the positive and negative geopotential heights associated with SCEII, respectively. Color shadings in the middle latitude and Arctic show the subtropical westerly jet and SCEII-associated Arctic SIC anomalies, respectively. Red arrows denote the sea ice drift anomalies tied to SCEII.



Seasonal evolution of North Atlantic circulations. Composite anomalies of geopotential height at 850 hPa in (a, d) ON, (b, e) NDJ, and (c, f) DJF based on the (a–c) homophase and (d–f) antiphase TBSA years. Unit is gpm. The dotted regions indicate the geopotential height anomalies exceeding the 95% statistical confidence level.

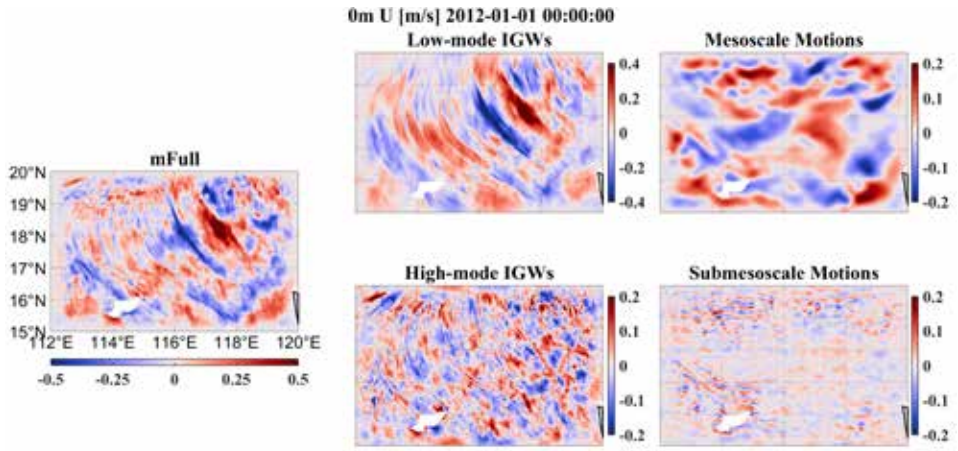
References:

Zhang, C; Duan, AM*; Jia, XJ; Hu, J; Liu, SZ. Snow cover on the Tibetan Plateau and Lake Baikal Intensifies the winter North Atlantic Oscillation. *Geophysical Research Letters*. 2023. GRL66338

Zhang, C; Duan, AM*; Jia, XJ; Wang ZB; Pan ZL. A dynamic link between spring Arctic sea ice and the Tibetan Plateau snow increment indicator. *NPJ Climate and Atmospheric Science*. 2023. 6, 191

Dynamical Decomposition of Multiscale Oceanic Motions

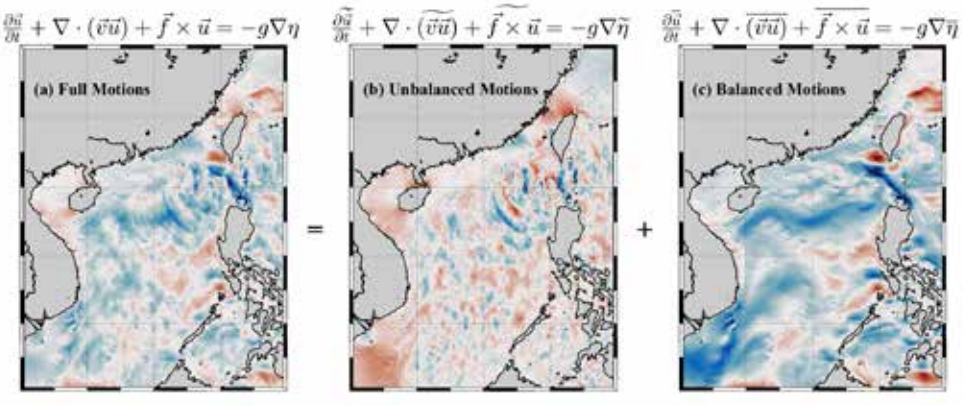
To date, large uncertainties remain in the quantitative understanding of energy transfers in the real ocean characterized by multiscale motions. A general and self-consistent decomposition of multiscale motions is crucial to exploring the dynamics of a specific process, interpreting scale interactions and quantifying energy exchanges but remains a great challenge. Conventional approaches focus on time-scale or space-scale decomposition which yields decomposed components with overlapping contributions. In this study, we have shown how fundamentals of ocean dynamics are used to devise two decomposition approaches that can disentangle various dynamical regimes as unambiguously as possible. First of all, dynamical properties of typical oceanic processes are utilized to decompose physical variables (e.g., sea surface height) into six distinct dynamical regimes (i.e., large-scale circulations, barotropic tides, low-mode internal gravity waves, mesoscale flows, high-mode internal gravity waves and submesoscale flows). Moreover, the classic framework for vortical and wavy modes is extended through introducing the background flow, and a dynamical filter is thus devised to decompose physical variables into vortical (e.g., the large-scale circulations, mesoscale flows and submesoscale flows) and wavy (e.g., barotropic tides and internal gravity waves) motions. Correspondingly, governing equations and kinetic energy equations for vortical and wavy motions are respectively derived. The usefulness of the two decomposition approaches is demonstrated using outputs of a numerical simulation with a global, tide-resolving and submesoscale-admitting configuration (i.e., LLC4320) of MITgcm. It is hoped that the new framework for decomposing multiscale motions will help reveal the mechanisms of scale-interaction and associated energy transfers in the ocean.



A. Application of the six-regime separation approach in the South China Sea.

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

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

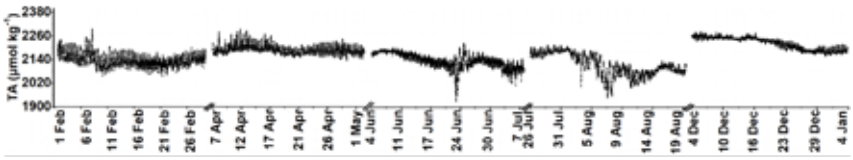


B. Application of the theory for separating the geostrophic motion and internal gravity wave in the South China Sea.

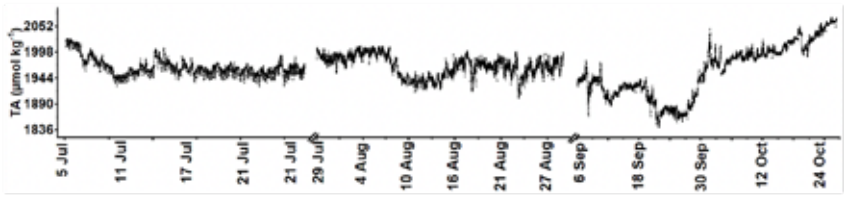
Development and Applications of High-Precision In Situ Total Alkalinity Analyzer Capable of Month-Long Observations in Seawaters

As one of the four parameters of marine carbonate system, total alkalinity (TA) is an essential variable for the study of physical and biogeochemical processes in coastal and oceanic systems. In situ TA analyzers/sensors are the best tools to obtain TA data of high spatiotemporal resolution, which are highly desired. However, the performance of the current in situ TA analyzers/sensors, including precision, accuracy and deployment duration, cannot fully meet most research requirements, and these instruments have not been used in the related researches.

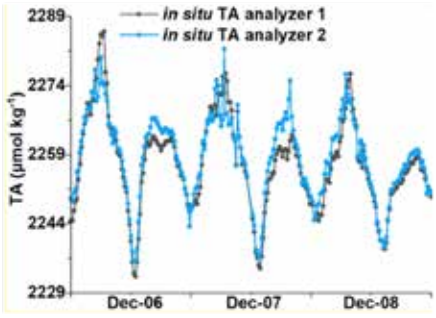
With our earlier work on the automated TA analyzer, an in situ TA analyzer was develop by modifying the structure to make it submersible, applying empirical equations to calibrate temperature effect, and using on-line calibration with standard to reduce drift during long-term deployment. With a precision of 6~0.8 μmol kg^{-1} and a sample throughput time of 7 min, the analyzer is capable of month-long observations in seawaters. Diel and seasonal variations in Tong'an Bay, Xiamen, China and Kiel Fjord estuarine, Germany (cooperate with GEOMAR Helmholtz Centre for Ocean Research Kiel) were observed with the analyzer, and the controlling mechanisms of TA variations in the study areas were revealed. Our studies provide the research community with a new tool to obtain seawater TA data of high temporal resolution and enhance our understanding of the carbon cycle and the impact of anthropogenic CO_2 emissions on ecosystems.



TA time series obtained in Tong'an Bay, Xiamen, China (five months in three seasons)



TA time series obtained in Kiel Fjord estuarine, Germany (four months in two seasons)



In situ total alkalinity analyzer and the TA time series obtained in Tong'an Bay, Xiamen, China and Kiel Fjord estuarine, Germany.

References:

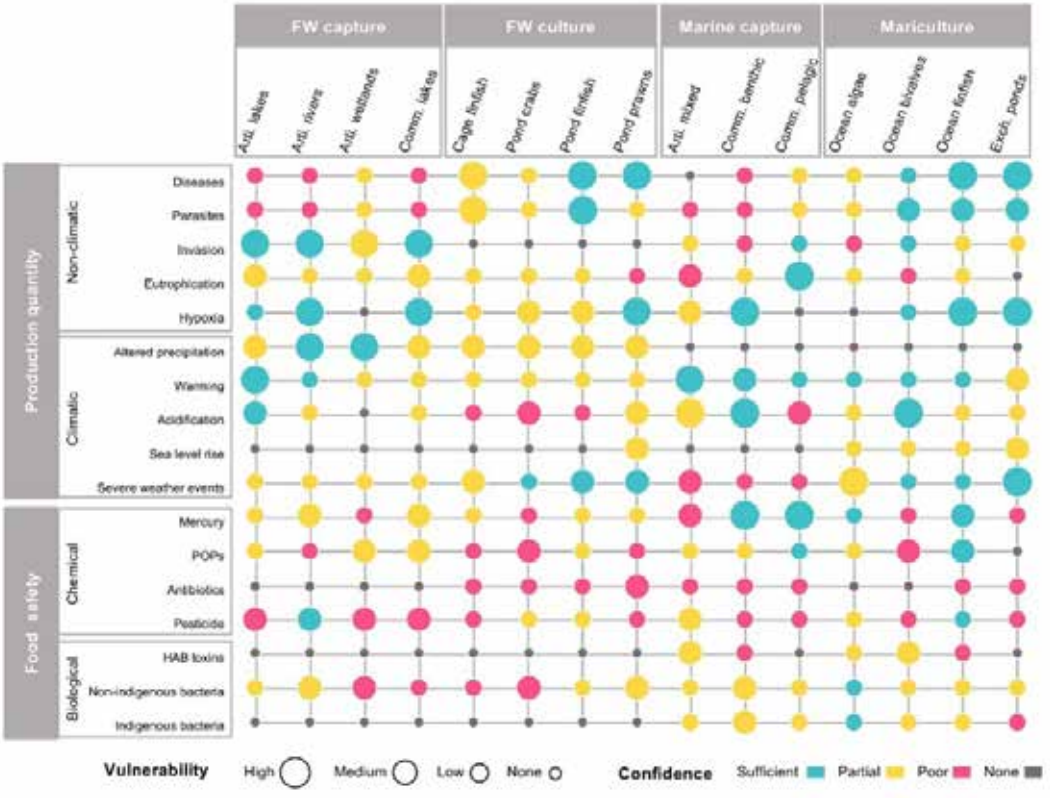
Qiu, L; Li, QL; Yuan, DX; Chen, JS; Xie, JZ; Jiang, KS; Guo, LG; Zhong, GB; Yang, B; Achterberg, EP. High-precision *in Situ* total alkalinity analyzer capable of month-long observations in seawaters. *ACS Sensors*. 2023. 8(7): 2702-2712

Qiu, L; Jiang, KS; Li, QL*; Yuan, DX; Chen, JS; Yang, B; Achterberg, EP*. Variability of total alkalinity in coastal surface waters determined using an in-situ analyzer in conjunction with the application of a neural network-based prediction model. *Science of the Total Environment*. 2024. 908:168271

Qiu, L; Esposito, M; Martínez-Cabanas, M; Achterberg, EP.*; Li, QL*. Autonomous high-frequency time-series observations of total alkalinity in dynamic estuarine water. *Marine Chemistry*. 2023, 257(20): 104332

Vulnerability of Blue Foods to Human-induced Environmental Change

Global aquatic or “blue” foods, essential to over 3.2 billion people, face challenges of maintaining supply in a changing environment while adhering to safety and sustainability standards. Despite the growing concerns over their environmental impacts, limited attention has been paid to how blue food production is influenced by anthropogenic environmental changes. Here we assess the vulnerability of global blue food systems to predominant environmental disturbances and predict the spatial impacts. Over 90% of global blue food production faces substantial risks from environmental change, with the major producers in Asia and the United States facing the greatest threats. Capture fisheries generally demonstrate higher vulnerability than aquaculture in marine environments, while the opposite is true in freshwater environments. While threats to production quantity are widespread across marine and inland systems, food safety risks are concentrated within a few countries. Identifying and supporting mitigation and adaptation measures in response to environmental stressors is particularly important in developing countries in Asia, Latin America and Africa where risks are high and national response capacities are low. These findings lay groundwork for future work to map environmental threats and opportunities, aiding strategic planning and policy development for resilient and sustainable blue food production under changing conditions.

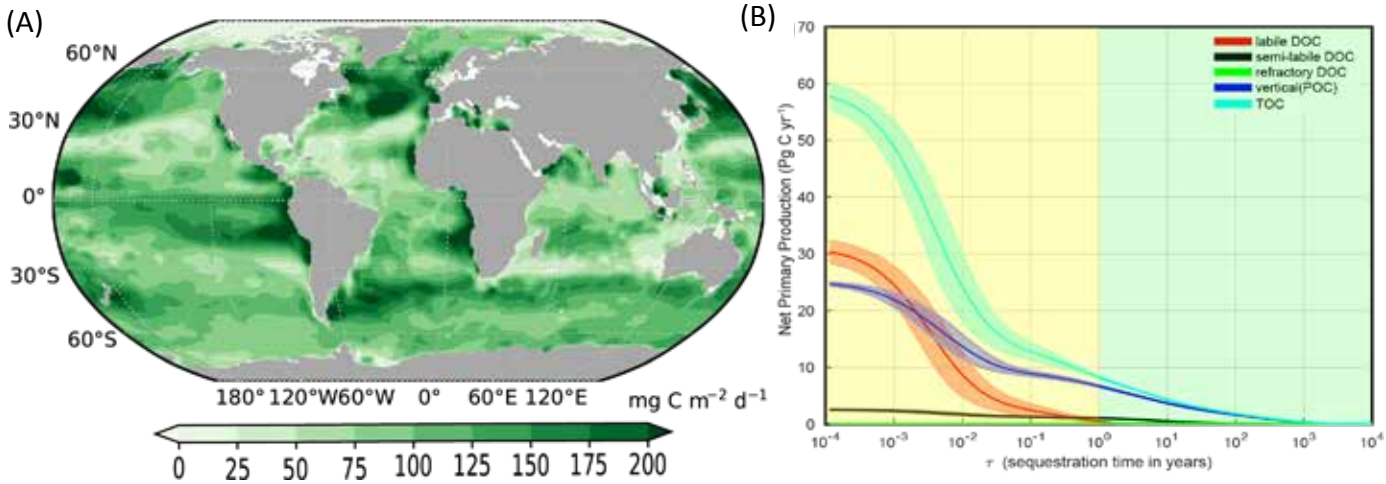


Vulnerability scores of 15 blue food archetypes to anthropogenic stressors affecting production quantity and food safety. (FW, freshwater; Arti., artisanal; Comm., commercial; Exch., exchange.)

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

Biological Carbon Pump Estimate Based on Multi-decadal Hydrographic Data

The transfer of photosynthetically produced organic carbon from surface to mesopelagic waters draws carbon dioxide from the atmosphere1. However, current observation-based estimates disagree on the strength of this biological carbon pump (BCP)2. Earth system models (ESMs) also exhibit a large spread of BCP estimates, indicating limited representations of the known carbon export pathways3. Here we use several decades of hydrographic observations to produce a top-down estimate of the strength of the BCP with an inverse biogeochemical model that implicitly accounts for all known export pathways. Our estimate of total organic carbon (TOC) export at 73.4 m (model euphotic zone depth) is 15.00 ± 1.12 Pg C year^{-1}, with only two-thirds reaching 100 m depth owing to rapid remineralization of organic matter in the upper water column. Partitioned by sequestration time below the euphotic zone, τ, the globally integrated organic carbon production rate with τ > 3 months is 11.09 ± 1.02 Pg C year^{-1}, dropping to 8.25 ± 0.30 Pg C year^{-1} for τ > 1 year, with 81% contributed by the non-advective-diffusive vertical flux owing to sinking particles and vertically migrating zooplankton. Nevertheless, export of organic carbon by mixing and other fluid transport of dissolved matter and suspended particles remains regionally important for meeting the respiratory carbon demand. Furthermore, the temperature dependence of the sequestration efficiency inferred from our inversion suggests that future global warming may intensify the recycling of organic matter in the upper ocean, potentially weakening the BCP.



A. Distribution of the total organic carbon flux (in milligrams of carbon per cubic metre per day) at the depth (73.4 metres) used in our model.

B. The sequestration time (τ) of produced organic carbon.

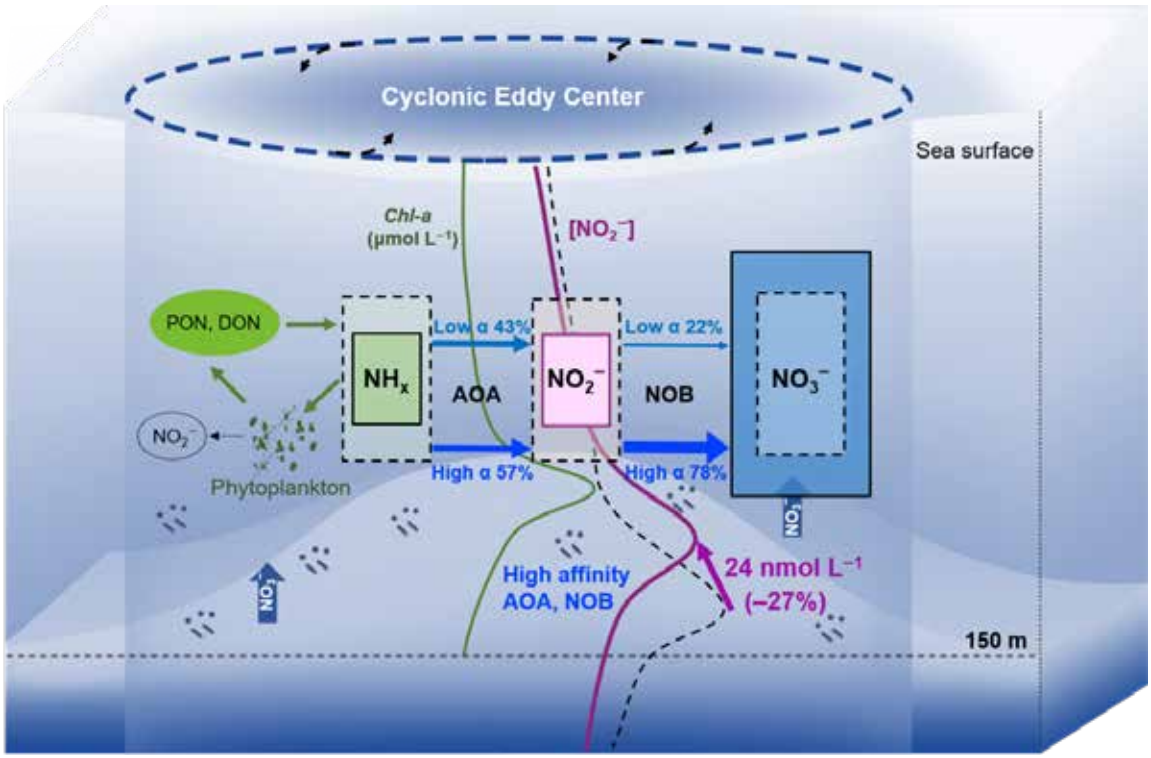
References:

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

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

Reduced Nitrite Accumulation at the Primary Nitrite Maximum in the Cyclonic Eddies in the Western North Pacific Subtropical Gyre

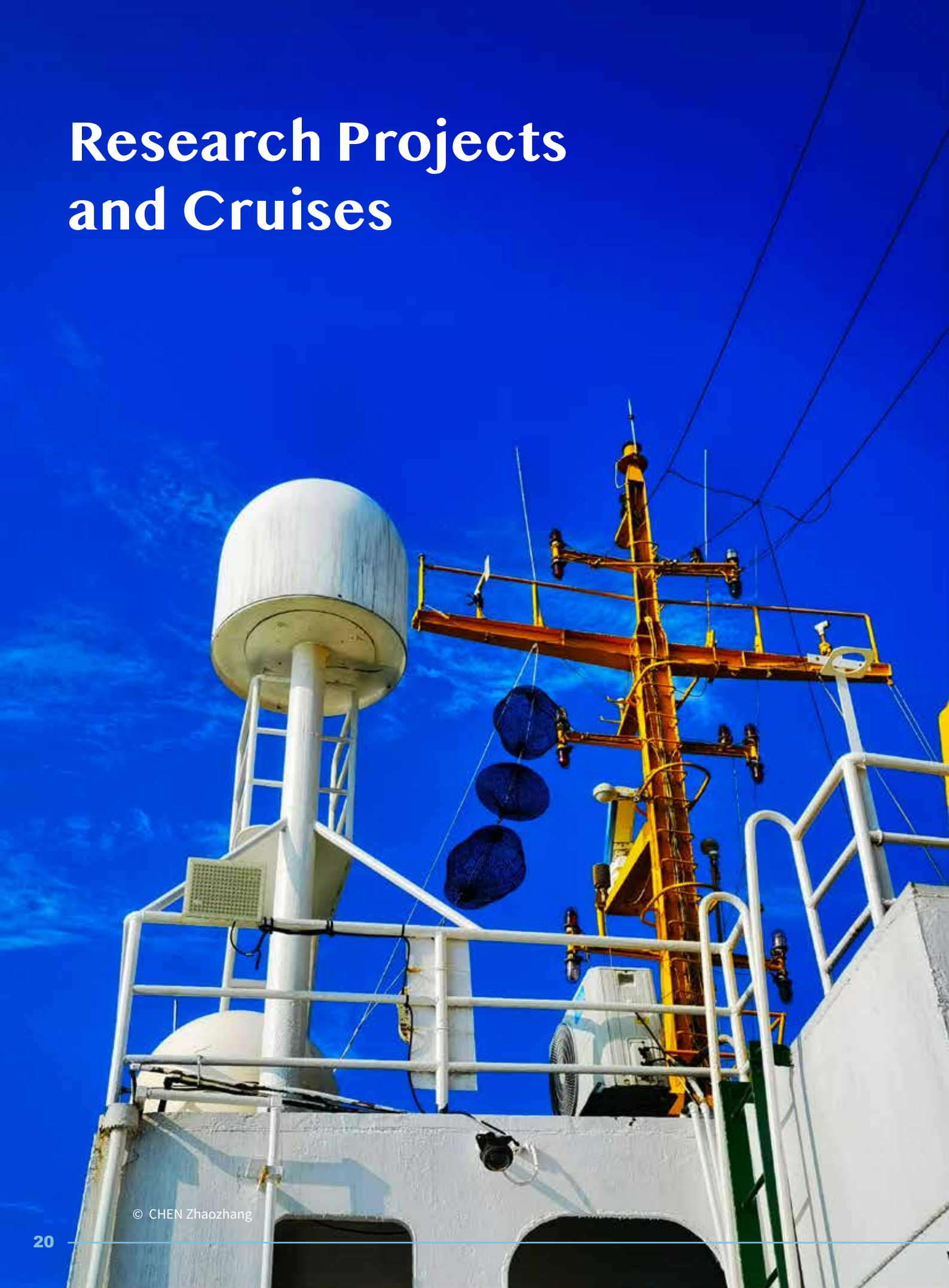
Nitrite, an intermediate product of the oxidation of ammonia to nitrate (nitrification), accumulates in upper oceans, forming the primary nitrite maximum (PNM). Nitrite concentrations in the PNM are relatively low in the western North Pacific subtropical gyre (wNPSG), where eddies are frequent and intense. To explain these low nitrite concentrations, we investigated nitrification in cyclonic eddies in the wNPSG. We detected relatively low half-saturation constants (i.e., high substrate affinities) for ammonia and nitrite oxidation at 150–200 m water depth. Eddy-induced displacement of high-affinity nitrifiers and increased substrate supply enhanced ammonia and nitrite oxidation, depleting ambient substrate concentrations in the euphotic zone. Nitrite oxidation is more strongly enhanced by the cyclonic eddies than ammonia oxidation, reducing concentrations and accelerating the turnover of nitrite in the PNM. These findings demonstrate a spatial decoupling of the two steps of nitrification in response to mesoscale processes and provide insights into physical–ecological controls on the PNM.



Schematic depicting effects of mesoscale cyclonic eddies on the two steps of the nitrification pathway, NO^{2-} distribution, and primary NO_2^- maximum (PNM) in the euphotic zone.

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

Research Projects and Cruises



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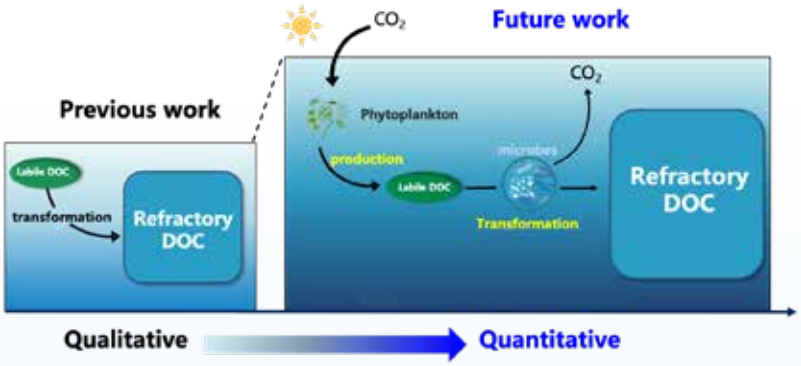
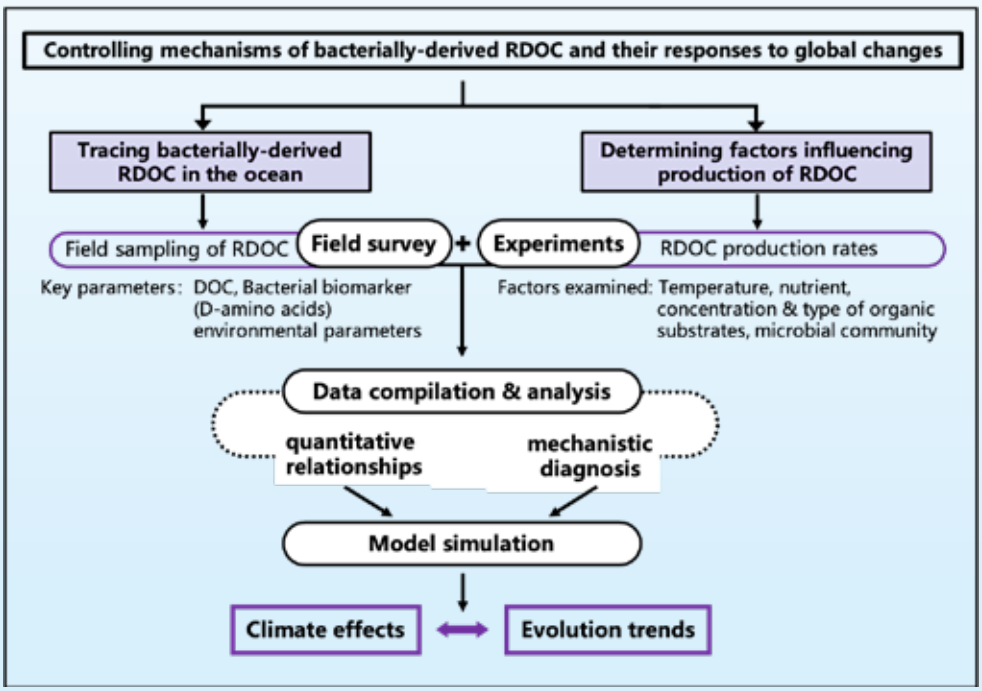
Marine Dissolved Organic Carbon Cycle

• **NSFC Fund for Excellent Young Scientists 2024-2026 | SHEN Yuan**

This project addresses the core scientific question of the "regulatory mechanisms of marine refractory organic carbon production and its response to global changes." Focused on the South China Sea as the experimental area, the research revolves around the distribution and contribution of bacterial-derived refractory dissolved organic carbon (DOC) in the ocean, the production efficiency, and regulatory mechanisms of bacterial-derived refractory DOC, as well as the production patterns of bacterial-derived refractory DOC under the backdrop of global changes. The project aims to achieve trace analysis of bacterial biomarkers (D-amino acids) through technological innovation, integrating chemical composition analysis, environmental-biological parameter investigations, and model simulations to quantitatively assess the spatiotemporal distribution patterns and production efficiency of bacterial-derived organic matter in the ocean, as well as the production evolution trends under different CO_2 emission scenarios. The quantitative aspects of this project are expected to surpass previous qualitative understandings of the international community regarding the sources of marine refractory DOC, filling critical gaps in global research on refractory DOC sources and sinks. This will provide essential scientific foundations for assessing changes in marine carbon reservoirs under the context of global warming.



A. Diagram of Proposed Work

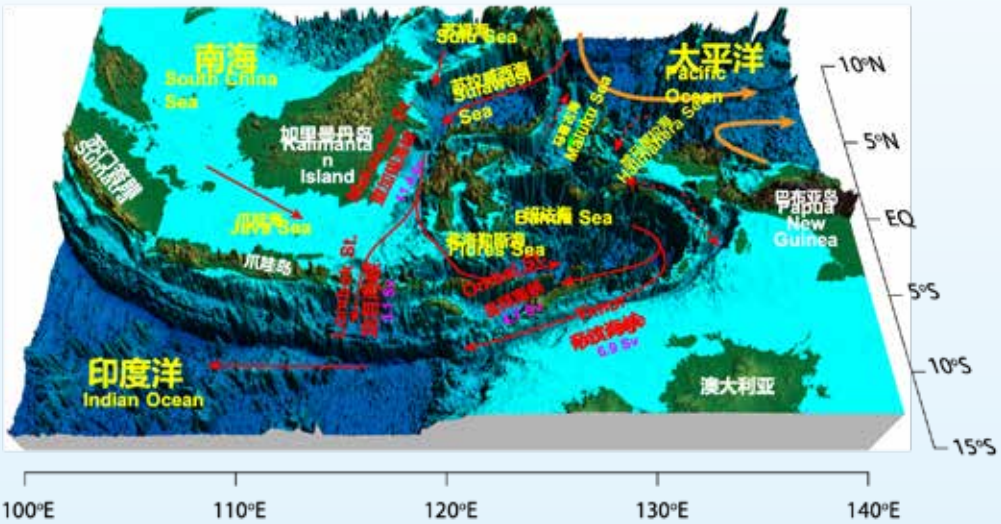


B. Project Technical Roadmap

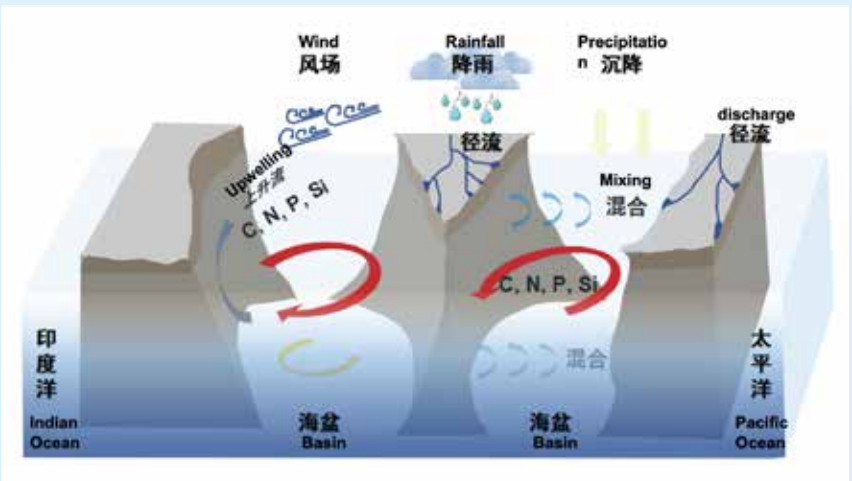
Spatio-temporal Variability of the Indonesian Seas Circulation and Its Effect on the Nutrient Budget

• NSFC Key Program 2024-2028 | XUE Huijie

This project will use a coupled physical-biogeochemical ocean model that spans from the northern Indian Ocean to the western Pacific including all the Indo-Pacific marginal seas, assisted with in situ and satellite observations, and a biogeochemical inverse model investigation, to study the circulation and nutrient budget of the Indonesian Seas. We will 1) depict the regional circulation regime, evaluate the importance of rivers of Maritime Continent on the Indonesian Seas'circulation and water properties; 2) analyze water mass, heat and salt exchanges in major straits and their variability as well as the coherence and discordance among major basins of the Indonesian Seas to determine the relative importance of local and remote forcing; 3) use available in situ and satellite observations and inverse modeling approach to constrain key biogeochemical parameters, which will be implemented in the coupled physical-biogeochemical ocean model to improve the simulation results; and 4) quantify the role of physical transport, riverine input and atmospheric deposition on nutrient transport and cycling, especially their temporal variations related to strong Indian Ocean Dipole (IOD) and El Niño and Southern Oscillation (ENSO) events.



The map of the Indonesain Through-flow (based on Sprintal et al. (2019)). The red (green) arrows are upper (lower) layer circulation, with red dashed line indicating the uncertainty. The numbers in magenta represent mean transport estimated from the INSTANT project.

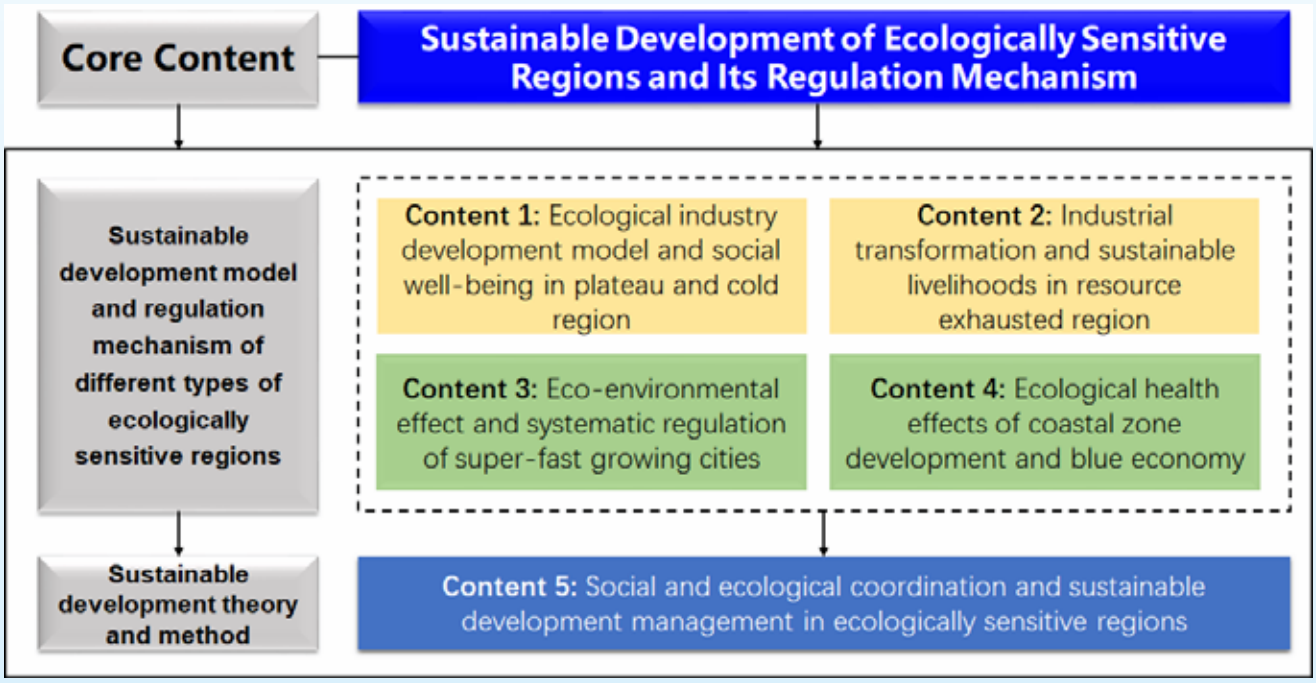


Schematics of the biogeochemical budget of the Indonesian Seas.

Sustainable Development of Ecologically Sensitive Regions and Its Regulation Mechanism

• **NSFC Major Project 2024-2028 | LU Yonglong**

This project is aiming at solving the pressing contradiction between the socio-economic development and environmental carrying capacity in ecologically sensitive regions, and meeting the major needs of national ecological civilization and the international frontier of sustainability science. It is intended to focus on the theme of "Sustainable Development of Ecologically Sensitive Regions and Its Regulation Mechanism", with the purpose of tackling three key scientific questions, including the evolution and driving mechanism of the coupling relationship between socio-economy and environment in ecologically sensitive regions, the impacts of different types of human activities on regional ecology and their interaction, and the supporting function of regional ecology in sustainable economic and social development and the integrated management model. To give full play to the advantages of the interdisciplinary interactions of management science, ecology, geography, and environmental economics, it is aimed to innovate the theoretical system and qualitative and quantitative research methods for sustainable development of regional social-economic-natural complex ecosystem. It is also designed to explore the scientific law of human-nature relations in ecologically sensitive regions, reveal the coupling mechanism between human activities and regional ecology, provide important scientific and technological support for the construction of innovation driven demonstration areas for the delivery of sustainable development goals, and provide a new Chinese model for sustainable development of ecologically sensitive regions in the world.

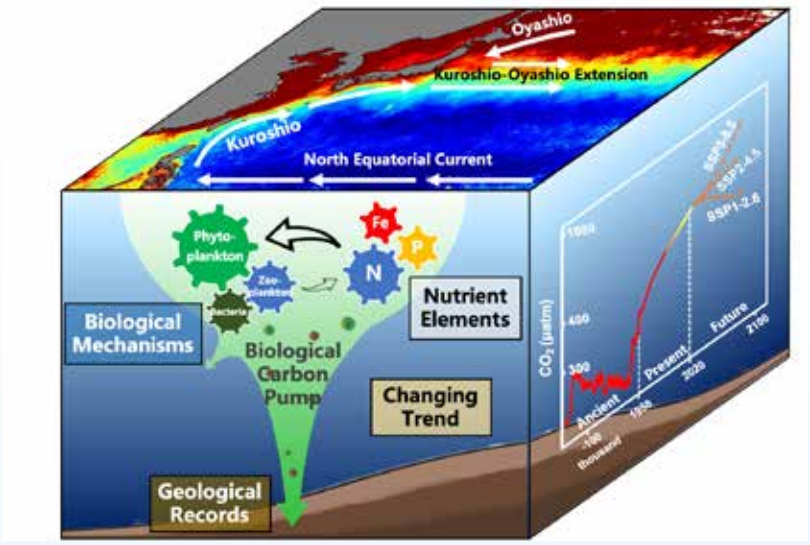


Research Design of the Major Project

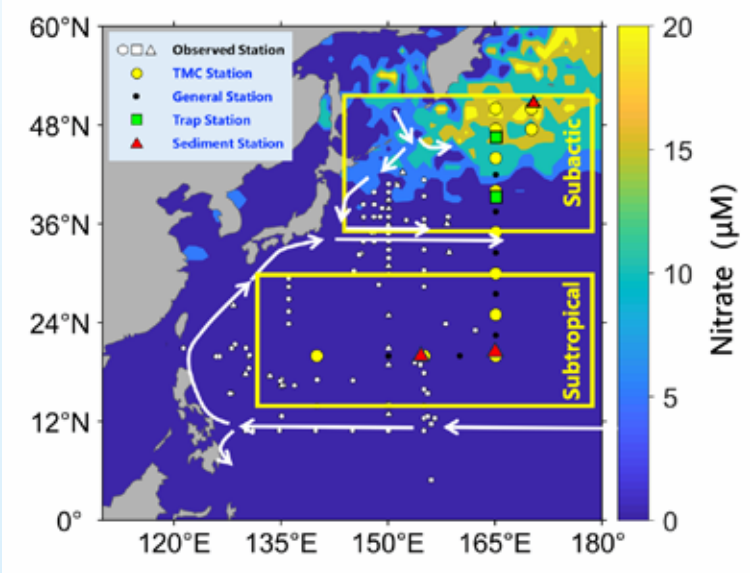
Nutrient Regulation and Evolution of the Biological Pump in the Western North Pacific

- **National Key Research and Development Program 2023-2028 | SHI Dalin**

This project focuses on the key issue of how essential nutrients such as nitrogen, phosphorus, and iron control the biological carbon pump in the Northwest Pacific, as well as how carbon sinks change under global environmental shifts. Accordingly, a framework of “nutrient elements–biological mechanisms-geological records–changing trend" for the biological carbon pump has been established. Two typical regions (low-latitude oligotrophic and high-latitude eutrophic) in the Northwest Pacific, exhibiting distinct nutrient and ecosystem structures, are chosen as the primary study sites. The project will focus on the modern biogeochemical process, combined with geological records and predictive modeling, to explore the critical processes and mechanisms of the biological pump under global change circumstance. The project aims to reveal the biogeochemical cycle of nitrogen, phosphorus, and iron, their effects on carbon fixation and storage. Additionally, reconstruction of the historical evolution of the paleo-biological pump offers insights into the influence of climate change on the evolution trend of biological carbon pump. Combining the studies of modern and paleo biological pump, carbon sinks in the Northwest Paicific will be assessed by biogeochemical modeling under distinct climatic scenarios.



A. Overview of the Project

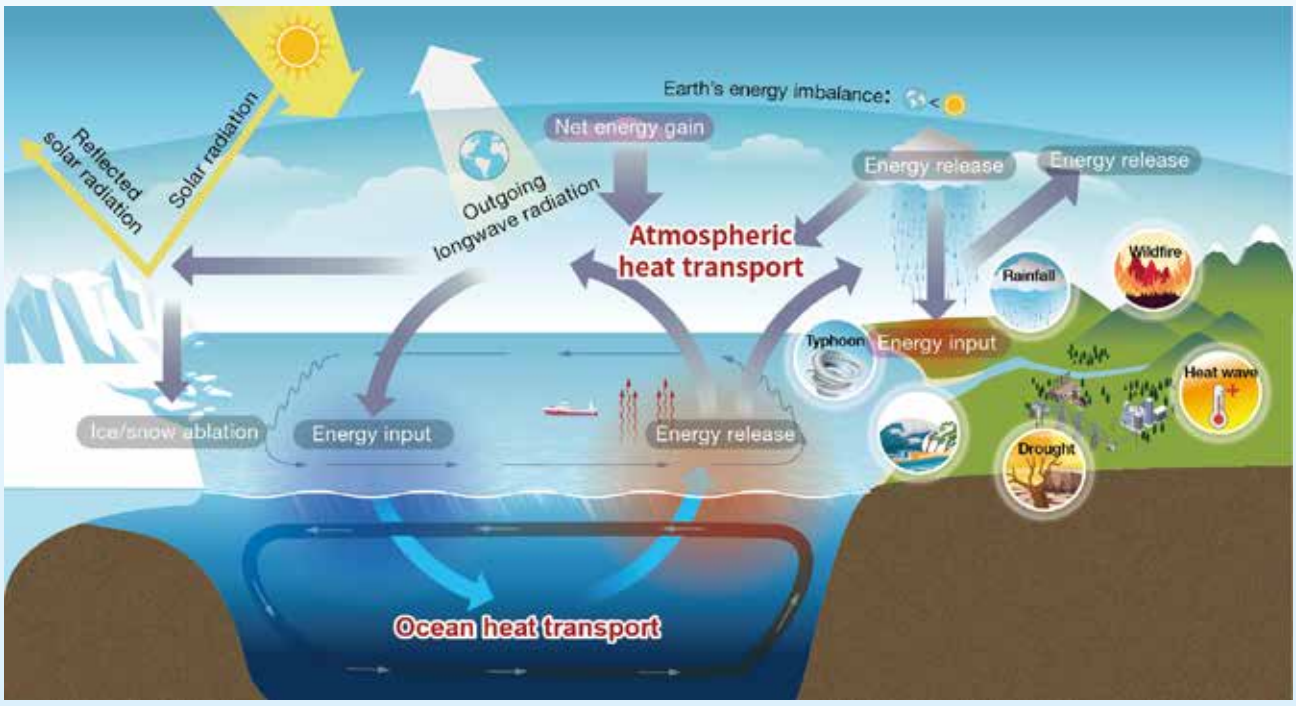


B. Selected sites in Northwest Pacific

Understanding and Prediction of Decadal Climate Change Based on Energy Processes

• **Young Scientist Project of National Key Research and Development Program 2023-2028 | LYU Kewei**

As an important basis for the medium- and long-term planning of social and economic development, decadal climate prediction for the future annual to decades is one of the frontier issues but also grand challenges in the climate research field. However, due to the lacking of capability in understanding and predicting decadal climate change, the current decadal prediction skill could not meet the requirement for operational use. From the perspective of energy processes through the climate system, the project intends to deepen the understanding of decadal climate change, identify new sources of decadal predictability, and develop new approach for decadal climate prediction. The main research content includes: revealing key processes involved in the energy cycle across major components of the climate system and its modulation of climate variability on decadal timescales; diagnosing energy processes and predictors related to the origin of ocean memory that contributes to decadal predictability; developing new approach for decadal climate prediction based on big data and machine learning with important constraints from energy processes. The final outcome of the project is expected to improve the current prediction skill of decadal climate change, thus providing strong support for our nation in the face of climate change.

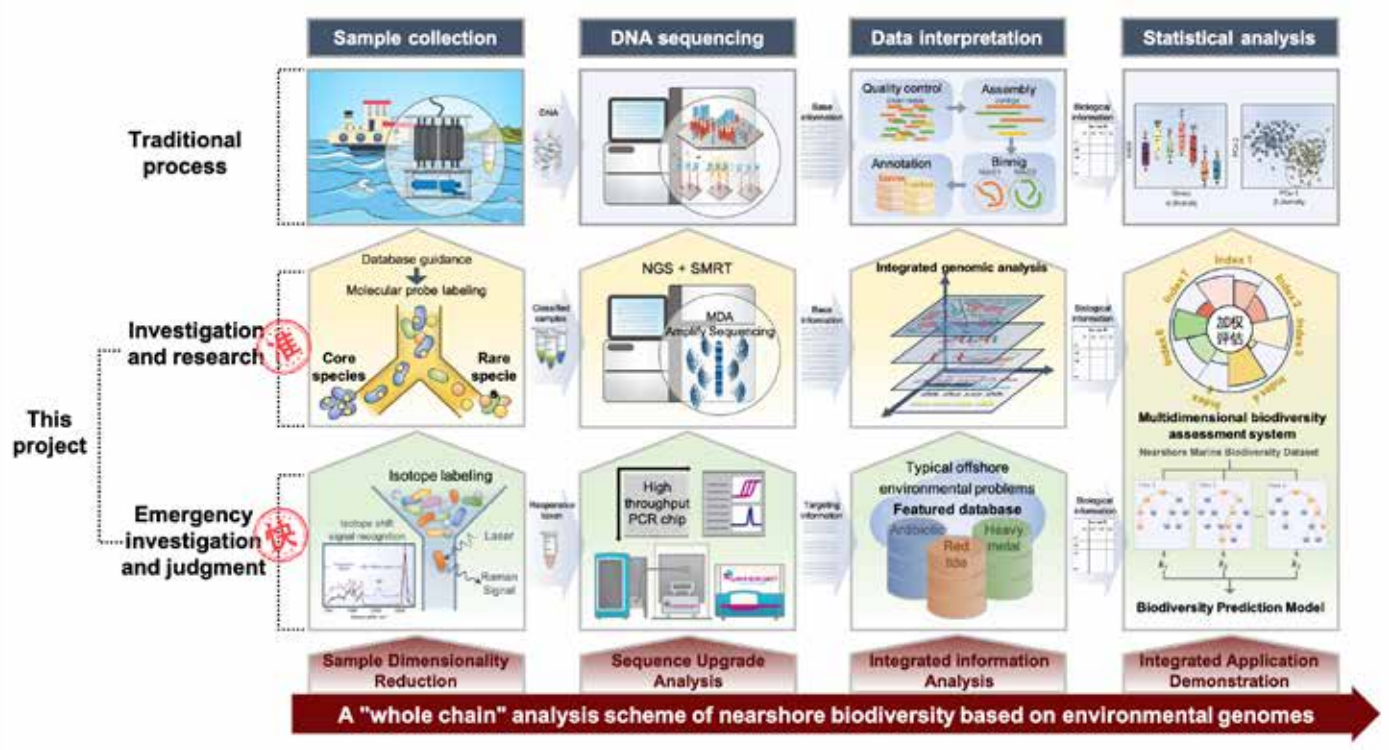


Multi-sphere energy cycle through the climate system

Precision and Rapid Analysis of Nearshore Biodiversity Based on Environmental Genomics

• Young Scientist Project of National Key Research and Development Program 2023-2026 | ZHENG Yue

This project aims to meet the demands for both "precision" and "speed" in analyzing biodiversity in China nearshore. Under the background of multiple environmental stressors in the nearshore, the project focuses on microorganisms with remarkable response to environmental stress and employs innovative biodiversity analysis techniques as a breakthrough. By targeting the three key stages of analysis, namely "pre-sequencing, sequencing, and post-sequencing," the project employs sample dimension reduction, sequence upgrading analysis, and integrated information interpretation. The aim is to develop more accurate and faster biodiversity analysis techniques, create new indicators for biodiversity assessment, construct predictive models, and ultimately establish a "multi-scenario, full-chain, one-click" solution for nearshore biodiversity analysis.
This comprehensive approach aims to contribute to the construction and widespread application of marine ecological environmental protection systems, providing technical support for the sustainable development of nearshore ecological environments.

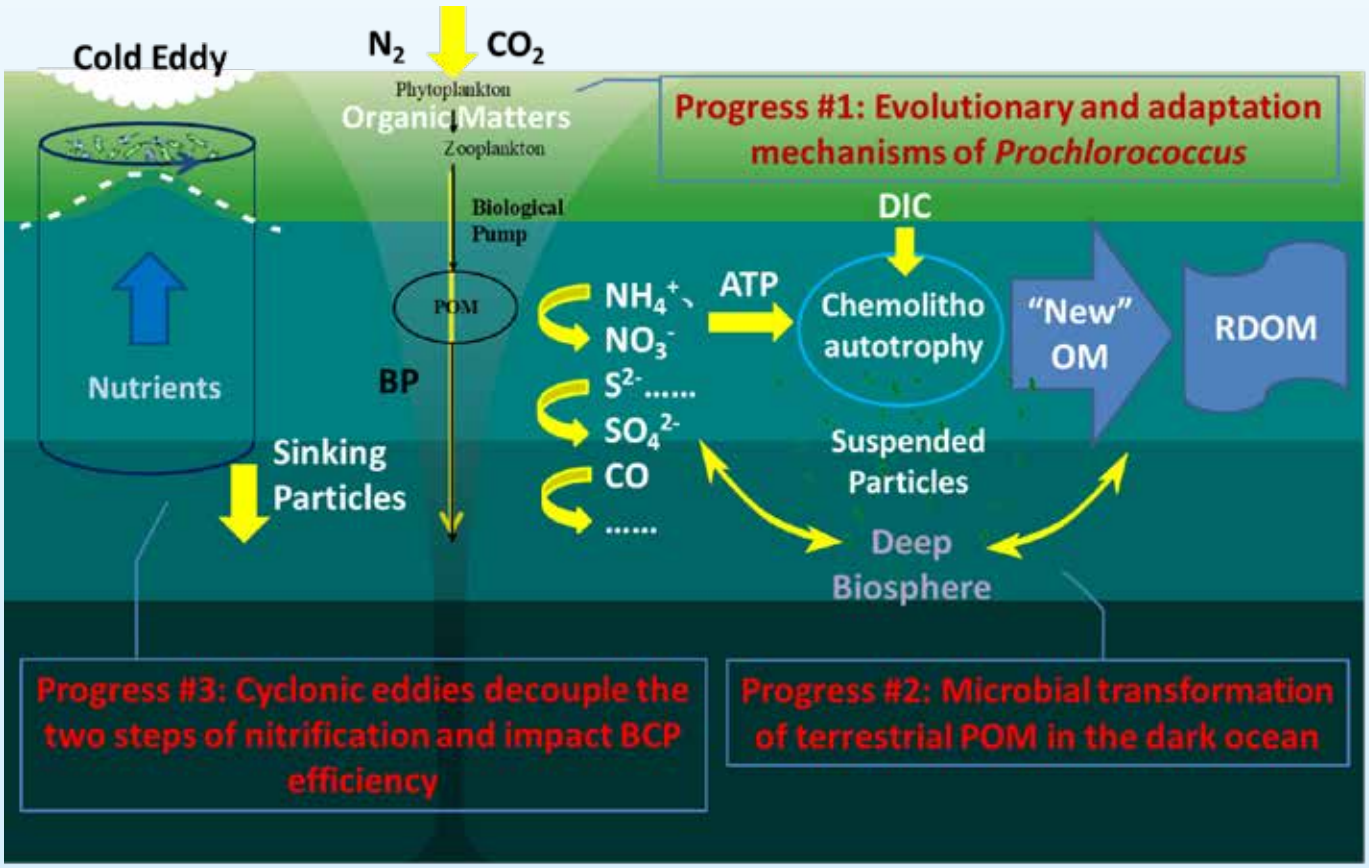


The main research content of the project

Biogeochemical Cycles Driven by the Deep-sea Microorganisms

- **NSFC Fund for Distinguished Young Scholars 2022-2026 | ZHANG Yao**

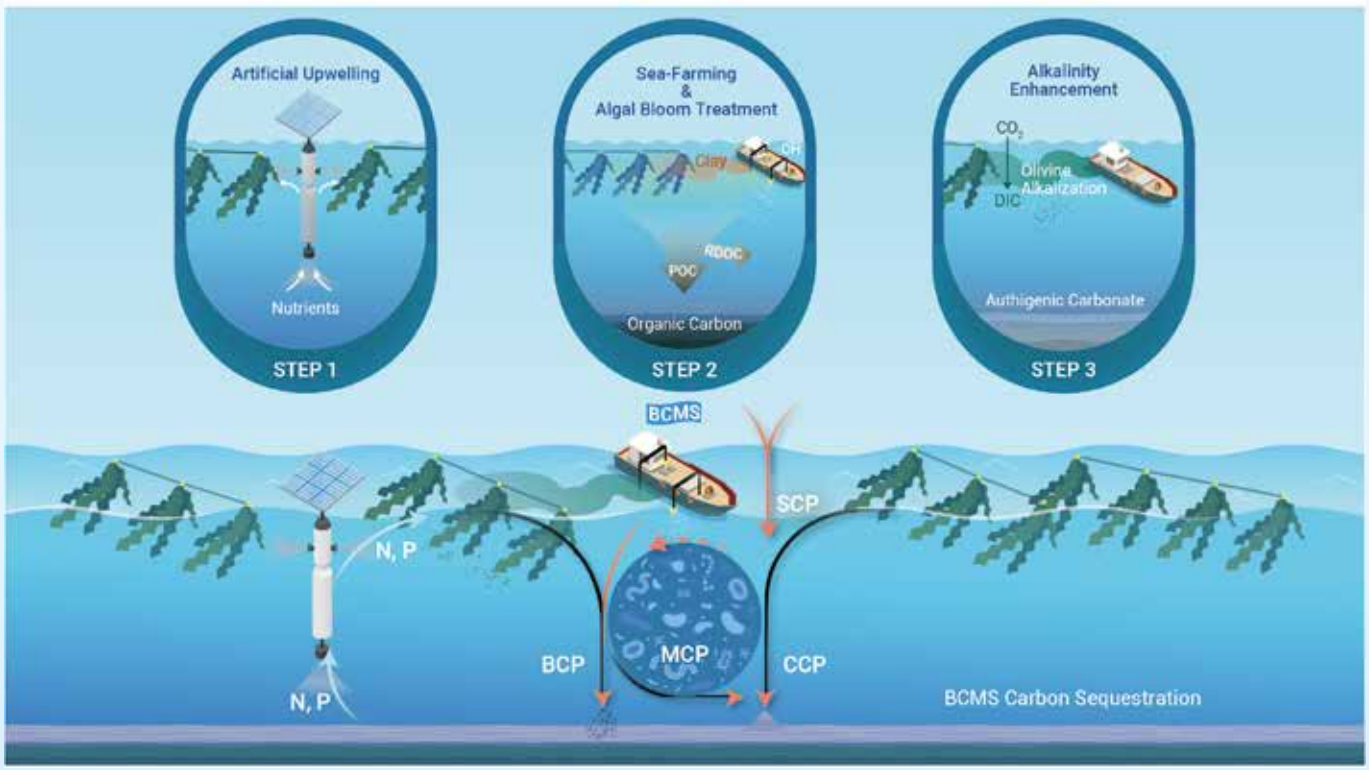
The project focuses on the biogeochemical processes in the deep ocean and their connection with the upper ocean processes. It aims to provide a comprehensive understanding of the microbial community structure and function, key processes and coupling mechanisms involved in microbially driven carbon and nitrogen cycles, as well as the impact of oceanic dynamic processes on material-energy balance and microbial metabolism. The progress achieved in the project includes: 1) We conducted the first-ever mutational accumulation experiment on the key primary producer, *Prochlorococcus*, in the open ocean. This study reveals its low mutation rate and small effective population size, providing evidence for the significant role of genetic drift in its evolution and ecological adaptation. 2) Using the Aquatron, a large-scale seawater culturing system, we conducted long-term tracking observations to understand the fate of terrestrial particulate organic matter (tPOM) in the deep ocean. This study systematically elucidates the microbial transformation of tPOM in the energy-limited dark ocean, explaining the significant gap between terrestrial inputs and carbon burial. 3) We conducted a multi-disciplinary oceanic field observation in the Northwest Pacific cyclonic eddy system, revealing for the first time the decoupling of two-step nitrification induced by mesoscale cyclonic eddies. This study provides a potential mechanism for the meridional distribution pattern of the primary nitrite maximum in the upper ocean.



Research Center for Marine Carbon Sink and Biogeochemical Process

• **NSFC Basic Science Center Program 2022-2026 | JIAO Nianzhi**

The Marine Carbon Sink and its Biogeochemical Processes is a grant basic science center funded by the NSFC, and is to conduct in-depth research on the formation process and regulatory mechanism of marine carbon sinks, aiming to establish theoretical methods and technical solutions for marine carbon sequestration, and provide supports for national needs related to climate change. In 2023, this project has made significant progress in developing theory of ocean carbon sinks and paradigm of ocean negative emission ecological engineering, and revealing climate effect of the ocean carbon sink, carbon sequestration in marine aquaculture, deep-sea viral ecology and its impact on carbon sink, machine learning interpretation of ocean carbon sink, and etc. The research results have been published in Nature Communications、National Science Review、Earth System Science Data、Geophysical Research Letters、Environmental Science & Technology and etc, making progresses in revealing the theory of ocean carbon sequestration, developing negative emission demonstrations, and verifying the ecological and climate effects of ocean carbon sink. In addition, the leading scientists of this project has led or participated in important international events, promoting international collaborations on marine carbon sinks and negative ocean emission.



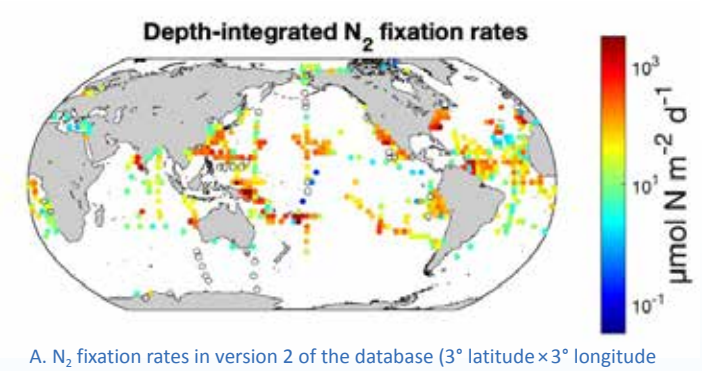
A roadmap for Ocean Negative Carbon Emission eco-engineering in sea-farming fields

Carbon Fixation and Export in Oligotrophic Ocean

• NSFC Major Program 2019-2023 | DAI Minhan

The oligotrophic ocean occupies about 30% of the ocean surface and has been conventionally regarded as ocean deserts. It is characterized by nutrient depletion in the surface waters and extremely low net biological production and hence, per unit area, contributes little to carbon export from surface to deep waters. Emerging evidence, most notably based on ocean time-series studies such as those at the Hawaiian Ocean Time-series station, has shown a wider than previously assumed dynamic range of nutrient inputs and biological responses in this vast oceanic system. This project studies sources and fluxes of macronutrients (i.e., N, P, Si) and micronutrients (e.g., Fe) and their spatiotemporal distributions and how these factors support biological pump at the two distinct layers of the euphotic zone in the North Pacific Subtropical Gyre (NPSG), one of the world's largest oligotrophic regimes. It aims to frame new understandings on key mechanisms controlling the biological pump and efficiency of carbon storage in the ocean.

By integrating in-situ and remote sensing observations, and numerical simulations, Carbon-FE has been carrying out innovative researches since the launch of the project. The project has achieved a series of breakthroughs in optimization and innovation of methods and techniques, generations of data products, and scientific understanding. We highlight some of the major achievements over the past year as follows:



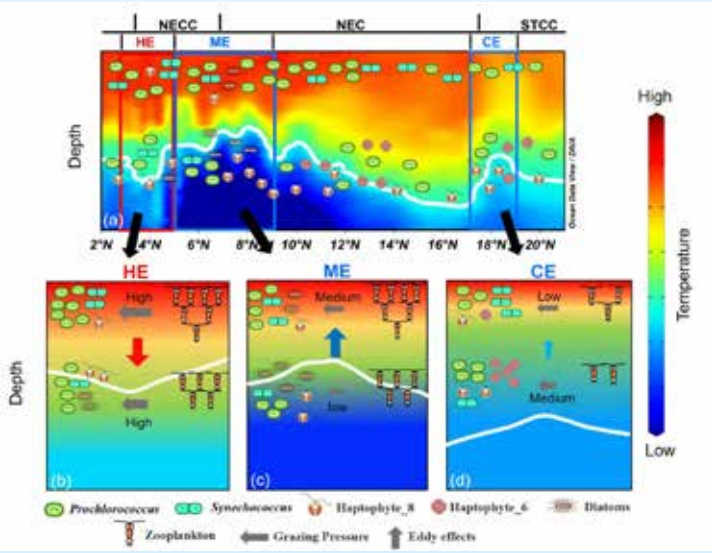
A. N_2 fixation rates in version 2 of the database (3° latitude × 3° longitude bins) (Shao et al., Earth System Science Data, 2023)

(1) Atmospheric deposition has been identified as the predominant source of dissolved iron in the upper waters of the southwestern North Pacific Subtropical Gyres (NPSG), with its input fluxes approximately one order of magnitude higher than those from sediment contributions of the Philippine Islands and about 50 times higher than the vertical transport of iron from the nutrient-replete layer to the nutrient-depleted layer.

(2) The spatiotemporal patterns of biological nitrogen fixation in the NPSG has been revealed by integrating observation data, global historical data, and model predictions (Fig. 1). For the first time, it was found that UCYN-B dominated the diazotroph community in the high nitrogen-fixing rate stations in this region, highlighting its significance in global marine nitrogen fixation.

(3) The integration of high-resolution field observations and remote sensing numerical models has revealed the mechanisms and main influencing factors of mesoscale eddies on the spatial distribution of phytoplankton communities in the western equatorial Pacific Ocean, within distinct physical-biogeochemical backgrounds of different current systems (Fig. 2).

(4) A two-group competition conceptual framework driven by light and nutrients, built upon long-term observation data from 10 BGC-Argo floats, has been proposed. This provides a more rational explanation for the variations of the depth of sub-surface chlorophyll maximum in oligotrophic waters.



B. Schematic diagram of biogeochemical effects in 130°E section (a) and from three mesoscale eddies (b–d) (An et al., Deep Sea Research Part I: Oceanographic Research Papers, 2023). White lines represent 22°C isotherm. Gray, blue, and red arrows represent the pressure of microzooplankton grazing, the cyclonic eddies effect and anticyclonic eddy effect respectively.

Frontal Instability Induced Offshore Phytoplankton Bloom in Winter and Early Spring Taiwan Strait

• Key Supported Projects of Joint Fund 2023-2026 | JIANG Yuwu

Off-coast blooms frequently occur in the winter and early spring Taiwan Strait, closed associated with the alongshore front. As a frontier and hotspot in physical oceanography, frontal submesoscale instabilities significantly modulate the occurrence of the blooms due to their consistent timescale as well as the enhancement of vertical transport and stratification of the water column. Based on long-term monitoring data, cruise and satellite data analyses, two-ship synchronous cruises and drifting buoy array experiments, high-resolution physical-biological model experiments, and the instability theory analyses, this project aims at revealing the spatiotemporal characteristics of the blooms, as well as the dynamics of the frontal instabilities and their modulations on the blooms. The study will provide new dynamical explanations of the phytoplankton growth and reproduction in the Taiwan Strait, with expectations of expanding the frontier of submesoscale physical-biological coupling research, and promoting the development of marine fisheries and the warning of harmful algal blooms.

Over the past year, the project has achieved the following progresses: 1) Robust results of the trajectories of three types of drift buoys were obtained from the in situ experiment; 2) Statistical analysis of multi-year cruise and satellite data indicated the blooms occur in the frontal region during the northeasterly monsoon relaxation period; 3) Diagnostics of the high-resolution realistic model suggested the restratification effect of submesoscale baroclinic instability mainly triggers the off-coast blooms; 4) Sensitivity experiments of the idealized model revealed the different contributions of symmetric, mesoscale and submesoscale baroclinic instabilities on the blooms; 5) Idealized model analysis showed the influence of submesoscale process on sea-surface height.

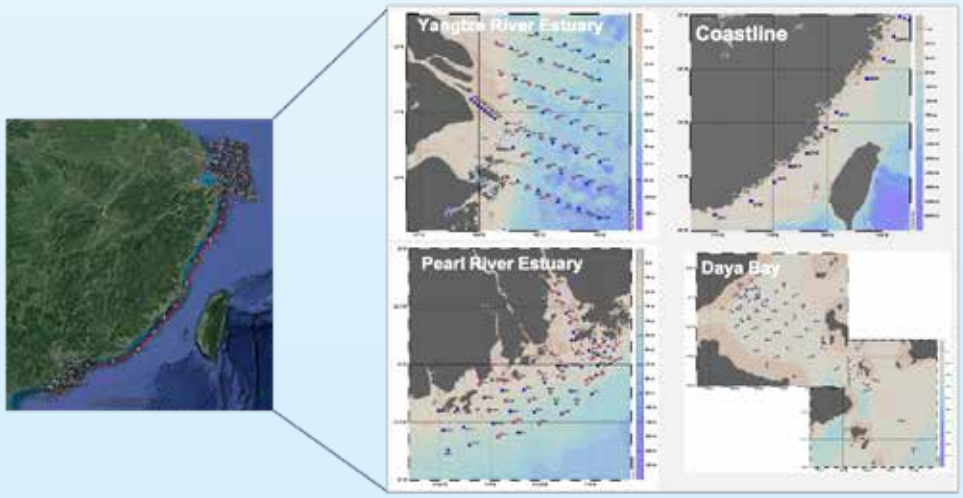
Preliminary results of the drifting buoy array experiments in the Taiwan Strait

Tipping Points, Resilience and Reconstructure of Plankton Ecosystem in Typical Marine Areas of China

• **National Key Research and Development Program | 2022-2025, WANG Dazhi**

Targeting the core scientific question of "Tipping points, resilience and reconstructure of plankton ecosystem in typical marine areas under co-stresses of human activities and global changes", this project selected the plankton ecosystems in the Yangtze River Estuary, the Pearl River Estuary and adjacent waters that are significantly stressed by human activities and global changes, as the research objects. We will integrate the existing pattern, historical data, sediment records of plankton diversity, and the ecosystem's steady-state transformation in different stressed environments and extreme events, establish the theory and method of characterizing and quantifying the ecosystem's tipping points, evaluate the resilience and restoring ability under multiple environmental stresses, built the theory and method of ecosystem reconstruction, develop the prediction model of ecosystem evolution trend and achieve the application demonstration of intelligent and situational prediction, and put forward management strategies suitable for the coordinated development of China's offshore economy, human health and ecological environment, strengthen the scientific understanding of the tipping points, resilience and restoring ability of plankton ecosystem, and clarify the evolution history, current situation and driving mechanism of planktonic ecosystem under co-stressors of global change and human activities. This project will provide theoretical and methodological supports for formulating biodiversity conservation and climate change strategies, and implementing national strategies such as land and sea integration and carbon neutrality.

Since the implementation of the project one year ago, significant progress was made: 1) conducting on-site investigation of the planktonic ecosystem in typical coastal areas of China during spring and summer; 2) collecting and analyzing the historical data of plankton in the Yangtze River Estuary and Pearl River Estuary over the past 50 years; 3) reconstructing the composition and structure of phytoplankton over the past century, and inverting the characteristics of primary productivity changes; 4) revealing the tipping point of temperature changes in the community structure of phytoplankton and planktonic bacteria in the Daya Bay; 5) constructing the physics-ecosystem coupling model of the Yangtze River Estuary and Pearl River Estuary; 6) completing the preparation of carbon, nitrogen and phosphorus emission inventory of anthropogenic sources in the Yangtze River Estuary and Pearl River Estuary.



Main samples of spring and summer cruises

Samples	Spring	Summer
DO	698	1110
DIC/TA	349	555
DIC-^{13}C	156	360
Inorganic nutrients, urea	670	852
Particulate matter	378	470
Ammonia/nitrate/urea absorption rate and Michaelis parameters	282	282
Fractionated Chlorophyll a	1452	929
Net-phytoplankton	174	362
Water-phytoplankton	367	88
Diversity	1334	1200
Bacterial productivity and respiration	1128	1210
Meta-Omics	136	152

The investigation areas and sampling statistics in spring and summer 2023

MEL AFIELD

R/V *TKK*

9
Cruises

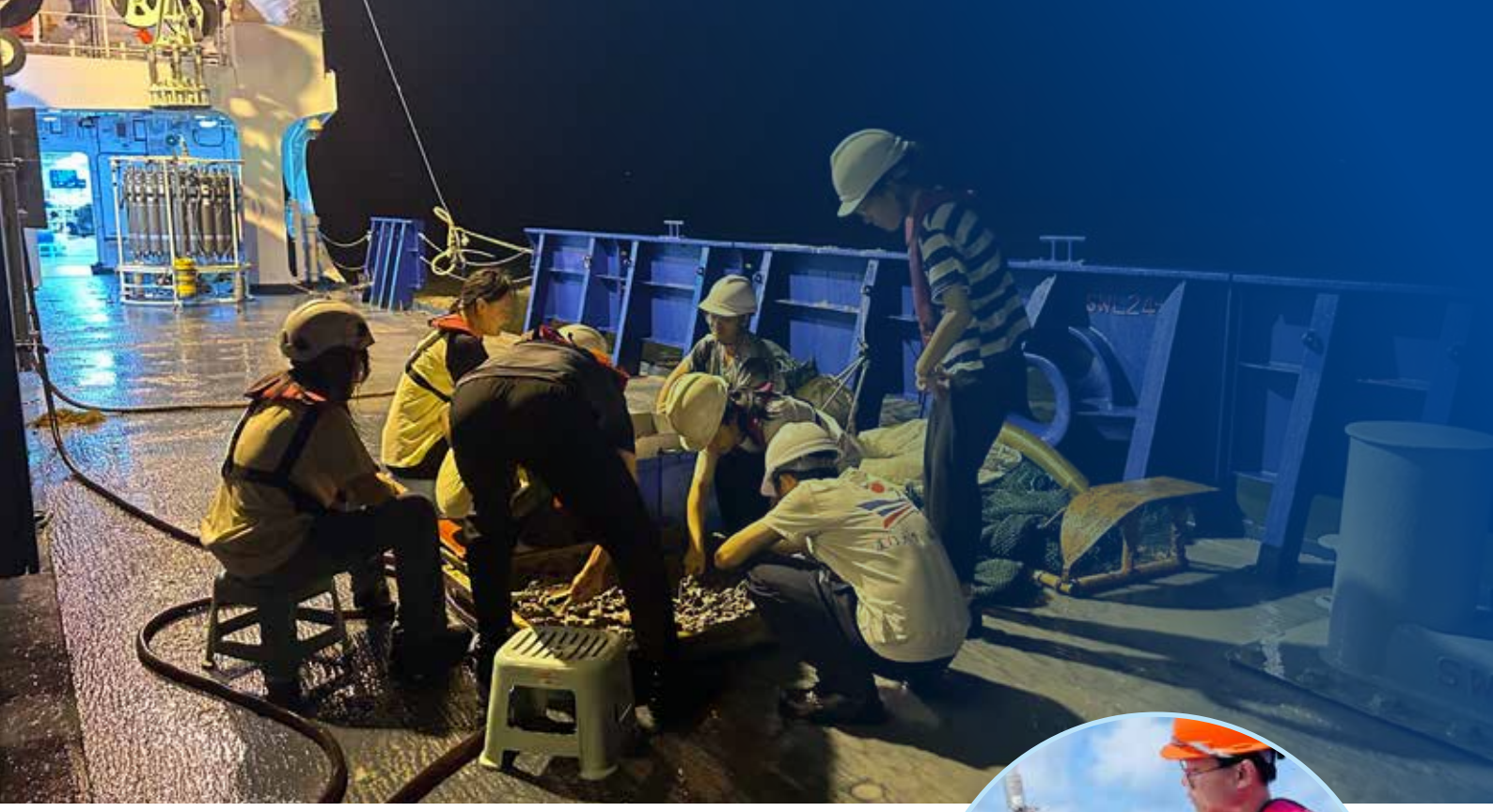
209
Days at sea

25,423
Nautical miles covered

© YANG Weidi

From June to September, the NSFC Open Research Cruise in the central SCS (NORC2021-06) was accomplished onboard the RV *TKK*. This expedition was split into two legs—the comprehensive biogeochemical leg and the geological and geophysical leg. SHEN Yuan and CHEN Hongmei served as the chief scientists of each leg. The cruise supported 39 NSFC-funded projects conducted by 59 scientists and researchers from 16 domestic institutions. On this 50-day expedition, 457 over-the-side operations were implemented, including CTD casts, multiple net plankton sampler deployments, *in situ* LVPs, gravity cores, box sediment samples, heat flow probes, and benthic trawls and rock trawls.

© CHEN Xirong



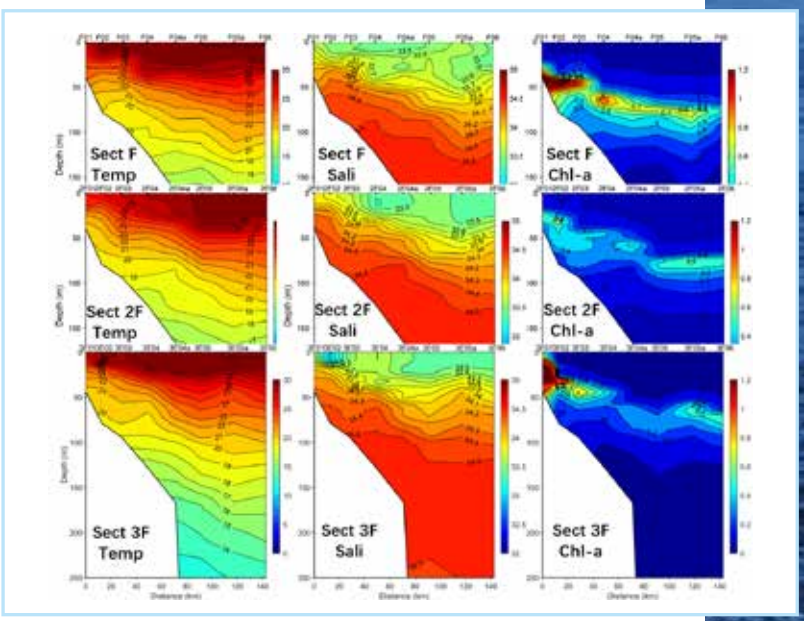
On August 11th, the fourth “XMU at Sea” Undergraduate Training Cruise was accomplished onboard the R/V *TKK*. ZHANG Run, CHEN Hongmei, and LI Feili served as the chief scientists of each leg. Seventy-six undergraduates from six universities participated in the three-leg expedition. They conducted various operations on board, including macronutrient determinations, plankton trawls, benthic trawls, CTD casts, ADCP flow velocity measurements, hydroacoustic communication performance, and gravity cores, covering marine chemistry, marine biology, physical oceanography, geological oceanography, and applied ocean physics and engineering. To date, 250 undergraduates have participated in the program, obtaining valuable opportunities to practice at sea.

Other Cruises

• Hainan Upwelling Cruise in Summer 2023

Coastal surface drifter deployment

From July 27th to August 19th, Xiamen University and other institutions conducted the Hainan Upwelling Cruise in Summer 2023, funded by the NSFC Center for Marine Carbon Sink and Biogeochemical Process. The cruise took 24 days on the R/V *Lanbo 1*, and conducted multidisciplinary observations in the Hainan upwelling region. The cruise focused on the contribution of the marine biological pump and micro biological pump on the carbon sink in the Hainan upwelling region, verified the collaboration and distinction of the marine biological pump and micro biological pump in time and space, and estimated the regulatory effects of the two pumps on CO_2 source and sink patterns.



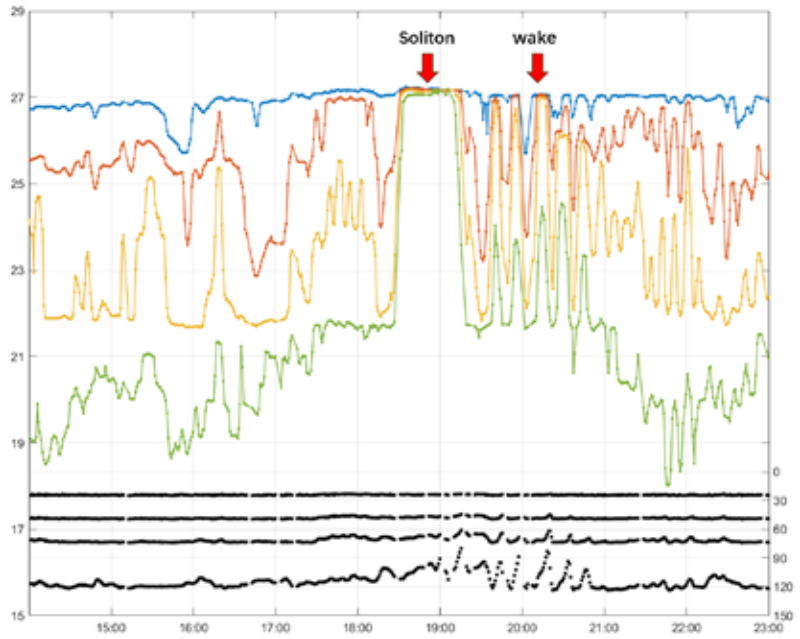
Temperature, salinity and chlorophyll distribution in the three key sections in different upwelling phases

Deployment of Underway ADCP

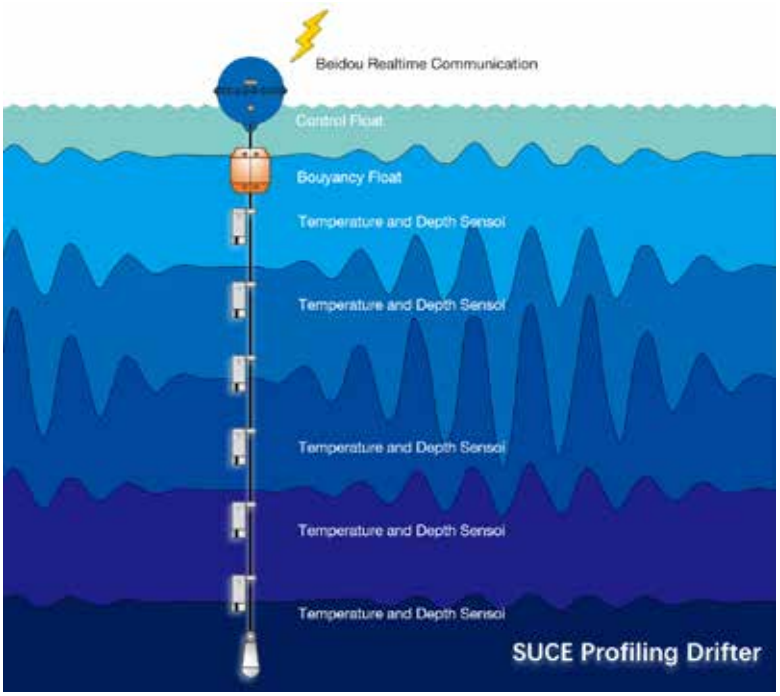
© SUN Zhenyu

• South China Sea Ocean Internal Wave Drifting Experiment in Autumn 2023

From October 14th to November 21st, the Ocean Observation Technology and Data Center conducted a drifting observation of the internal waves around Dongshan Islands in the northern South China Sea, based on a self-developed profiling drifter system. The system can continuously acquire temperature and pressure profiles from the surface to 150m , so as to realize remote and real-time monitoring of ocean internal waves. In this experiment, the drifting Temperature and Depth chain acquired multiple occurrences of strong ocean internal solitons. Surface water was injected below 100m in short periods and oscillated in the wakes. The observational results revealed interactions between the internal solitons and the complicated topography and internal tides in this region.



Temperature curves in the internal soliton process acquired by the TD chain



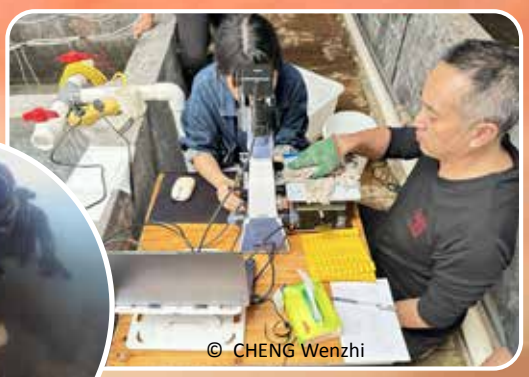
SUCE Profiling Drifter in the application of real time monitoring on internal waves

In 2023, the National Observation and Research Station for the Taiwan Strait Marine Ecosystem (T-SMART) executed quarterly cruise observations in the Taiwan Strait, Dongshan Bay, and Zhangjiang Estuary. In summer, a special cruise observing the upwelling in Dongshan Bay was carried out. At the same time, mangrove and salt marsh quadrat surveys were conducted once, and animal surveys in coastal wetlands were conducted twice. A new solar radiation observation system was constructed in Dongshan, through which about 30 GB of observational data were collected. The Coral Ecosystem Cabled Observatory (CECO) recorded over 2500 hours of coral reef video.

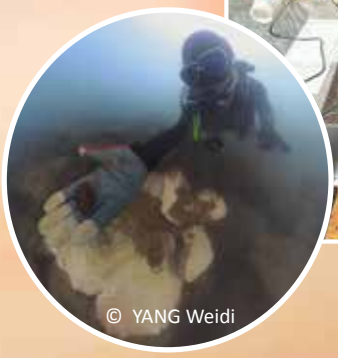
Cruise to survey the upwelling in Dongshan Bay

Undergraduates from Xiamen University's College of the Environment & Ecology, College of Ocean and Earth Sciences, and School of Life Sciences conducted research activities in T-SMART

T-SMART has been highly successful this year in terms of innovation and environmental protection and outreach. MAO Yong's team established a complete set of precision intelligent assessment technologies for shrimp phenotypes. WANG Wenqing's team conducted public educational programs in Luoyuan, Fujian Province promoting mangrove restoration and utilisation.. The D-SMART technical team assisted in coral protection in Dongshan waters through underwater surveys and a seabed coral observation system.



Shrimp breeding



Survey of coral resources in the Dongshan sea area

Database construction, data management, and data application services of T-SMART

- Marine Monitoring and Information Service Cloud System (Marine Cloud) which is also the portal website for Data Center of T-SMART
- Xiamen University's Ecological Environment Data Query, Display, and Sharing Service System
- Coastal Remote Sensing Database
- Digital Twin System for Large Yellow Croaker Farming of Sansha Bay
- Digital Twin System for Disaster Prevention and Reduction of Xiamen Bay

Fujian Zhangjiangkou National Mangrove Nature Reserve
© FANG Wei

MEL Synergy

© DITTO

The Global Ocean Negative Carbon Emissions (Global-ONCE) Program

The Global Ocean Negative Carbon Emissions (Global-ONCE) Program was approved by the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational Scientific and Cultural Organization (UNESCO). It is in the framework of the United Nations Decade of Ocean Science for Sustainable Development. The program aims to promote ONCE's "public products" to the international community and governments through official channels, disseminating knowledge, promoting exchanges, and enhancing mutual trust.

Global-ONCE will undertake and facilitate the science required to evaluate and implement eco-technological interventions. It will:

1) develop an international network of field stations and research facilities;
2) co-design interdisciplinary collaborative research;
3) develop an evaluation framework for mitigation and adaptation approaches;
4) co-ordinate capacity building;
5) facilitate equitable policy, governance, and societal understanding.

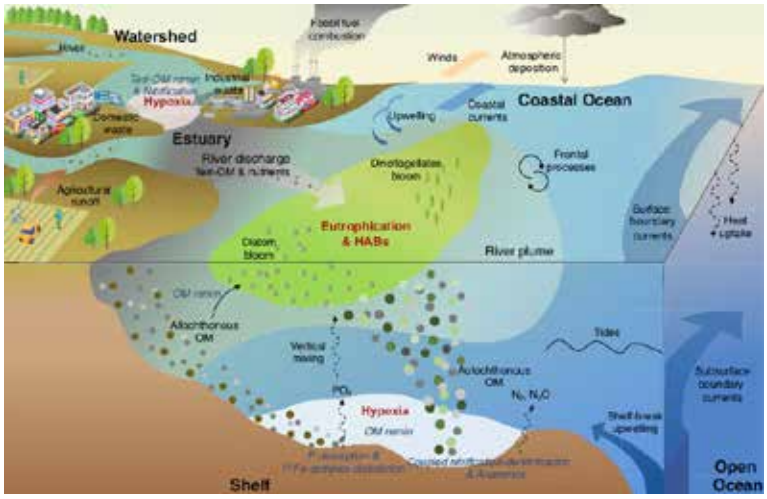
ONCE Open Science Conference

On November 8th, the opening ceremony of the ONCE Open Science Conference was held in Xiamen. Mr. Peter Thomson, the UN Secretary-General's Special Envoy for the Ocean, and Dr. DOU Xiankang, Director of the NSFC, along with scientists from 12 countries including China, France, UK, Germany, USA, Australia, Canada, Austria, Thailand, South Korea, Indonesia, and Fiji, and other collaborators, participated in the conference.

The ONCE Program's series of achievements were released. After the opening ceremony, Dr. DOU Xiankang and Mr. Peter Thomson delivered keynote speeches during the ninth session of the Xiamen University Qunxian Lecture, focusing on the development and transformation of the NSFC and ocean health issues and sustainable development goals.

© Global ONCE

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



Led by MEL, the COASTAL-SOS, or "Coastal Zones Under Intensifying Human Activities and Changing Climate: A Regional Programme Integrating Science, Management and Society to Support Ocean Sustainability," partners cross-sectoral stakeholders, including leading academic institutions, industrial enterprises, non-profit foundations, and nongovernmental/intergovernmental organizations (NGO/IGOs) from East Asian countries to advance scientific understanding of critical coastal ocean health issues.

In 2023, multiple research funds for COASTAL-SOS were granted. Implementation plans are progressing in an orderly manner. In February, an invited review entitled "Persistent eutrophication and hypoxia in the coastal ocean" was published in *Cambridge Prisms: Coastal Futures*, laying a solid foundation for the future work of COASTAL-SOS and providing a new perspective on tackling the problems of eutrophication and hypoxia.

- To mark World Oceans Day 2023 on June 8th, COASTAL-SOS organized a series of activities with programme partners on ocean deoxygenation and engaged more than 1100 students from primary, middle, and high schools, as well as university students.


© 70.8 Media Lab

- In July, COASTAL-SOS co-organized the interdisciplinary panel "Coastal Issues: Support Ocean Sustainability" at the 20th Annual Meeting of the Asia Oceania Geosciences Society in Singapore, to jointly promote healthy and sustainable development of the oceans and coastal zones.


© COASTAL-SOS

Surface Ocean - Lower Atmosphere Study

Formally launched in 2004, the Surface Ocean-Lower Atmosphere Study (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. In 2023, the IPO continued to provide support to the global SOLAS community, including 33 national/regional networks, 19 sponsored/endorsed projects, and 4 integrated atmosphere-ocean time series stations.

22	21	10	12	50	250
International Conferences, Meetings and Workshops	National / Regional Reports	Event Reports	Issues of Newsletters	Announcements	Tweets

- SOLAS organized its 9th Summer School in Mindelo, Cabo Verde in June 2023. It was the first time the SOLAS Summer School took place in an African country. In addition, SOLAS launched a postdoc programme in August to advance understanding and model development of marine carbon dioxide removal and contribute to robust monitoring, reporting, and verification (MRV) protocols and consensus within the international scientific community. It also established the Early Career Scientist Committee (ECSC) in January 2023 and organized and planned a series of activities.

- SOLAS launched a regional panel in Southeast Asia. The panel has been working actively on joint grant proposals and building connections with other international scientific organizations and research projects.

- 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, SOLAS organized a special issue on Boundary Shift: The Air-Sea Interface in a Changing Climate in *Elementa: Science of the Anthropocene*.

ELEMENTA
Science of the Anthropocene

- The SOLAS Scoping Workshop was held in Xiamen and online in September 2023. The workshop gathered 40 leading oceanographers and atmospheric scientists from 18 countries to discuss SOLAS future beyond 2025 and draft the SOLAS 2026-2035 science plan and organization.

The Sixth Xiamen Symposium on Marine Environmental Sciences

Initiated in 2014 and organized by MEL, the serial Xiamen Symposium on Marine Environmental Sciences (XMAS) celebrated its sixth iteration from January 9th to 12th, 2023, both online and offline. DAI Minhan served as the Chairman of the Scientific Advisory Committee, while CAO Zhimian and LI Feili chaired the Local Organizing Committee. Throughout the symposium, approximately 12,000 individuals from 35 countries and regions, including (but not limited to) the United States, Canada, Germany, France, the United Kingdom, South Africa, Australia, Japan, Malaysia, and Indonesia engaged in the symposium.

Under the theme “Multidisciplinary and Solution Sciences for a Sustainable and Healthy Ocean,” Ken Buesseler from the Woods Hole Oceanographic Institution, Juliet Hermes from the University of Cape Town, Angele Falciator from Sorbonne Université, Lisa Levin from the Scripps Institution of Oceanography, Eric Galbraith from McGill University, and Haojia Abby Ren from Taiwan University made keynote speeches. Moreover, the symposium saw 34 sessions and workshops, 221 oral presentations and 193 posters. Additionally, side events such as the Surface Ocean - Lower Atmosphere Study (SOLAS) workshop, Women in Science Salon, Meet the Editor and public education initiatives were conducted.

The event attracted coverage from 12 media outlets, including China Central Television (CCTV), reaching an audience of over 650,000.

© XMAS

International Digital Twins of the Ocean 2023

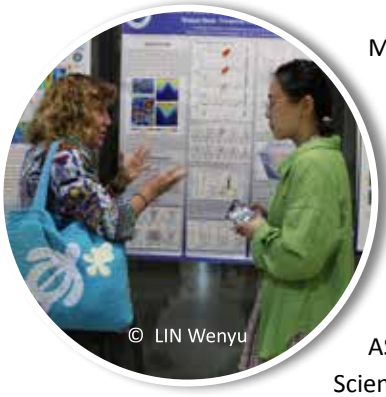
Initiated by the Digital Twins of the Ocean (DITTO) Programme, an endorsed initiative of the UN Ocean Decade, the DITTO Summit 2023 took place in Xiamen from November 9th to12th, 2023. Co-hosted by the Fujian Ocean Innovation Center and MEL, the Summit was presided over by CHAI Fei (Xiamen University) and Martin Visbeck from GEOMAR, Germany. The event drew the participation of over 450 scholars, students, and entrepreneurs from 118 institutions across 19 countries and regions.

The Summit centered on disseminating the latest knowledge about digital twin oceans (DTOs) and engaging in discussions on future actions for their advancement and application. Specific topics covered included ocean modelling, ocean observation, DTO applications, data lakes, DTO architecture, and interoperability. The Summit organized 12 keynote speeches and 15 parallel sessions featuring 94 oral presentations and 71 posters. In addition, various academic activities such as 2 panel discussions, 3 theme-based workshops, and virtual satellite events were conducted.

As one of the special events of the DITTO, the Sub-forum on Marine Technology and Engineering of the 2023 Maritime Silk Road International Conference on the Cooperation and Integration of Industry, Education, Research and Application was held on November 9th. Themed “Developing Digital Twins of the Ocean to Enable Strategic Emerging Industries,” the sub-forum aimed to promote high quality development of the ocean economy based on the integrity of digital twin technologies structure and potential market. During the forum, the unveiling ceremony of the University-Industry Collaborative Education Base on Coastal Eco-environment Big Data Applications was held.

© DITTO

South China Sea Annual Meeting 2023


© LIN Wenyu

The South China Sea Annual Meeting 2023 (SCSAM 2023) was held in Malaysia from November 3rd- 5th. It was the first time the series was held overseas. It was co-hosted by MEL, XMU's College of Ocean and Earth Sciences, and the China-ASEAN College of Marine Sciences (Xiamen University Malaysia). Under the theme "The South China Sea under Climate Change: Multi-scale Dynamics and Their Ecological and Environmental Effects," the meeting attracted over 120 scholars and student representatives from the US, Australia, China, and Malaysia. During the meeting, the first special contribution award, the "Yuhai Award," was given to Professor ZHENG Quan'an and Dr. HUANG Ruixin from Woods Hole Oceanographic Institution.

The 3rd Offshore Carbon Capture, Utilization and Storage Forum

The 3rd Offshore Carbon Capture, Utilization and Storage (OCCUS) Forum was held from November 12th-15th, 2023 in Xiamen. The forum was co-sponsored by MEL and the China Pacific Society. The forum aimed to explore the strategic positioning of offshore CCUS, synergistically promote industrial integration and technological innovation, and benefit coordinated development of land and sea resources, ecology, industry, and space. The forum attracted more than 160 experts, scholars, and industry leaders from over 60 universities, research institutes, and enterprises both domestically and internationally.

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Other Conferences


© HUANG Jiahao

The Symposium of Status, Challenges, and Opportunities of Regional Ocean Modeling and Digital Twins (April 25th, Xiamen)


© Cross-strait Marine Science Conference

The 13th Cross-strait Marine Science Conference (September 1st-3rd, Hangzhou)


© China - ASEAN Seaweed Cooperation Forum

China - ASEAN Seaweed Cooperation Forum (November 11th, Xiamen)


© The Chinese Academy of Science "Human-Ocean Coupling and System Resilience in the Coastal Region" Frontier of Science and Technology Symposium

The Chinese Academy of Science "Human-Ocean Coupling and System Resilience in the Coastal Region" Frontier of Science and Technology Symposium (December 2nd-3rd, Xiamen)

Visiting Fellowship Program

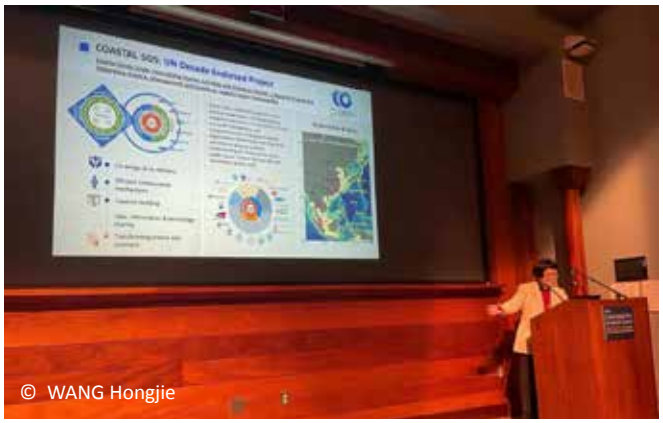
The MEL Visiting Fellowship Program was launched in 2009 and supports visiting fellows to conduct collaborative studies with MEL scientists for durations of 1 to 6 months. It provides research funds, travel, and living expenses. Thirty-two fellows were sponsored in 2023. They cooperated with MEL members, participated in academic conferences, provided guidance to young scholars and MEL, and gave a number of seminars.

Prof. Mark Wells, University of Maine, participated in a MEL Salon

Prof. CAI Wenju, recipient of the Distinguished (Zhengzhong Distinguished) Visiting Fellowship 2023, gave a MEL seminar

Other forms of exchange

MEL academic exchanges continued offline this year. In the form of academic presentations, lecture teaching, and research collaboration, 201 visitors held 33 MEL Luncheon Seminars and 11 Lingfeng Forums in total. The MEL Salon continues to be a positive platform for communication among MEL members.



Prof. HONG Huasheng introducing MEL at the University of Rhode Island

Prof. Edward Laws, Louisiana State University, gave a talk at MEL

A delegation from City University of Hong Kong led by Prof. Kenneth M. Y. LEUNG visited MEL

Dr. Erik Solheim, former UNEP Director and former Under-Secretary-General of the UN, gave a Nanqiang Lecture

Newly Appointed in Organizations or Associations

International Positions

- LIN Xin, Group Member / UN Ocean Decade Vision 2030 Working Group 9
- TANG Tiantian, Peer Reviewer / PNNL EMSL Proposal Review Panel (Environmental Transformations and Interactions)
- WANG Bingbing, Fellow / The Royal Society of Chemistry
- YOU Weiwei, Vice President / International Abalone Society

Domestic Positions

- KE Caihuan, President / Abalone Branch, China Aquatic Products Processing and Marketing Alliance
- LIU Xiangyang, Honorary Member of Council / Chinese Society for Biomaterials
- LU Yonglong, Routine Member of Council / Ecological Society of China
- SHI Dalin, Vice Chairman / Technology Management and Analysis Branch, China Association of Higher Education

Newly Appointed in Journals

International Positions

- CAO Ling, Editor-in-Chief / *Reviews in Fish Biology and Fisheries*
- CAO Zhimian, Associate Editor / *Science Bulletin*
- CHAI Fei, Editorial Board Member / *Ocean Modelling*
- JIAO Nianzhi, Associate Editor-in-Chief / *Science China Earth Science*
- LIN Xin, Associate Editor / *Frontiers in Marine Science*
- WANG Weilei, Guest Editor / *Frontiers in Marine Science*
- YU Fengling, Special Issue Editor / *Geomorphology*

Domestic Positions

- LIU Zhiyu, Editor / *Advances in Marine Science*
- MA Jian, Editor / *Journal of Integration Technology*
- SHANGGUAN Mingjia, Editorial Board Member / *Acta Optica Sinica*
- YOU Weiwei, Editorial Board Member / *Journal of Fisheries of China*
- ZHU Xudong, Editorial Board Member / *Chinese Journal of Applied Ecology*

Selected Invited Talks in International / National Conferences

- BAI Xiaolin. Internal Solitary Waves on the Northern Shelf of the South China Sea: Observations and Simulations. 2023 International Conference on Frontiers of Ocean Science and Technology. October 13-15. Changsha, China. (Invited talk)
- CHAI Fei. Digital Twin Ocean for China Coastal Seas. the 13th International Workshop on Modeling the Ocean. June 27- 30. Hamburg, Germany. (Invited talk)
- DAI Minhan. A Sustainable Blue Economy Toward Carbon Neutrality. the 2nd China and Portuguese-speaking Countries Ocean Research and Education Symposium. October 11-14. Macao, China. (Invited talk)
- DAI Minhan. Observationally Constrained Nutrient Budget Reveals a Dominate Biological Consumption Term & Low Pumping Efficiency of Mesoscale Eddies in the Oligotrophic Ccean. the 12th International Workshop on Tropical Marine Environmental Changes. Guangzhou, China. (Invited talk)
- JIAO Nianzhi. Global ONCE - An Innovative, Scientific Ocean-based Solution Provider. North Pacific Marine Science Organization 2023 Annual Meeting. October 23-27. Seattle. United States. (Plenary talk)
- JIAO Nianzhi. Ocean Negative Carbon Emissions (ONCE) - Potential Best Practice for mCDR. United Nations Climate Change Conference 28. November 29 - December 14. Duba. The United Arab Emirates. (Invited talk)
- LEE Zhongping. Neural Networks for Ocean Color Remote Sensing: A Few Examples and the Question. The 44th Photonlcs and Electromagnetics Research Symposium. July 1-9. Prague. Czech Republic. (Invited talk)
- LI Jianghui. Acoustical and Chemical Strategies for Environmental Monitoring of Marine Carbon Storage. The XIV Congress of the International Association for Engineering Geology and the Environment 2023. September 23-25. Chengdu, China. (Invited talk)
- LI Yangfan. Urban Marine Synergy Towards Risk-resilience Wellbeing Nexus Towards Risk-resilience. 5th International Conference on Canadian, Chinese & African Sustainable Urbanization. December 9-18. Nairobi, Kenya. (Keynote Speech)
- LIU Xiangyang. Mesoscopic Materials Strategies for Development of Cocoon Silk Flexible Meso-Electronic/ Photonics. The 10th IEEE International Conference on Cybernetics and Intelligent Systems. June 9-12. Penang, Malaysia. (Keynote Speech)
- WANG Cheng. LiDAR Visual Localization in Urban Environment. the 12th International Symposium on Mobile Mapping Technology. May 22-28. Padua , Italy. (Keynote Speech)
- WANG Guizhi. COASTAL-SOS: Coastal Sciences for Solutions. 2023 East Asia Marine Cooperation Platform Qingdao Forum. July 27-29. Qingdao, China. (Keynote Speech)
- YOU Weiwei. Genetic Improvements Progress for Fujian Oyster. the 2nd "World is Our Oysters" Symposium. October 27-29. Hong Kong, China. (Invited talk)

© The colofor vein near Jeju Island by HiSea-2

MEL Education

Marine and Environmental International Joint Training Program

The MEL Marine and Environmental International Joint Training Program for Innovative Talents was launched in 2020. The program supports PhD candidates, postdoctoral fellows, and, faculty members to visit or study at the University of Delaware (UD), GEOMAR Helmholtz Centre for Ocean Research Kiel (GEOMAR), and Laboratoire d'Océanographie de Villefranche, Sorbonne University–CNRS (LOV) for joint training. Six candidates were awarded the scholarship in 2023.

Preparing samples in the clean lab

HAN Yuye, a PhD student specializing in marine chemistry, arrived at GEOMAR in March 2023. She is co-supervised by Prof. DAI Minhan from MEL and Dr. Zvi Steiner from GEOMAR. Her research focuses on comparing the sources and sinks of dissolved Ca and Sr between the Mediterranean Sea and the North Pacific Subtropical Gyre (NPSG), with a focus on their interaction with the $CaCO_3$ cycle. Yuye is currently analyzing particulate inorganic carbon and coccolithophore samples collected during the Kuroshio Extension cruise in the western North Pacific Ocean. This analysis helps quantify the contribution of coccolithophores to $CaCO_3$ production and explores the significance of coccolithophore production in various environmental conditions.

HUANG Lei, a PhD student specializing in physical oceanography, successfully completed his project entitled "Cross Ocean Basins Transport & Interactions and Impacts on Global Climate Changes" at the University of Delaware (UD) in June 2023. He was supervised by Prof. YAN Xiaohai. During his time at UD, Lei published two articles in the *Journal of Geophysical Research: Oceans*. Additionally, in February 2022, Lei presented a poster entitled "Decadal cooling events in the south Indian Ocean during the Argo Era" at the Ocean Science Meeting.

HUANG Lei and his supervisor

Outstanding Postdoctoral Fellowship

To foster innovative research and interdisciplinary collaborations, MEL launched the Outstanding Postdoctoral Fellowship Program in 2014. In 2023, a total of 10 applicants were awarded funding, including Dr. PENG Yuzhuo, Dr. WANG Ru, Dr. SUN Bin, Dr. CUI Chuang, Dr. ZHAO Qilei, as well as Dr. CHEN Xincong and Dr. SHEN Yawei, Dr. FANG Weiwei, Dr. HE Changfei, and Dr. LU Ye.

YU Xiaolong, WANG Zhi, ZHANG Murong, ZHANG Chao, WANG Ru, SHEN Yawei, and CHEN Xincong received the NSFC Young Scientists Fund. ZHANG Chao gave an oral presentation at the 8th Young Scientist Forum of Earth Sciences. He also received support from the Marine and Environmental International Joint Training Program and will conduct his research at GEOMAR Helmholtz Centre for Ocean Research Kiel in 2024. WANG Zhi serves as a mentor in the Maritime Silk Road, providing guidance for benthos-related internship work in the Taiwan Strait and the northeastern South China Sea.

Learn from peers and follow the best, explore the changes of sea and land, and seek the harmony of it.

-- SUN Bin

MEL has gathered many outstanding experts and scholars in the field of marine science; their works have led me to new understandings of theoretical models and cutting-edge methods. My vision has reached its highest level because of such a wild range of knowledge and perspectives.

-- ZHAO Qilei

Dr. WANG Zhi in benthos-related internship

I am deeply encouraged and moved by MEL's precision, collaborative atmosphere, and care given to new comers.

--- CUI Chuang

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. Five awardees joined MEL in September 2023.

The healthy academic environment in MEL inspires us every hour and moment. Here, self-affirmation is accompanied by the spirit of "taking risks" and actions of finding solutions.

---DING Yanwei, Physical Oceanography

People in MEL are full of kindness and mutual concern. For me, MEL is an excellent platform for academic exchanges, which is fundamental for my future research.

---CHEN Jichen, Marine Biology

The fighting spirit is a typical feature of individuals, teams, and MEL itself. Resources here are fully utilized to realize self-improvement.

---CHENG Xiaolong, Environment Science

LAI Wendian during the NORC2023-4 cruise

ZHANG Qian attended the International Conference on Canadian, Chinese and African Sustainable Urbanization and gave an oral presentation

MEL Graduate Forum

The 8th MEL Graduate Forum, with the theme "To Infinity and Beyond," took place at the Dongshan Swire Marine Station from July 19th to 22nd. The forum gathered over 48 graduate students and covered a wide range of topics including physical oceanography, marine biogeochemistry, marine biology, marine ecology, marine geology, paleoclimatology, and environmental science.

University Consortium on Aquatic Sciences Symposium

From October 23rd to 27th, the 15th UCAS (University Consortium on Aquatic Sciences) Symposium was held in person. ZHANG Yichi, a candidate in the Joint PhD and Postdoc Fellowship Program between XMU and HKU, served as a core member of the symposium committee. Over 50 graduate students from Xiamen University, Taiwan Ocean University, Taiwan Sun Yat-sen University, and The University of Hong Kong participated in the event. Topics covered various areas such as ecology and biodiversity, biogeochemistry, ecotoxicology, environmental risk assessment and management, and fisheries and aquaculture. The symposium featured keynote presentations, oral talks, and workshops.

MEL Summer Undergraduate Research Fellowship in Marine Environmental Science

Initiated in 2014, the MEL Summer Undergraduate Research Fellowship in Marine Environmental Science (URF) aims to encourage undergraduates to pursue careers in science and technology by providing them with research experiences at MEL. In 2023, a total of 31 undergraduate students from 17 universities joined the program. They worked on mini research projects under the guidance of individual supervisors and received training in lab safety and facility operations. Additionally, several interactive seminars and field studies were organized to enhance their learning experience.

Cruise on the RV Ocean 2

A Decade: My Story With URF

Introduction:

LIU Jun, Associate Research Scientist of the College of Water Science, Beijing Normal University, was a participant in the 1st URF. Dr. LIU Jun's research focuses on materials for aquatic environment restoration, in situ online monitoring and sensing technology for the aquatic environment, and photocatalytic hydrogen production technology. He received support under the Young Scientist Project of the National Key Research and Development Program in 2023.

I came to Xiamen University to participate in the 1st URF in 2014, conducting research on the "Determination of total dissolved phosphorus in seawater with sodium persulfate" under the guidance of Prof. MA Jian. This experience laid a solid foundation for my scientific career, expanded my understanding of interdisciplinary environmental, marine, and ecological science, and exposed me to the integration of industry, education, and research. During this time, I developed impressive friendships with students at home and even abroad. It was also my honor to be introduced to the lovely Environmental Chemistry Research Group-Spring (Xiamen University) led by Prof. YUAN Dongxing.

For me, Xiamen University is always of great importance in each stage of my career. My research on the "Development of in-situ monitoring and sensing instruments for halogenated hydrocarbons in groundwater" received support from the Young Scientist Project of the National Key Research and Development Program in 2023. This could not be achieved without the help of Assoc. Prof. PAN Feng, Prof. MA Jian, and Prof. LI Quanlong at Xiamen University.

It is rare to see such an opportunity for undergraduates to be exposed to scientific research and receive focused training. I strongly recommend our students to actively participate in the URF, making full use of opportunities and advantages provided by MEL.

The 3rd Ocean Color Summer School in China

The Ocean Color Summer School was organized in 2017 to cultivate early careers specializing in water colors remote sensing. After 2 successful iterations, it has earned a good reputation in the related academic community.

In July 17th-28th, 34 participants from 29 universities and institutes gathered in Guiyang, Guizhou Province to attend the 3rd Ocean Color Summer School in China. Co-hosted by MEL, the Nanjing Institute of Geography & Limnology, the Chinese Academy of Science, the State Key Laboratory of Satellite Ocean Environment Dynamics, the Second Institute of Oceanography MNR, the Key Laboratory of Space Ocean Remote Sensing and Application MNR, Laoshan Labotratory, and PIESET Co. Ltd., the summer school aimed to strengthen theoretical foundations, improve practical abilities, and promote communication and exchange. It not only arranged classroom courses related to frontier theories and the application of water color remote sensing, but also had a field component. Under the guidance of 27 distinguished scholars from home and abroad, including Academician PAN Delu, participants were exposed to much knowledge and high-level teachings.

The younger generation is expected to be dedicated to the national cause of building a technological powerhouse. In this path, it is of great importance to have a spirit of seeking truth and the creativity to "raise a question, analyze it, and finally solve it."

-- PAN Delu, Academician, Chinese Academy of Engineering

MEL in the Community

1. Dr, ZHANG Xin, Researcher, Institute of Oceanology, Chinese Academy of Sciences, speaking at the Ocean Youth Speaking event
2. Science at Sea - Xiamen Binglang Middle School students aboard the R/V *Ocean* 2 in the Jiulong River estuary
3. Dr. Faisal Hamzah, Junior Research Scientist, Research Center for Oceanography, the National Research and Innovation Agency, Indonesia, speaking at the "Career Choice of Marine Scientists Salon"
4. Dr. TANG Tiantian, Associate Professor, lead an experiment with students from Xiamen Music School

72 WeChat posts

58 videos

59,2000
the highest number of views

The Lorax speaks for the trees. We speak for the ocean. But unlike The Lorax, scientists need to be taught how to speak for the ocean in ways that are engaging and form connections. MEL is fortunate enough to have 2 dedicated platforms, 70.8 Media Lab and COSEE China, to help scientists "translate" their science for the public and also train scientists to become better storytellers of their own work.

Social Media and Science – Powerful New Bedfellows

MEL is able to reach a much larger audience than ever before thanks to social media. Guided by skilled specialists in the 70.8 Media Lab, 72 WeChat posts and 58 videos among other content (livestreams, blogs, articles) allowed people to connect with the ocean at a personal level, regardless of their proximity to the coast. Even science conferences can be shared via social media, allowing for near real-time virtual outreach. One such post, concerning the Sixth Xiamen Symposium on Marine Environmental Sciences received 592,000 views, demonstrating that skilled use of social media can really broaden our impact.

5-6. Dr. DAI Minhan, Academician, made an introductory reading of *Gaia: A New* Look at Life on Earth
7. Dr. DAI Minhan presenting on the TV show "Ocean Open Course"
8-10. 12th Annual Ocean Science Open Day
11. HONG Jinghan, a high school student from Chiway Repton School Xiamen, shares her ocean story

100+
scientists involved

50+
cooperative units

300+
talents cultivated

Art and Science – Long time Collaborators

The connection between art and science is an old one. Countless stories, songs, paintings, sculptures, and compositions have been inspired by science. Recognizing how art and science inspire each other, MEL has instituted some new programs to challenge the way we view both. The Ocean Speaking town hall included a dancer from the well-known drama "The Ocean Lady" among its panelists and the "Ocean Sensors: Science & Art Exhibition" invited members from the Central Academy of Fine Arts to visit and, for 2 artists, reside in D-SMART, resulting in many inspired pieces of collaborative art work.

Connection – Demystifying Science

Humans are curious by nature. It is what drives us to explore. To ask questions. To want to understand the seemingly unfathomable. Yet many find science (and the ocean) to be scary, unfathomable, and completely foreign. The 12th Annual Ocean Sciences Day allowed MEL to connect with over 10,000 visitors and reignited their innate curiosity about the natural world through hands on experiments and displays, engaging talks, and laboratory tours.

12

13

Out of the Classroom – Broadening Our Reach

The “Ocean Open Courses,” developed in partnership with the Fujian Media Group, was the first TV show focused solely on marine knowledge and culture in China, allowing us another way to reach even more people.

14

A Blue Future - Nurturing the Ocean Stewards and Scientists of Tomorrow

MEL aims to nurture the future voices of the ocean throughout the academic spectrum. The Aquatic Sciences Eco-Learning Programme continues to inspire young students, deepening their critical thinking and observation skills. By introducing them to basic research methods through the context of our ever-changing environment, we are able to foster a new generation of ocean literate citizens, more able to deal with the problems they will face. The Junior Blue Pioneers Training Program focuses on high school students and, unlike many similar immersive science programs throughout the country, participants stay in contact with collaborating MEL faculty for one whole year post program. By mentoring them, we cultivate the marine leaders of the future some of whom went on to join in the Ocean Youth Speaking competition. And the Future Star of Marine Outreach provides intensive media training for marine science students nationally as well as a platform for them to spread their work and technical support.

15

16

12. Junior Blue Pioneers Training Program participants explored the Zhangjiangkou mangrove ecosystem
13. ZHANG Yamian, engineer at the Zhangjiang Estuary Mangrove Wetland Ecosystem Station, guided students from the Junior Blue Pioneers Training Program as they handle samples of benthic organisms
14. Dr. SHI Dalin, Professor, with students from Xiamen No.1 High School of Fujian discussing the influence of the ocean on global climate change
15. Dr. ZHANG Murong, Assistant Professor, gave a lecture on typhoons in Xiamen Wuyuan No. 2 Experimental School of Xiamen
16. Dr. ZHAO Yangyang gave a lecture on ocean deoxygenation at Houtian School of Xiamen

MEL Advancing Science Through Innovation

LidarS-Lab
© SHANGGUAN Mingjia

Center of Major Equipment and Technology (COMET)

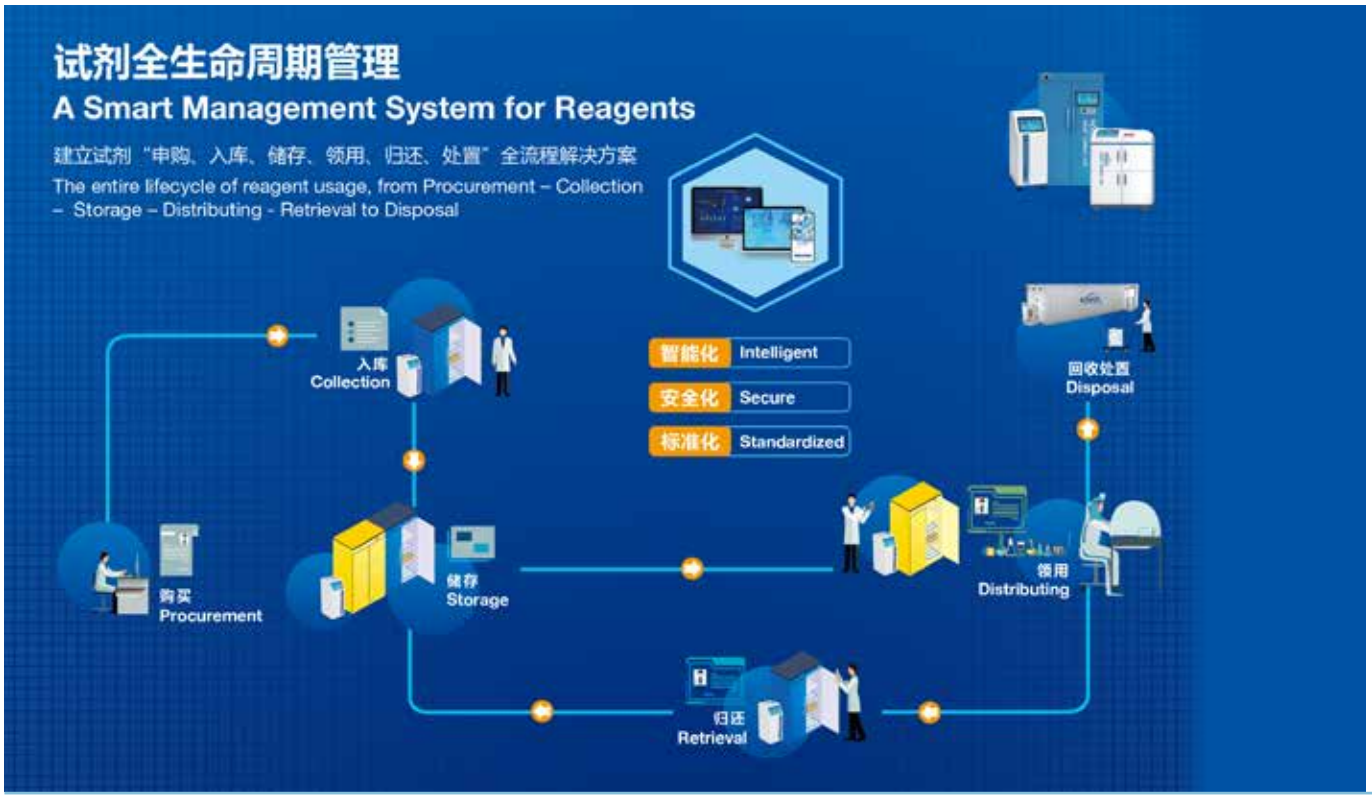
The Center of Major Equipment and Technology (COMET) was established in 2008 to better maintain MEL's scientific instruments with higher efficiency and lower operating costs. COMET continues to strive for excellence as an infrastructure for research and teaching and to inspire innovative research discoveries.

COMET
Center of Major Equipment and Technology

	Scientific instruments available	Registers	Appointments	Users
2013	100+	900+	10000+	400+
2023	210+	3100+	14000+	1100+

A Smart Management System for Reagents

July 2023, the second phase of the construction of the smart management system for reagents has been completed. The system is fully integrated with the first phase both in software and hardware, resulting in an efficient set of management solutions. The system comprises intelligent reagent cabinets (with RFID technology at its core), weighing control platforms, and reagent management systems. The entire lifecycle of reagent usage, from procurement to collection, distribution, storage, retrieval, and disposal is now seamlessly managed, ensuring the integrity and traceability of the process. The system also enables an intelligent, secure, and standardized management model with optimized storage and business operations, comprehensively improving the safety, cost, and efficiency of laboratory management.

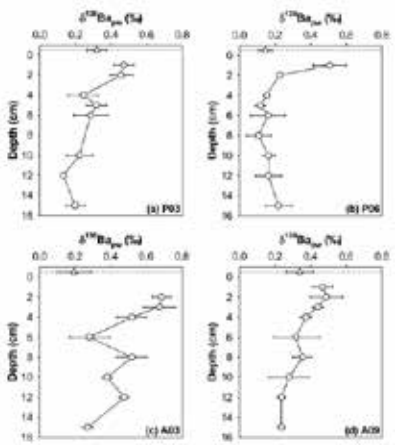


Mass Spectrometry Center

Founded in 2009 and aimed at improving the efficiency of equipment utilization, giving full play to the multiple functions of instruments, and promoting the sharing of high-end resources, the Mass Spectrometry Center is open to marine science, environmental science, ecology, and other disciplines. Its primary function includes the analysis of trace elements and their isotopes and the separation and identification of various organic compounds and real-time tracking followinginternational cutting-edge mass spectrometry technology. The Center provides high-efficiency and high-level services to researchers from domestic and foreign universities and research institutes based on the latest progress in new mass spectrometry analytical methods.

The Center covers an area of 350 m^2 and is now equipped with 9 mass spectrometers (another 3 will be installed in the near future) and 1 class 1,000-level clean lab, with a total value of nearly 50 million yuan.

As of 2023, the Mass Spectrometry Center has supported more than 150 research projects at all levels, the publication of more than 170 papers, organized over 160 instrument training courses, and trained over 800 users. The main achievements in technical support provided by the center include: the precise measurement of stable Ba isotope ratios in pore waters of estuarine sediments using the MC-ICP-MS (Cao et al., 2023) and metaproteomics analysis of *Phaeocystis globose* using the UPLC-tribrid MS (Cheng et al., 2023).



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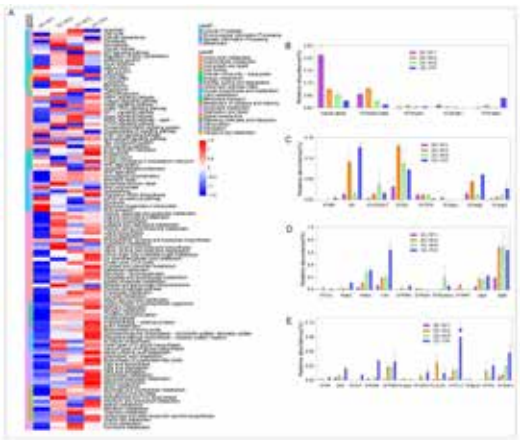


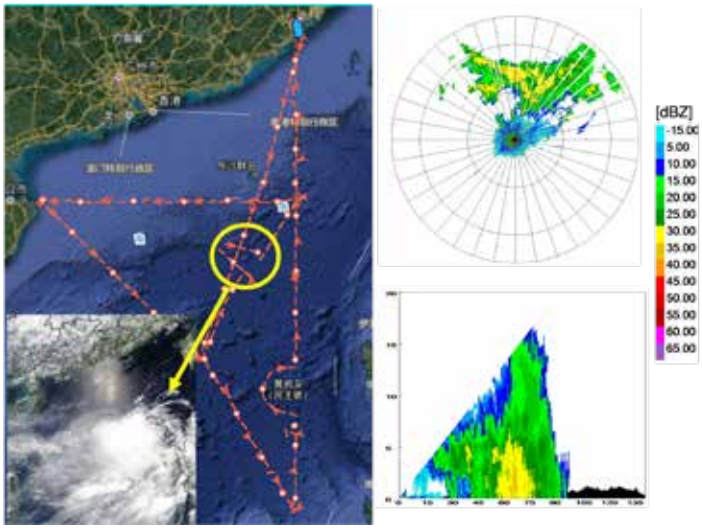
B

Major Instruments

- ICP-MS（Agilent 7700x）
- MC-ICP-MS（Nu Plasma HR）
- LC-MALDI-TOF/TOF（AB SCIEX 5800）
- HPLC-MS/MS（Agilent 1290-6490）
- GC×GC-TOFMS（LECO Pegasus 4D）
- HR-SF-ICP-MS（Thermo Fisher Element XR）
- UPLC-Q/TOF（Waters ACQUITY H-Class-Xevo G2-XS）
- UPLC-tribrid MS（Thermo Fisher UltiMate ™ 3000 RSLCnano-Orbitrap Fusion ™ Lumos ™）
- IRMS（Thermo Fisher Delta V Advantage）
- HR-MC-ICP-MS（Nu Instruments Sapphire）
- ICP-MS（Agilent 7900）
- IRMS（Thermo Fisher Delta Q）

● Doppler Weather Radar for Air-Sea Observations

The C-band dual-polarization Doppler weather radar on the top of the central mast of R/V *TKK* serves as an essential and powerful weather observation system for atmospheric and marine scientific research. It is specially funded by the Ministry of Finance for equipment and infrastructure construction. This radar plays a vital role in the observation of the mesoscale weather system, providing real-time radar reflectivity measurements, intensity, and the location of clouds and rain within a radius of 150 kilometers from the vessel and 20 kilometers above the ocean. The precipitation distribution, the wind profile, and their dynamic structures, as well as other precipitation estimates can also be inferred. This helps scientists to better understand precipitation mechanisms and weather system development. The data can be used to improve climate models and weather predictions.



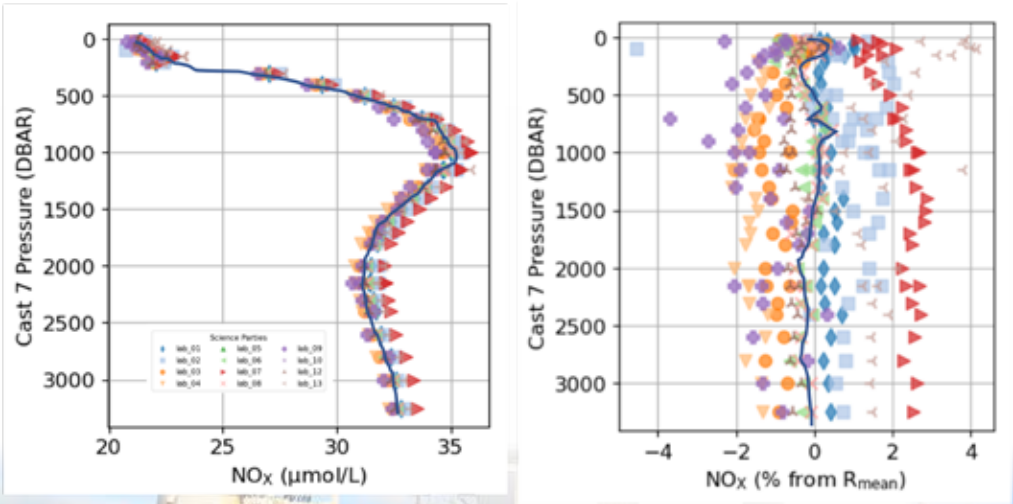
During South China Sea Cruise, the Doppler weather radar, along with other air-sea observatories and equipment were utilized for the first time to observe the monsoon, indicating that the ship was fully capable of real-time air-sea observations. During the expedition, stronger convection cells were seen prior to the onset of an incoming monsoon, while outer typhoon rainbands and organized convections were observed after its onset.

© Marine Operations, Xiamen University

MEL participated for the first time in the International Nutrient Inter-comparison Voyage 2023

Accurate determination of nutrients in seawater is one of the important prerequisites for the exploration of marine ecology and biogeochemistry and is crucial for understanding ocean health in response to climate change. The International Nutrient Inter-comparison Voyage (INIV_2023) was hosted by the Commonwealth Scientific and Industrial Research Organization (CSIRO) of Australia and took place in June 2023 on board the R/V *Investigator*. This project aims to assess the inter-comparability of seawater nutrient measurements and evaluate different shipboard methodologies to reduce errors among international laboratories. INIV_2023 was the first large-scale in-field nutrient comparative experiment in the international marine chemistry community, providing a comprehensive reflection of the measurement capabilities of various laboratories worldwide under the influence of complicated manipulations such as sample collection, storage, preprocessing, and determination. This is significant progress in the inter-comparison of nutrient seawater, overcoming the limitations of lab-based blind tests.

To enhance the comparability of nutrient data between MEL and other global marine chemistry laboratories and to elevate the authority of MEL's ocean observation data internationally, MEL participated in this voyage. This is China's first-ever participation in a large-scale in-field nutrient international interlaboratory comparison cruise. MEL technician WANG Lifang and 2 PhD students, FANG Tengyue and TANG Jinming, completed the intercomparison tasks for all stations and achieved excellent results, comparable to other high-level chemical oceanography laboratories worldwide, including the Scripps Research Institute, Japan Agency for Marine-Earth Science and Technology, the Royal Netherlands Institute for Sea Research, Bangor University, Institut Francais de Recherche Exploitation Mer, and CISRO. This international comparison voyage has further elevated the authority of MEL's seawater nutrient measurement capabilities, contributing to the improvement of global ocean nutrient measurement methods and the comparability and quality of global nutrient data.

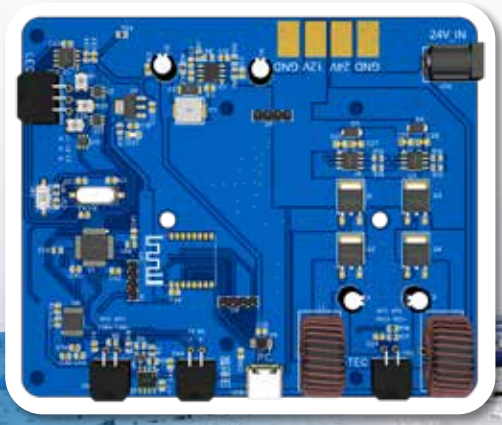


Taking the NOX profile distribution map of SR03-27 (Cast7) station with the best measurement results from all laboratories as an example, the MEL profile (Lab8) fall in the distribution curves of the overall of each laboratory, and the deep layer is basically in the middle position. From the deviation distribution with the robust mean in chart, it can also be seen that the measurement results of MEL at all stations are basically close to the 0% straight line

Instrumentation

The Ocean Observation Technology and Data Center (OOTDC) developed a self-contained *in situ* sea water temperature logger in 2023. This instrument has the advantages of high precision, small size, is easy to operate, and is low cost. As a widely used instrument for *in situ* observations, it can be incorporated into various observation systems, including ocean buoys, subsurface moorings, and seabed-based platforms, to acquire time series of sea water temperature distribution and variations.

The Marine Instrument R&D Center (Ocean IDEA) provides technical services such as mechanical design, embedded software and hardware development, and system integration. In 2023, it has achieved the integration of lightweight buoy systems for near-shore or aquaculture areas, the integration of *in situ* and shipboard pH systems, and hardware modification for nutrient analysis, as well as mechanical and embedded hardware design for marine laser radar.



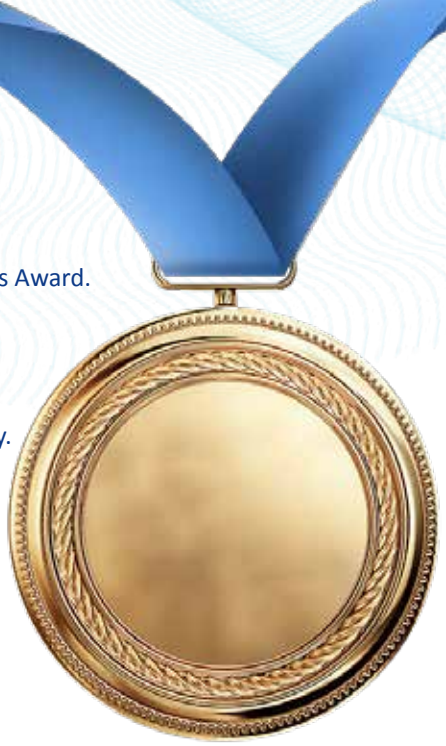
To meet the needs of *in situ* carbon cycle monitoring in near-shore aquaculture areas, estuaries, and confluence areas, Ocean IDEA designed a large usage capacity and ultra-small buoy system that can collect data from sensors such as pCO_2, CTD, DO, chlorophyll a, nitrate, pH, and meteorology. The buoy system has the advantages of portable transportation, installation and deployment, large usage space, and long endurance.

© CAO Fuqing

© YANG Zhifeng

MEL PEOPLE

Recognition, Promotion and Awards



- HONG Haizheng, LI Jianghui, ZHANG Zengkai received the National High-level Talents Award.
- SHEN Yuan was granted funding under the NSFC Fund for Excellent Young Scientists.
- BAO Hongyan received Humboldt Research Fellowship for Experienced Researcher.
- CHEN Luzhen was promoted a Nanqiang Outstanding Professor of Xiamen University.
- GENG Xupu was promoted to Professor in engineering.
- GUO Xianghui and LUO Yawei were promoted to Professor.
- Research by WANG Kejian's team on the "Identification and the related products application of novel antimicrobial peptides" won the 1st "Marine Biotechnology Award - Academia or Industry," granted by the Asia Pacific Marine Biotechnology Association.
- DAI Minhan was given the XMU Nanqiang Distinguished Contribution Award.
- JIAO Nianzhi was elected an "Ocean Figure 2023" by the Ministry of Natural Resources of China.
- Co-research on the "Application of marine artificial upwelling technology" won the Zhejiang Province 1st Class of Science and Technology Progress Award.
  Team Members: CHEN Ying, FAN Wei, PAN Yiwen, **JIAO Nianzhi, ZHANG Yao**, ZHANG Dahai
- Research by WANG Cheng's team on the "Key technology of 3D environmental perception and its industrialization targeting intelligent connected vehicles" won the Fujian Province 2nd Class of Science and Technology Progress Award, 2022.
- Research by WANG Kejian's team on the "Analysis and application of novel antimicrobial peptides" won the Excellent Product Award at the 25th China High-tech Fair.
- Co-research on the "Geographical Distribution Pattern and Adaptation Mechanism of Shellfish in the Intertidal Zone" won the 1st Class of Marine Science and Technology Award, 2022 by the Chinese Society for Oceanography.
  Team Members: DONG Yunwei, LIAO Mingling, **JIANG Yuwu**, WANG Wei, HUANG Haiyan, HAN Guodong, WANG Jie, LI Xiaoxu, HU Lisha
- Co-research on "Key technology and its application of marine Laser remote sensing" won the Special Class of Marine Science and Technology Award, 2022 by the Chinese Society for Oceanography.
  Team Members: MAO Zhihua, ZHU Xiaolei, CHEN Jianyu, WU Songhua, **LEE Zhongping**, MA Chaofei, CHEN Peng, SUN Deyong, HE Yan, LIU Dong, SONG Qingjun, FU Yutiao, LE Chenfeng, ZHOU Bin, QIU Zhenge, HAN Bing, CHEN Benqing, ZHAO Limin, LIU Bingyi, TAO Bangyi
- Co-research on the "Occurrence mechanism of green tide in the South Yellow Sea the targeting technical system for source prevention and control" won the Ministry of Natural Resources of the People's Republic of China 1st Class of Science.
  Team Members: HE Peimin, JIANG Xiaoshan, ZHANG Jianheng, LIU Caicai, WANG Hua, ZHAO Sheng, **LIU Tao**, JI Huanhong, CAI Chun'er, QIN Yutao, XU Juntian, WEN Ruobing, LIU Jinlin, WU Hailong, ZHAO Shuang
- Co-research on the "Theoretical and practical research on common large seaweed resources in the South China Sea" won the Technology Progress Award and Hainan Province 2nd class of Natural Science Award.
  Team Members: **LIU Tao**, TANG Xianming, DU Hong, CHEN Weizhou, YANG Shouguo, WU Xiangyu.

Faculty

Dr. CAO Ling
Professor

Dr. CAO Ling received her PhD from the University of Michigan in 2012, and was engaged in postdoctoral research at the University of Michigan and Stanford University from 2012 to 2016. She served as an associate research fellow in Stanford University from 2016 to 2017 and a special research fellow in Shanghai Jiao Tong University from 2017 to 2023. She joined Xiamen University in March 2023. Dr. CAO's research focuses on cutting-edge social and scientific issues such as sustainable fisheries and integrated marine ecological management. She has published articles as the first or corresponding author in top international comprehensive journals such as *Nature, Science*, *Nature Sustainability*, and *PNAS*.

Dr. XIU Peng
Professor

Dr. XIU Peng received his PhD from Ocean University of China in 2008. He was engaged in postdoctoral research at the University of Maine from 2008 to 2009 and the National Center for Atmospheric Research from 2009 to 2010. He served as a research scientist at the University of Maine from 2010 to 2014 and was appointed the Director of the Guangdong Provincial Key Laboratory of Ocean Marine Remote Sensing from 2022 to 2023. Dr. XIU joined Xiamen University as a Nanqiang Outstanding Professor in July 2023, mainly engaging in research and teaching in marine ecosystem dynamics, carbon cycle and climate change, and ocean dynamics physical-ecological-biogeochemical coupling simulation and modeling.

Dr. HUANG Yibin
Associate Professor

Dr. HUANG Yibin did his PhD work at Duke University and Xiamen University from 2018 to 2020 and received his degree from Xiamen University in 2020. He finished his postdoctoral research at the University of California (Santa Cruz), the National Oceanic and Atmospheric Administration, and University of Hawaii, and then joined Xiamen University in October 2023. His research focuses on key carbon sequestration processes in the marine biological pump, with the aim to elucidate its underlying regulatory mechanisms, evolutionary trends, and its effects and implications for related biogeochemical processes.

Outstanding Postdoctoral Fellows

SUN Bin
Sustainable ecology, conservation, and sustainable utilization of coastal biodiversity

WANG Ru
Physical oceanography, ocean dynamics, ocean multi-scale dynamic processes and their interactions

ZHAO Qilei
Recreational fisheries, marine sustainability assessment

PENG Yuzhuo
Arctic sea ice, Antarctic sea ice, Tibetan Plateau, climate change

CUI Chuang
Crustacean immunology, aquatic virology

SHEN Yawei
Environmental stress response and genetic breeding of marine mollusks

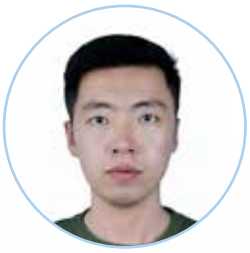
CHEN Xincong
Coastal wetland ecology and invasion ecology

FANG Weiwei
Ecological system response to typhoons, ocean numerical simulation, ocean ecological modelling

HE Changfei
Marine microbial ecology, marine carbon cycle, genome, metagenomics

LU Ye
Marine microbial ecology, microbial genomics

Research Scientists



Dr. CHEN Qi
Assistant Research Scientist
Molecular mechanism of marine microbial mediated labile dissolved organic carbon transformation

Dr. GAO Xiaolong
Research Scientist
Behavioral ecology of marine shellfish

Dr. YUAN Zhongwei
Assistant Research Scientist
Nutrient biogeochemistry

Research Assistants

BAI Xue

CHEN Luyao

DENG Zhanghan

GAO Ruixi

HONG Xiao

LIU Yongqi

LUO Hui

SUN Jingyue

SUN Yafei

Research Assistants

WU Linni

XIAO Shizi

XU Lu

XU Ming

XUE Bowen

YANG Yutong

YU Jinping

YU Yiqi

YUE Xinli

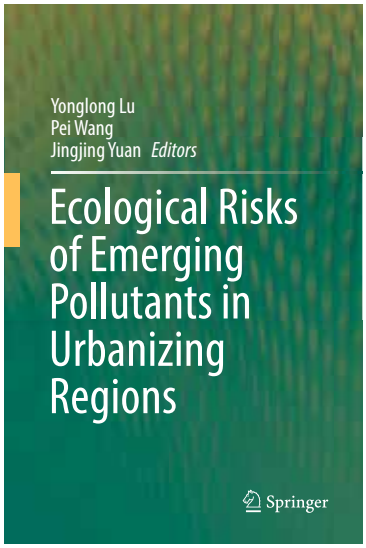
ZHANG Hongyi

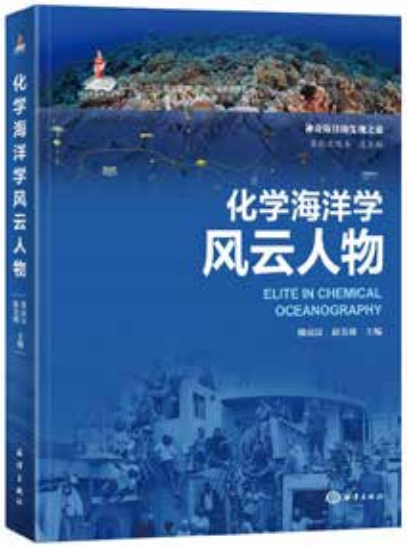
ZHONG Wenjing

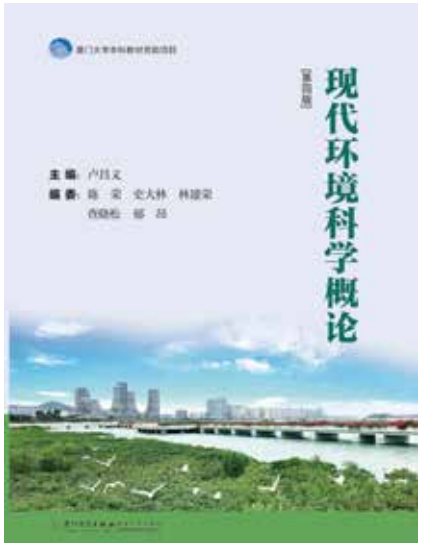
ZHU Jin

MEL Publications

Books and Chapters







- **LU Yonglong, WANG Pei, YUAN Jingjing (Editors). 2023. Ecological Risks of Emerging Pollutants in Urbanizing Regions. Springer**
- **Gourp of Development Strategy Study of Chinese Disciplines and Frontiers (2021-2035). 2023. Development Strategy of Chinese Oceanography 2035. Science Press**
  (Expertises and editors involved: JIAO Nianzhi, DAI Minhan, LIU Zhiyu, WANG Dazhi, SHI Dalin, HUANG Bangqin, XIU Peng, etc,.)
- **DAI Minhan, ZHAO Meixun. 2023. ELite in Chemical Oceanography. China Ocean Press**
- **YUAN Dongxing, LI Yan, HONG Huasheng. 2023. Spring Immersing Into the Sea: the Development of Environmental Science in Xiamen University. Xiamen University Press**
- **LU Changyi. 2023. Introduction of Modern Environmental Science (the 4th Version). Xiamen University Press**
  Editorial Board: CHEN Rong, SHI Dalin, LIN Jianrong, ZHA Xiaosong, YU Ang
- **JIANG Yuhuan, ZHANG Jiwei, XUE Xiongzhi, PAN Xinchun. 2023. Study on Global Governance and Regional Practice on Marine Biodiversity. China Ocean Press**

Journal Papers

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

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

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

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

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

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

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

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

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

Li, BJ; Chen, L; Yan, MZ; Jiang, Z; Xue, YG; Xu P*. Integrative transcriptomics and metabolomics analysis of body color formation in the common carp. ***AQUACULTURE***. 2024, 579, 740143

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Chen, MM, Li, YF; Tang, K; Hu, AY; Fan, W; Wang, DL; Arthur, CT; Zhang, Y*. Highly diverse diazotrophs drive high N_2 fixation rates in a shallow submarine hydrothermal system. ***FUNDAMENTAL RESEARCH***. 2023, DOI: 10.1016/j.fmre.2023.07.009

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

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

EVOLUTIONARY MICROBIOLOGY. 2023, 73, 5859

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

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

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

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

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

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

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

Cheng, HM; Zhang, SF; Ning, XL; Peng, JX; Li, DX; Zhang, H; Zhang, K; Lin, L; Liu, SQ; Smith, WO; Wang, DZ*. Elucidating colony bloom formation mechanism of a harmful alga *Phaeocystis globosa* (Prymnesiophyceae) using metaproteomics. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 869, 161846

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

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

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

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

Dai, HJ; Yin, MM; Zhang, SM; Wei, J; Jiao, TH; Chen, QM; Chen, QS; Chen, X; Oyama, M; Chen, XM*. A paper-based photoelectrochemical aptsensor using near-infrared light-responsive $AgBiS_2$ nanoflowers as probes for the detection of *Staphylococcus aureus* in pork. ***TALANTA***. 2024, 266, 125128

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

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

Deng, WC*; Zhao, ZH; Li, YF; Cao, RG; Chen, MM; Tang, K; Wang, DL; Fan, W; Hu, AY; Chen, GC; Chen, CTA; Zhang, Y*. Strategies of chemolithoautotrophs adapting to high temperature and extremely acidic conditions in a shallow hydrothermal ecosystem. ***MICROBIOME***. 2023, 11, 270

Ding, S; Wang, FF; Yue, H; Peng, SY; Ruan, QZ; Lin, JL; Cao, WZ*. Downward trends in streamflow and sediment yield associated with soil and water conservation in the Tingjiang River Watershed, Southeast China. ***WATER***. 2023, 15, 212

Du, D; Lu, YL*; Li, QF; Zhou, YQ; Cao, TZ; Cui, HT; Han, GX. Estimating industrial process emission and assessing carbon dioxide equivalent of perfluorooctanoic acid (PFOA) and its salts in China. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 867, 161507

Fan, JL; Li, FT; Hu, SY; Gao, KS; Xu, JT*. Larger diatoms are more sensitive to temperature changes and prone to succumb to warming stress. ***LIMNOLOGY AND OCEANOGRAPHY***. 2023, 68: 2512-2528

Fang, ZM; Zhang, K; Yang, WF*; Chen, M; Stubbins, A*; Hu, HN. Top-down control over dissolved organic carbon in the bottom water of the Weddell Sea and its implication for the continental shelf pump. ***PROGRESS IN OCEANOGRAPHY***. 2023, 219, 103145

Feng, Y; Xiong, YL; Hall-Spencer, JM; Liu, KL; Beardall, J; Gao, KS; Ge, JK; Xu, JT; Gao, G*. Shift in algal blooms from micro- to macroalgae around China with increasing eutrophication and climate change. ***GLOBAL CHANGE BIOLOLGY***. 2023, 30, e17018

Fu, HJ; Jian, X*; Pan, HQ. Bias in sediment chemical weathering intensity evaluation: A numerical simulation study. ***EARTH-SCIENCE REVIEWS***. 2023, 246, 104574

Fu, Y*; Lozier, MS*; Biló, TC; Bower, AS; Cunningham, SA; Cyr, F; de Jong, MF; deYoung, B; Drysdale, L; Fraser, N; Fried, N; Furey, HH; Han, GQ; Handmann, P; Holliday, NP; Holte, J; Inall, ME; Johns, WE; Jones, S; Karstensen, J; Li, FL; Pacini, A; Pickart. Seasonality of the meridional overturning circulation in the subpolar North Atlantic. ***COMMUNICATIONS EARTH & ENVIRONMENT***. 2023, 4, 181

Gan, Y; Wang, Y; Yu, F; Xiao, QZ; Luo, X; Han, ZF; Ke, JW; You, WW*; Ke, CH*. Genotype by environment interactions for productive traits of purebred and crossbred abalone strains under different rearing modes. ***AQUACULTURE***. 2023, 563, DOI: 10.1016/j.aquaculture.2022.738966

Gao, KL; Tang, YH; Chen, DL*; Wang, J; Duan, AM. Influence of Arctic sea ice and Interdecadal Pacific Oscillation on the recent increase of winter extreme snowfall in Northeast China. ***ATMOSPHERIC RESEARCH***. 2023, 295, 107030

Gao, KL; Wang, J; Chen, DL; Hu, WT; Zhang, YJ*; Duan, AM; Zhang, XX. Synoptic climate settings and moisture supply for the extreme heavy snowfall in northern China during 6-8 November 2021. ***JOURNAL OF METEOROLOGICAL RESEARCH***. 2023, 37: 75-89

Gao, XL; Lyu, MX; Zhang, M; Lin, SH; Ke, CH*. Structural characteristics of orexin receptor type 2 in Pacific abalone and its diurnal expression pattern after fasting and re-feeding. ***INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES***. 2023, 229: 873-884

Gao, XL; Zhang, M; Lin, SH; Lyu, M; Luo, X; You, WW; Ke, CH*. Reproduction strategy of nocturnal marine molluscs: Running for love. ***INTEGRATIVE ZOOLOGY***. 2023, 18: 906-923

Gao, Y; Schmitt, FG; Hu, JY; Huang, YX*. Probability-based wind-wave relation. ***FRONTIERS IN MARINE SCIENCE***. 2023, 9, 1085340

Geng, XC; Jia, XL; Liu, LQ; Ma, SP; Liu, HB*; Liu, T*. Gametophyte phase of commercial kelps, the potential food supplements for essential fatty acids and n-3 polyunsaturated fatty acids. ***JOURNAL OF FOOD SCIENCE***. 2023, 88: 2411-2424

Gong, HB; Hu, WY; Huang, QT; Wang, WL; Pu, SH; Xie, Y; Liu, GK*; Tian, ZQ*. Highly sensitive qualitative analysis of electronegative molecules based on surface-enhanced Raman spectroscopy. ***CHINESE JOURNAL OF ANALYTICAL CHEMISTRY***. 2023, 51: 1213-1221

Goudsmit-Harzevoort, B*; Lansu, A; Baatsen, MLJ; von der Heydt, AS; de Winter, NJ; Zhang, YR; Abe-Ouchi, A; de Boer, A; Chan, WL; Donnadieu, Y; Hutchinson, DK; Knorr, G; Ladant, JB; Morozova, P; Niezgodzki, I; Steinig, S; Tripati, A; Zhang, ZS; Zhu, J; Zi. The relationship between the global mean deep-sea and surface temperature during the early Eocene. ***PALEOCEANOGRAPHY AND PALEOCLIMATOLOGY***. 2023, 38, e2022PA004532

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

SYSTEMS. 2024, 241, 103917

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

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

Gu, XX; Qiao, PY; Krauss, KW; Lovelock, CE; Adams, JB; Chapman, SK; Jennerjahn, TC; Lin, QL; Chen, LZ*. Changes in mangrove blue carbon under elevated atmospheric CO_2. ***ECOSYSTEM HEALTH AND SUSTAINABILITY***. 2023, 9, 33

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

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

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

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

Gu, ZD; Jian, X*; Liu, GX; Shen, XT; Fu, HJ; Zhai, XF; Jiang, H. Age, provenance and tectonic setting of the Tonian–Cryogenian clastic successions in the northwest Bikou terrane, NW Yangtze Block, Central China. ***PRECAMBRIAN RESEARCH***. 2023, 397, 107197

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

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

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

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

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

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

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

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

Häder, DP*; Gao, KS. Aquatic productivity under multiple stressors. ***WATER***. 2023, 15, 817

Halili, B; Yang, XM*; Wang, R; Zhu, KY; Hai, XJ*; Wang, CC*.

Inferring the population history of Kyrgyz in Xinjiang, Northwest China from genome-wide array genotyping. ***AMERICAN JOURNAL OF BIOLOGICAL ANTHROPOLOGY***. 2023, 181: 611-625

Han, AQ*; Yang, JYT; Chen, ML; Zheng, ZZ; Yin, XJ; Lin, H*; Xu, MN; Kao, SJ. Hydrological connectivity controls on the dynamics of particulate organic matter in a semi-enclosed mariculture bay. ***AQUACULTURE***. 2024, 578, 740109

Han, LL; Wang, HL; Ge, LH; Xu, MN; Tang, JM; Luo, L; Li, P*; Kao, SJ*. Transition of source/sink processes and fate of ammonium in groundwater along with redox gradients. ***WATER RESEARCH***. 2023, 231, 119600

He, WL; Ke, X; Li, TC*; Wu, YM; Tang, XM; Chen, WZ; Liu, T; Du, H*. Comparison and improvement of RNA extraction methods in *Sargassum* (Phaeophyta). ***JOURNAL OF PHYCOLOGY***. 2023, 59: 822-834

He, YJ; Lin, D; Chen, BH; Liu, XZ; Ye, JN; Sun, J; Tang, K*. *Paracoccus albicereus* sp. nov., isolated from the shallow-sea hydrothermal system off Kueishantao Island. ***INTERNATIONAL JOURNAL OF SYSTEMATIC AND EVOLUTIONARY MICROBIOLOGY***. 2023, 73, DOI: 10.1099/ijsem.0.005998

Hong, HL; Qian, L; Wu, SJ; Ruan, LY; Li, HY; Su, ML; Zhang, BH; Liu, JC; Yan, CL; Lu, HL*. Centennial-scale source shift in potentially toxic metal(loid)s in Yangtze River. ***JOURNAL OF HAZARDOUS MATERIALS***. 2024, 461, 132526

Hossain, KB; Lin, Y; Chen, K; Zhang, MY; Liu, MY; Zhao, WL; Ke, HW; Liu, FJ; Wang, CH; Cai, MG*. Policy impact on microplastic reduction in China: Observation and prediction using statistical model in an intensive mariculture bay. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 858, 160075

Hu, WT*; Duan, AM; Wu, GX; Mao, JY; He, B. Quasi-biweekly oscillation of surface sensible heating over the central-eastern Tibetan Plateau and its relationship with spring rainfall in China. ***JOURNAL OF CLIMATE***. 2023, 36: 6917-6936

Hu, ZD; Lin, HY*; Liu, ZY*; Cao, ZY; Zhang, FT; Jiang, ZP; Zhang, Y; Zhou, KB; Dai, MH. Observations of a filamentous intrusion and vigorous submesoscale turbulence within a cyclonic mesoscale eddy. ***JOURNAL OF PHYSICAL OCEANOGRAPHY***. 2023, 53: 1615-1627

Huang, JF; Zhou, MC; You, WW; Luo, X*; Ke, CH*. Molecular characterization and function of bone morphogenetic protein 7 (*BMP7*) in the Pacific abalone, *Haliotis discus hannai*. ***GENES***. 2023, 14, 1128

Huang, JP*; Zhou, XJ; Wu, GX*; Xu, XD; Zhao, QY; Liu, YM; Duan, AM; Xie, YK; Ma, YM; Zhao, P; Yang, S; Yang, K; Yang, HJ; Bian, JC; Fu, YF; Ge, JM; Liu, YZ; Wu, QG; Yu, HP; Wang, BB; Bao, Q; Qie, K. Global Climate impacts of land-surface and atmospheric processes over the Tibetan Plateau. ***REVIEWS OF GEOPHYSICS***. 2023, 61, e2022RG000771

Huang, L; Zhuang, W*; Lu, WF; Zhang, Y; Edwing, D; Yan, XH. Rapid sea level rise in the tropical Southwest Indian Ocean in the recent two decades. ***GEOPHYSICAL RESEARCH LETTERS***. 2023, 51, e2023GL106011

Huang, L; Zhuang, W*; Wu, ZL; Zhang, Y; Meng, LS; Edwing, D; Yan, XH. Quasi-decadal temperature variability in the intermediate layer of subtropical South Indian Ocean during the Argo period. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2023, 128, e2023JC019775

Huang, X; He, Q; Zhang, ZK; Zhu, KF*. Two sides of the same coin: The economic and environmental effects of China's international trade from a global value chain perspective. ***CHINA ECONOMIC REVIEW***. 2023, 79, 101952

Huang, Y; Sun, H; Wei, SZ; Cai, LL; Liu, LQ; Jiang, YA; Xin, JB; Chen, ZQ; Que, YQ; Kong, ZB; Li, TT; Yu, H; Zhang, J; Gu, Y; Zheng, QB*; Li, SW*; Zhang, R*; Xia, NS*. Structure and proposed DNA delivery mechanism of a marine roseophage. ***NATURE COMMUNICATIONS***. 2023, 14, 3609

Huang, ZQ; Yu, FL*. InSAR-derived surface deformation of Chaoshan Plain, China: Exploring the role of human activities in the evolution of coastal landscapes. ***GEOMORPHOLOGY***. 2023, 426, 108606

Jian, ZM*; Yu, JM; Wang, Y*; Dang, HW; Dai, MH; Li, C; Ji, X; Wang, XX; Chen, Y. Equatorial Pacific sea-Air CO_2 exchange modulated by upper ocean circulation during the last deglaciation. ***GEOPHYSICAL RESEARCH LETTERS***. 2023, 50, e2023GL105169

Jiang, HB*; Hutchins, DA*; Ma, WT; Zhang, RF; Wells, M; Jiao,

NZ; Wang, YT*; Chai, F. Natural ocean iron fertilization and climate variability over geological periods. ***GLOBAL CHANGE BIOLOGY***. 2023, 29: 6856-6866

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

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

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

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

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

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

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

King, MA*; Lyu, KW; Zhang, XB. Climate variability a key driver of recent Antarctic ice-mass change. ***NATURE GEOSCIENCE***. 2023, 16: 1128-1135

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

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

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

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

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

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

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

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

Li, DY; Zheng, MF; Qiu, YS; Lai, LM; Chen, NW; Jing, HM; Zhang, R*; Chen, M. Comparative assessment of nitrogen fixation rate by $^{15}N_2$ tracer assays in the South China Sea. ***ACTA OCEANOLOGICA SINICA***. 2023, 42: 75-82

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

Li, H; Gao, KS*. Deoxygenation enhances photosynthetic performance and increases N_2 fixation in the marine cyanobacterium *Trichodesmium* under elevated pCO_2. ***FRONTIERS IN MICROBIOLOGY***. 2023, 14, 1102909

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

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

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

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

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

Li, JS; Zhang, KD; Li, L; Wang, YJ; Wang, C; Lin, SJ*. Two-sided effects of the organic phosphorus phytate on a globally important marine coccolithophorid phytoplankton. ***MICROBIOLOGY SPECTRUM***. 2023, e0125523

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

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

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

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

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

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

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

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

Li, YT; Zhang, XY; Wang, DN; Liu, X; Zhou, KB; Huang, BQ; Dai, MH; Cao, ZM*. Spatial and seasonal dynamics of biogenic silica in a eutrophic marginal sea, the East China Sea. ***FUNDAMENTAL RESEARCH***. 2023, DOI: 10.1016/j.fmre.2023.07.005

Li, YY; Yun, HY; Chen, R; Jiao, NZ; Zheng, Q; Yang, YL*; Zhang, R*. Characterization of a vibriophage infecting pathogenic *Vibrio*

harveyi. ***INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES***. 2023, 24, 16202

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

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

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

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

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

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

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

Lin, LJ; Zhang, XT; Yuan, B; Li, HY; Lu, HL; Liu, JC; Hong, HL*; Yan, CL*. Effects of biofouling on the properties and sinking behavior of disposable face masks in seawater: A systematic comparison with microplastic films and particles. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY LETTERS***. 2023, 10: 792-797

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

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

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

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

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

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

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

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

Lin, ZF; Shangguan, MJ*; Cao, FQ; Yang, ZF; Qiu, Y; Weng, ZW. Underwater single-photon lidar equipped with high-sampling-rate multi-channel data acquisition system. ***REMOTE SENSING***. 2023, 15, 5216

Lin, ZL; Liang, D; Bhalla, APS; Al-Shabab, AAS; Skote, M; Zheng, W; Zhang, Y*. How wavelength affects hydrodynamic performance of two accelerating mirror-symmetric undulating hydrofoils. ***PHYSICS OF FLUIDS***. 2023, 35, 81901

Lin, ZL; Zheng, W; Zhang, JH; Ou, WZ; Yang, C; Huang, HB; Xu, WJ; Yang, ZY; Zhou, W*; Zhang, Y*. Mudskipper-inspired amphibious robotic fish enhances locomotion performance by pectoral-caudal fins coordination. ***CELL REPORTS PHYSICAL SCIENCE***. 2023, 4, 101589

Liu, CL; Xu, Q; Wang, Z; Jiang, XB; Ding, GM; Ren, QQ; Song, JH; Liu, M*. Community structure of benthic molluscs shaped by environmental and ecological variables in the coastal waters of Changle, Fujian Province, China. ***FRONTIERS IN MARINE SCIENCE***. 2023, 10, 1045393

Liu, GB; Chen, ZW*; Lu, HH; Liu, ZY; Zhang, Q; He, QY; He, YH; Xu, JX; Gong, YK; Cai, SQ*. Energy transfer between mesoscale eddies and near-inertial waves from surface drifter observations. ***GEOPHYSICAL RESEARCH LETTERS***. 2023, 50, e2023GL104729

Liu, HY; Jie, DM*; Liu, LD; Gao, GZ; Li, DH; Li, NN. Temperature sensitivity of surface soil phytoliths: A case study in Northeast China. ***QUATERNARY INTERNATIONAL***. 2023, 667: 51-60

Liu, J; Bellerby, RGJ*; Zhu, Q*; Ge, JZ. Estimating sea surface salinity in the East China Sea using satellite remote sensing and machine learning. ***EARTH AND SPACE SCIENCE***. 2023, 10, e2023EA003230

Liu, J; Bellerby, RGJ*; Zhu, Q; Ge, JZ. Estimation of sea surface pCO_2 and air-sea CO_2 flux in the East China Sea using *in-situ* and satellite data over the period 2000-2016. ***CONTINENTAL SHELF RESEARCH***. 2023, 254, 104879

Liu, JY; Yin, ZH; Zhou, MZ; Yu, WC; You, WW; Chen, YX; Luo, X*; Ke, CH*. Genetic parameters and genomic prediction for nutritional quality-related traits of Pacific abalone (*Haliotis discus hannai*). ***AQUACULTURE***. 2024, 579, 740118

Liu, JY; Zhou, MZ; Yin, ZH; Huang, D; Zhu, LY; Zou, WG; Yu, WC; Shen, YW; Huang, ZK; You, WW; Ke, CH*; Luo, X*. Development of near-infrared reflectance spectroscopy (NIRS) model and genome-wide association study for glycogen and protein content in Pacific abalone. ***AQUACULTURE***. 2023, 576, 739764

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

Liu, L; Chen, XF; Ye, JN; Ma, XY; Han, Y; He, YJ; Tang, K*. Sulfoquinovose is a widespread organosulfur substrate for Roseobacter clade bacteria in the ocean. ***ISME JOURNAL***. 2023, 17: 393-405

Liu, L; Yu, XL; Xue, HJ; Xu, P*. Reconstructability of the open ocean's interior from satellite observations: Evaluating the isQG method using yearlong high-resolution mooring data in the Northeast Atlantic. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2023, 128, e2023JC020124

Liu, L; Zhong, KX; Chen, Q; Wang, Y; Zhang, T; Jiao, NZ; Zheng, Q*. Selective cell lysis pressure on rare and abundant prokaryotic taxa across a shelf-to-slope continuum in the Northern South China Sea. ***APPLIED AND ENVIRONMENTAL MICROBIOLOGY***. 2023, 89, e01393-23

Liu, MY; Zheng, HW; Cai, MG*; Leung, KMY; Li, YF; Yan, M; Zhang, ZF; Zhang, K; Chen, M; Ke, HW. Ocean stratification impacts on dissolved polycyclic aromatic hydrocarbons (PAHs): From global observation to deep learning. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2023, 57: 18339–18349

Liu, PY; Zheng, Y; Zhang, RR; Bai, JL; Zhu, KL; Benzerara, K; Menguy, N; Zhao, X; Roberts, AP; Pan, YX; Li, JH*. Key gene networks that control magnetosome biomineralization in magnetotactic bacteria. ***NATIONAL SCIENCE REVIEW***. 2023, 10, nwac238

Liu, XH; Li, P*; Wang, HL; Han, LL; Yang, K; Wang, YH; Jiang, Z; Cui, L; Kao, SJ. Nitrogen fixation and diazotroph diversity in groundwater systems. ***ISME JOURNAL***. 2023, 17: 2023-2034

Liu, XL; Ye, M; Lin, FY; Yang, LO; Lin, J; Jiang, YQ; Tian, DJ; Chen, X*. Fluorescence sensing of ammonia in water using lead-free perovskite Cs2AgInCl6:Bi. ***MICROCHEMICAL JOURNAL***. 2023, 192, 108913

Liu, XW; Liu, Y; Jiang, ZY; Cao, L*. Spatiotemporal variation of China's mariculture potential under climate change. ***REVIEWS IN FISH BIOLOGY AND FISHERIES***. 2023, DOI: 10.1007/s11160-023-09814-2

Liu, Y*; Moore, JK*; Primeau, F; Wang, WL. Reduced CO_2 uptake and growing nutrient sequestration from slowing overturning circulation. ***NATURE CLIMATE CHANGE***. 2023, 13: 83-90

Liu, Y; Cao, L*; Cheung, WWL; Sumaila, UR. Global estimates of suitable areas for marine algae farming. ***ENVIRONMENTAL RESEARCH LETTERS***. 2023, 18, 64028

Liu, ZJ; Cai, RH*; Chen, YL; Zhuo, XC; He, C; Zheng, Q; He, D; Shi, Q; Jiao, NZ*. Direct production of bio-recalcitrant carboxyl-rich alicyclic molecules evidenced in a bacterium-induced steroid degradation experiment. ***MICROBIOLOGY SPECTRUM***. 2023, 11, e04693-22

Long, S; Chen, FY; Li, JS; Yang, Y; Wang, KJ*. A new gene *SCY3* homologous to *Scygonadin* showing antibacterial activity and a potential role in the sperm acrosome reaction of *Scylla paramamosain*. ***INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES***. 2023, 24, 5689

Lu, YH*; Cheung, SY; Koh, XP ; Xia, XM; Jing, HM; Lee, PY; Kao, SJ; Gan, JP; Dai, MH; Liu, HB*. Active degradation-nitrification microbial assemblages in the hypoxic zone in a subtropical estuary. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 904, 166694

Lu, ZY; Wang, FF; Xiao, K; Wang, Y; Yu, QBA; Cheng, P; Chen, NW*. Carbon dynamics and greenhouse gas outgassing in an estuarine mangrove wetland with high input of riverine nitrogen. ***BIOGEOCHEMISTRY***. 2023, 162: 221-235

Lu, ZY; Xiao, K; Wang, FF; Wang, Y; Yu, QB; Chen, NW*. Salt marsh invasion reduces recalcitrant organic carbon pool while increases lateral export of dissolved inorganic carbon in a subtropical mangrove wetland. ***GEODERMA***. 2023, 437, 116573

Luo, L*; Liao, TT; Zhang, XL; Wu, YF; Li, JW; Zhang, RJ; Zheng, ZZ; Kao, SJ. Quantifying the formation pathways of nitrate in size-segregated aerosols during winter haze pollution. ***GONDWANA RESEARCH***. 2023, 115: 71-80

Luo, L*; Wu, SQ; Zhang, RJ; Wu, YF; Li, JW; Kao, SJ. What controls aerosol $\delta^{15}N\text{-}NO_3^-$? NOx emission sources vs. nitrogen isotope fractionation. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 871, 162185

Luo, Q; Zhang, M; Lin, SH; Lin, ZX; Hu, Y; Ke, CH*; Gao, XL*. Behavioral plasticity of nocturnal marine organisms under interspecific competitive pressure. ***GLOBAL ECOLOGY AND CONSERVATION***. 2023, 46, e02579

Luo, WC; Luo, YW*. Diurnally dynamic iron allocation promotes N_2 fixation in marine dominant diazotroph *Trichodesmium*. ***COMPUTATIONAL AND STRUCTURAL BIOTECHNOLOGY JOURNAL***. 2023, 21: 3503-3512

Lyu, KW*; Zhang, XB*; Church, JA; Wu, QR; Fiedler, R; Dias, FB. Roles of surface forcing in the Southern Ocean temperature and salinity changes under increasing CO_2: Perspectives from model perturbation experiments and a theoretical framework. ***JOURNAL OF PHYSICAL OCEANOGRAPHY***. 2023, 53: 19-36

Lyu, M; Gao, XL*; Zhang, M; Lin, SH; Ke, CH*. Circadian feeding characteristics of different abalone species and construction of a gastrointestinal evacuation model. ***AQUACULTURE***. 2023, 576, 739826

Ma, H; Hong, WS; Chen, SX*. A progestin regulates the prostaglandin pathway in the neuroendocrine system in female mudskipper Boleophthalmus pectinirostris. ***JOURNAL OF STEROID BIOCHEMISTRY AND MOLECULAR BIOLOGY***. 2023, 231, 106300

Ma, LQ; Bai, XL; Laws, EA; Xiao, WP*; Guo, C; Liu, X; Chiang, KP; Gao, KS; Huang, BQ*. Responses of phytoplankton communities to internal waves in oligotrophic oceans. ***JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS***. 2023, 128, e2023JC020201

Ma, MM; Lu, MX; Sun, R; Zhu, ZH; Fuller, DQ; Guo, JX; He, GL; Yang, XM; Tan, LL; Lu, YX; Dong, JJ; Liu, RL; Yang, JS; Li, B; Guo, TN; Li, XR; Zhao, DY; Zhang, Y; Wang, CC*; Dong, GH*. Forager-farmer transition at the crossroads of East and Southeast Asia 4900 years ago. ***SCIENCE BULLETIN***. 2023, DOI: 10.1016/j.scib.2023.10.015

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

MICROBIOLOGY. 2023, 25: 1250-1264

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Qi, L*;Cheng, P; Wang, MH; Hu, CM; Xie, YY; Mao, KY. Where does floating Sargassum in the East China Sea come from. ***HARMFUL ALGAE***. 2023, 129, 102523

Qian, LY; Wang, FF; Cao, W; Ding, S; Cao, WZ*. Ecological health

assessment and sustainability prediction in coastal area: A case study in Xiamen Bay, China. ***ECOLOGICAL INDICATORS***. 2023, 148, 110047

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

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

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

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

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

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

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

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

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

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

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

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

Shao, ZB; Xu, YC; Wang, H; Luo, WC; Wang, LC; Huang, YH; Agawin, NSR; Ahmed, A; Benavides, M; Bentzon-Tilia, M; Berman-Frank, I; Berthelot, H; Biegala, IC; Bif, MB; Bode, A; Bonnet, S; Bronk, DA; Brown, MV; Campbell, L; Capone, DG; Carpenter, EJ; Cassar, N; Chang, BX; Chappell, D; Chen, YLL; Church, MJ; Cornejo-Castillo, FM; Detoni, AMS; Doney, SC; Dupouy, C; Estrada, M; Fernandez, C; Fernández-Castro, B; Fonseca-Batista, D; Foster, RA; Furuya, K; Garcia, N; Goto, K; Gago, J; Gradoville, MR; Hamersley, MR; Henke, BA; Hörstmann, C; Jayakumar, A; Jiang, ZB; Kao, SJ; Karl, DM; Kittu, LR; Knapp, AN; Kumar, S; LaRoche, J; Liu, HB; Liu, JX; Lory, C; Löscher, CR; Marañón, E; Messer, LF; Mills, MM; Mohr, W; Moisander, PH; Mahaffey, C; Moore, R; Mouriño-Carballido, B; Mulholland, MR; Nakaoka, S; Needoba, JA; Raes, EJ; Rahav, E; Ramírez-Cárdenas, T; Reeder, CF; Riemann, L; Riou, V; Robidart, JC; Sarma, VVSS; Sato, T; Saxena, H; Selden, C; Seymour, JR; Shi, DL; Shiozaki, T; Singh, A; Sipler, RE; Sun, J; Suzuki, K; Takahashi, K; Tan, YH; Tang, WY; Tremblay, JÉ; Turk-Kubo, K; Wen, ZZ; White, AE; Wilson, ST; Yoshida, T; Zehr, JP; Zhang, R; Zhang, Y; Luo, YW*. Global oceanic diazotroph database version 2 and elevated estimate of globaloceanic N_2 fixation. ***EARTH SYSTEM SCIENCE DATA***. 2023, 15: 3673-3709

Shen, C; Tang, C; Zhu, KY; He, CY; Yang, CY; Zuo, ZH*. Toxicity and ecological risk assessment for two AhR agonistic pesticides

mepanipyrim and cyprodinil and their metabolites. ***ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH***. 2023, 30: 58944-58955

Shen, DH; Wang, JN*; Liu, ZY; Wang, F*. Mixing in the upper western equatorial Pacific driven by westerly wind event. ***FRONTIERS IN MARINE SCIENCE***. 2023, 9, 907699

Shen, Y*; Guilderson, TP; Chavez, FP; McCarthy, MD. Important contribution of bacterial carbon and nitrogen to sinking particle export. ***GEOPHYSICAL RESEARCH LETTERS***. 2023, 50, e2022GL102485

Shen, YW; You, WW; Luo, X; Lu, Y; Huang, MQ; Ke, CH*. An overview of the mechanisms underlying hypoxia tolerance differences in aquatic animals and their inspirations for aquaculture. ***REVIEWS IN FISH BIOLOGY AND FISHERIES***. 2023, 33: 1223-1236

Sheng, HX; Wan, XHS; Zou, BB; Sun, YF; Hanoch, B; Zou, WB; Yang, WD; Wu, SQ; Huang, H; Ward, BB; Kao, SJ*. An efficient diazotroph-derived nitrogen transfer pathway in coral reef system. ***LIMNOLOGY AND OCEANOGRAPHY***. 2023, 68: 963-981

Shi, GY; Wu, HP; Luo, SH; Lu, XY; Ren, B; Zhang, Q; Lin, WQ; Chen, RY; Guo, P; Chen, HB; Tian, ZQ; Shao, GF*; Yang, L*; Liu, GK*. 1D gradient-weighted class activation mapping, visualizing decision process of convolutional neural network-based models in spectroscopy analysis. ***ANALYTICAL CHEMISTRY***. 2023, 95: 9959-9966

Shi, WA; Hu, JY*. Spatiotemporal variation of anticyclonic eddies in the South China Sea during 1993-2019. ***REMOTE SENSING***. 2023, 15, 4720

Shi, Y; Chen, BH; Kong, SN; Zeng, QM; Li, LB; Liu, B; Pu, F; Xu, P*. Comparative genomics analysis and genome assembly integration with the recombination landscape contribute to *Takifugu bimaculatus* assembly refinement. ***GENE***. 2023, 849, 146910

Shu, HL; You, YC; Wang, HW; Wang, JT; Li, L; Ma, J*; Lin, X*. Transcriptomic-guided phosphonate utilization analysis unveils evidence of clathrin-mediated endocytosis and phospholipid synthesis in the model diatom, *phaeodactylum tricornutum*. ***MSYSTEMS***. 2023, 8, e01294-22

Song, C; Xiong, YL; Jin, P; Sun, YX; Zhang, QC; Ma, ZL; Gao, G*. Mariculture structure adjustment to achieve China's carbon neutrality and mitigate climate change. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 895, 164986

Song, LP; Lee, ZP*; Shang, SL; Huang, BQ; Wu, JH; Wu, ZL; Lu, WF; Liu, X. On the spatial and temporal variations of primary production in the South China Sea. ***IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING***. 2023, 61, 9100201

Song, LP; Lee, ZP*; Shang, SL; Huang, BQ; Wu, JH; Wu, ZL; Lu, WF; Liu, X. On the spatial and temporal variations of primary production in the South China Sea. ***IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING***. 2023, 61, 4201514

Song, YF; Du, JR; Yang, RJ; Lin, CJ; Chen, WJ; Wu, ZS; Lin, HW; Chen, X; Zhuang, YX*; Xie, RJ*. Recyclable time-temperature indicator enabled by light storage in particles. ***ADVANCED OPTICAL MATERIALS***. 2023, 11, 2202654

Song, ZC*; Quakenbush, L; Hobbs, R; Gaglione, E; Goertz, C; Castellote, M. Variability of echolocation clicks in beluga whales (*Delphinapterus leucas*) Within shallow waters. ***AQUATIC MAMMALS***. 2023, 49: 62-72

Song, ZC; Ou, WZ; Li, J; Zhang, C; Fu, WJ; Xiang, WJ; Wang, D; Wang, KX*; Zhang, Y*. Sound reception in the Yangtze finless porpoise and its extension to a biomimetic receptor. ***BIOMIMETICS***. 2023, 8, 366

Song, ZC; Ou, WZ; Su, YN; Li, HQ; Fan, WX; Sun, SY; Wang, T; Xu, XH; Zhang, Y*. Sounds of snapping shrimp (Alpheidae) as important input to the soundscape in the southeast China coastal sea. ***FRONTIERS IN MARINE SCIENCE***. 2023, 10, 1029003

Song, ZG; Yu, SJ; Bai, Y*; Guo, XH; He, XQ; Zhai, WD; Dai, MH. Construction of a high spatiotemporal resolution dataset of satellite-derived pCO_2 and air-sea CO_2 flux in the South China Sea (2003-2019). ***IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING***. 2023, 61, 4207015

Su, GY*; Lehmann, MF; Tischer, J; Weber, Y; Lepori, F; Walser, JC; Niemann, H; Zopfi, J*. Water column dynamics control nitrite-dependent anaerobic methane oxidation by *Candidatus* Methylomirabilis in stratified lake basins. ***ISME JOURNAL***. 2023, 17: 693-702

Su, QJ; Xiao, WZ; Simpson, SL; Tan, QG; Chen, R; Xie, MW*. Enhancing sediment bioaccumulation predictions: Isotopically modified bioassay and biodynamic modeling for nickel assessment. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2023, 57: 19352-19362

Su, YN; Song, ZC*; Li, HQ; Zhang, Y; Xiang, WJ; Hui, JA; Sun, SY; Xiao, Z; Zhang, Y. Call properties of the large yellow croaker (*Larimichthys crocea*) during reproduction with insight into directivitya). ***JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA***. 2023, 153: 3192-3200

Sun, HW; Chen, ZY; Zhao, ZH; Xu, MD; Zhang, YM; Yan, XH; Li, XD*; Jiang, YW*. Variability of volume transport in the Taiwan Strait and its response to tropical MJO convection: A numerical approach. ***OCEAN MODELLING***. 2023, 186, 102240

Sun, HY; Geng, XP; Meng, LS*; Yan, XH*. First Ocean Wave retrieval from HISEA-1 SAR imagery through an improved semi-automatic empirical model. ***REMOTE SENSING***. 2023, 15, 3486

Sun, N; Tao, L*; Wang, R; Zhu, KY; Hai, XJ*; Wang, CC*. The genetic structure and admixture of Manchus and Koreans in northeast China. ***ANNALS OF HUMAN BIOLOGY***. 2023, 50: 161-171

Sun, P*; Wang, Y; Zhang, YF; Logares, R; Cheng, P; Xu, DP; Huang, BQ*. From the sunlit to the aphotic zone: Assembly mechanisms and co-occurrence patterns of protistan-bacterial microbiotas in the Western Pacific Ocean. ***MSYSTEMS***. 2023, 8, e00013-23

Sun, XX; Tan, E; Wang, BC; Gan, ZX; Yang, J; Han, JB; Zhang, XY; Kao, SJ; King, G; Dong, HL; Jiang, HC*. Salinity change induces distinct climate feedbacks of nitrogen removal in saline lakes. ***WATER RESEARCH***. 2023, 245, 1206688

Sun, YF; Wang, GZ*; Weng, YB; Li, Q; Zhang, F; Jiang, WZ; Dai, GY; Lin, W; Sun, SY; Jiang, YY; Zhang, YJ*. Submarine groundwater discharge in Dongshan Bay, China: A master regulator of nutrients in spring and potential national significance of small bays. ***FRONTIERS IN MARINE SCIENCE***. 2023, 10, 1164589

Tang, K*; Liu, L. Bacteria are driving the ocean's organosulfur cycle. ***TRENDS IN MICROBIOLOGY***. 2023, 31: 772-775

Tao, L; Yuan, HB*; Zhu, KY; Liu, XY; Guo, JX*; Min, R; He, HF; Cao, DD; Yang, XM; Zhou, ZQ; Wang, R; Zhao, DY; Ma, H; Chen, J; Zhao, J; Li, YF; He, YH; Suo, DH; Zhang, RJ; Li, S; Li, L; Yang, F; Li, HC; Zhang, L; Jin, L; Wang, CC*. Ancient genomes reveal millet farming-related demic diffusion from the Yellow River into southwest China. ***CURRENT BIOLOGY***. 2023, 33: 4995-5002

Tian, HQ*; Yao, YZ; Li, Y; Shi, H; Pan, SF; Najjar, RG; Pan, NQ; Bian, ZH; Ciais, P; Cai, WJ; Dai, MH; Friedrichs, MAM; Li, HY; Lohrenz, S; Leung, LR. Increased terrestrial carbon export and CO_2 evasion from global inland waters since the preindustrial era. ***GLOBAL BIOGEOCHEMICAL CYCLES***. 2023, 37, e2023GB007776

Tong, S; Yang, DY; Qiu, JW; Ke, CH; Wang, Z*. *Podarkeopsis chinensis* sp. nov. (Annelida, Hesionidae) from southeastern China. ***ZOOKEYS***. 2023, : 339-355

Tong, ZY; Ma, LQ; Cai, SJ; Wang, L*; Xiao, WP*; Huang, BQ; Laws, EA. Responses of phytoplankton communities to the effect of both river plume and coastal upwelling. ***JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES***. 2023, 128, e2023JG007486

Tremblay, LA*; Chariton, AA; Li, MS; Zhang, Y; Horiguchi, T; Ellis, JI. Monitoring the health of coastal environments in the Pacific region-a review. ***TOXICS***. 2023, 11, 277

Tuo, P; Hu, ZY; Chen, SL*; Hu, JY; Yu, PN. Asymmetric drifter trajectories in an anticyclonic mesoscale eddy. ***REMOTE SENSING***. 2023, 15, 3806

Wan, R; Ge, LH; Chen, B; Tang, JM; Tan, EH*; Zou, WB; Tian, L; Li, M; Liu, ZB; Hou, LJ; Yin, GY; Kao, SJ*. Permeability decides the effect of antibiotics on sedimentary nitrogen removal in Jiulong River Estuary. ***WATER RESEARCH***. 2023, 243, 120400

Wan, S; Xiang, R*; Steinke, S; Du, Y; Yang, YP; Wang, SH; Wang, HY. Impact of the Western Pacific Warm pool and Kuroshio dynamics in the Okinawa Trough during the Holocene. ***GLOBAL AND PLANETARY CHANGE***. 2023, 224, 104116

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

8280

Wan, XHS*; Hou, L; Kao, SJ; Zhang, Y; Sheng, HX; Shen, H; Tong, SW; Qin, W; Ward, BB*. Pathways of N_2O production by marine ammonia-oxidizing archaea determined from dual-isotope labeling. ***PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA***. 2023, 120, e2220697120

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wang, X; Zhang, YH; Shi, JH; Cai, JF; Liu, GK*; Tang, J*. *In situ* temperature-modulated electrochemical surface-enhanced Ramanspectroscopy study of the effect of *CO on metal surface. ***JOURNAL OF PHYSICAL CHEMISTRY C***. 2023, 127: 13034-13043

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

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

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

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

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

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

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

Wang, YY; Yang, WF*; Zhao, XF; Zhang, QH; Chen, HS; Fang, ZM; Zheng, MF. Changes in the carbon source and storage in a cultivation area of macro-algae in Southeast China. ***MARINE POLLUTION BULLETIN***. 2023, 188, 114680

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

Wang, ZX; Wang, GZ; Guo, XH; Bai, Y; Xu, Y; Dai, MH*. Spatial reconstruction of long-term (2003-2020) sea surface pCO_2 in the South China Sea using a machine-learning-based regression method aided by empirical orthogonal function analysis. ***EARTH SYSTEM SCIENCE DATA***. 2023, 15: 1711-1731

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

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

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

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

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

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

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

Xia, MK; Wang, JJ; Li, SL; Lin, AH; Yao, QH; Guo, ZY; Chen, X; Chen, QS*; Chen, XM*. A sensitive electrochemiluminescence resonance energy transfer system between Ru-MOFs and Bi_2S_3 for deoxynivalenol detection. ***SENSORS AND ACTUATORS B-CHEMICAL***. 2023, 393, 134192

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

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

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

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

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

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

Xie, LF; Luo, SH; Liu, YY; Ruan, XJ; Gong, KD; Ge, QY; Li, KJ; Valev, VK; Liu, GK; Zhang, LW*. Automatic identification of individual nanoplastics by Raman spectroscopy based on machine learning. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY***. 2023, 57: 18203-18214

Xie, MY; Zheng, Y; Zhang, XQ; Xia, J; Maulani, N; Yuan, ZG; Cai, C*; Hu, SH*. Formate as an alternative electron donor for the

anaerobic methanotrophic archaeon candidatus '*Methanoperedens nitroreducens*'. ***ENVIRONMENTAL SCIENCE & TECHNOLOGY LETTERS***. 2023, 10: 506-512

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Yan, RF; Wang, FF; Wang, Y; Chen, NW*. Pollution abatement reducing the river N_2O emissions although it is partially offset by a warming climate: Insights from an urbanized watershed study. ***WATER RESEARCH***. 2023, 236, 119934

Yang, LO; Zhang, LC; Tian, DJ; Ye, M; Lin, FY; Liu, XL; Wang, YR*; Chen, X*. Oxygen sensing behavior modulation of tetranuclear

copper iodide hybrid materials using ligand engineering. ***SENSORS AND ACTUATORS B-CHEMICAL***. 2023, 393, 134310

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

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

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

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

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

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

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

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

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

Ye, YT; Sunda, WG; Hong, HZ; Shi, DL*. Interrelated influence of iron, light, and CO_2 on carbon fixation in a Southern Ocean diatom. ***LIMNOLOGY AND OCEANOGRAPHY***. 2023, 68: 1504-1516

Yi, XQ; Gao, KS*. Impact of ultraviolet radiation nearly overrides the effects of elevated pCO_2 on a prominent nitrogen-fixing cyanobacterium. ***LIMNOLOGY AND OCEANOGRAPHY***. 2023, 68: 557-568

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

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

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

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

Yu, SJ; Song, ZG; Bai, Y*; Guo, XH; He, XQ; Zhai, WD; Zhao, HD; Dai, MH. Satellite-estimated air-sea CO_2 fluxes in the Bohai Sea, Yellow Sea, and East China Sea: Patterns and variations during 2003–2019. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 904, 166804

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

2023, 562, 738764

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Zhang, L; You, HM; Chen, JF; Huang, BQ; Cui, YZ; Hossain, KB; Chen, QH; Cai, MG*; Qian, QR*. Surface structures changes and biofilm communities development of degradable plastics during aging in coastal seawater. ***MARINE POLLUTION BULLETIN***. 2023, 193, 114996

Zhang, L; Zhu, YM; Guo, ZY; You, LJ; Zhang, C; Chen, X*. Colorimetric sensing of the peroxide number of milk powder using $CsPbBr_3$ perovskite nanocrystals. ***BIOSENSORS-BASEL***. 2023, 13, 493

Zhang, M; Gao, XL*; Luo, Q; Lin, SH; Lyu, M; Luo, X; Ke, CH; You, WW*. Ecological benefits of artificial light at night (ALAN): Accelerating the development and metamorphosis of marine shellfish larvae. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 903, 166683

Zhang, M; Gao, XL; Lyu, M; Lin, SH; Luo, X; Ke, CH; You, WW*. Examination of the effects of blue light stress on monoamine oxidase-mediated immunomodulatory function in the Pacific abalone, *Haliotis discus hannai*. ***AQUACULTURE***. 2023, 575, 739726

Zhang, P; Duan, AM*. Connection between the tropical Pacific and Indian Ocean and temperature anomaly across West Antarctic. ***NPJ CLIMATE AND ATMOSPHERIC SCIENCE***. 2023, 6, 49

Zhang, P; Duan, AM*. Precipitation anomaly over the Tibetan Plateau affected by tropical sea-surface temperatures and mid-latitude atmospheric circulation in September. ***SCIENCE CHINA-EARTH SCIENCES***. 2023, 66: 619-632

Zhang, P; Duan, AM*; Wang, X. Joint effect of the Indian Ocean Dipole and the Silk Road Pattern on Indian rainfall during summer to autumn transition. ***ATMOSPHERIC RESEARCH***. 2023, 283, 106589

Zhang, QA; Zhang, Z; Xu, N; Li, YF*. Fully automatic training sample collection for detecting multi-decadal inland/seaward urban sprawl. ***REMOTE SENSING OF ENVIRONMENT***. 2023, 298, 113801

Zhang, QH; Zhou, JF; Fang, ZM*; Yang, WF*; Chen, M; Zheng, MF. Sources and dynamics of dissolved black carbon in the Pearl River Estuary and Shelf, Northern South China Sea. ***JOURNAL OF OCEANOGRAPHY***. 2023, DOI: 10.1007/s10872-023-00708-2

Zhang, RY; Qiao, J; Huang, DK*; Lin, XH; Tian, L; Wang, BY; Bao, HY*; Kao, SJ. Seasonal variations in the sources and influential factors of aerosol dissolved black carbon at a southeast coastal site in China. ***JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES***. 2023, 128, e2023JD038515

Zhang, WB; An, Z; Bai, YQ; Zhou, Y; Chen, FY*; Wang, KJ*. A novel antimicrobial peptide $Scyreptin_{1-30}$ from *Scylla paramamosain* exhibiting potential therapy of *Pseudomonas aeruginosa* early infection in a mouse burn wound model. ***BIOCHEMICAL PHARMACOLOGY***. 2023, 218, 115917

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

Zhang, Y; Qu, ZS; Li, JQ; Hu, T; Chen, CZ; Lin, XF*. From river to ocean: Connectivity and heterogeneity of aquatic ecosystems depicted by planktonic microeukaryotes. ***ECOLOGICAL INDICATORS***. 2023, 148, 110136

Zhang, YF; Xie, MW*; Spadaro, DM; Simpson, SL. Improving toxicity prediction of metal-contaminated sediments by incorporating sediment properties. ***ENVIRONMENTAL POLLUTION***. 2023, 338, 122708

Zhang, YL*; Yang, KL; Chen, HM; Dong, YP; Li, W*. Origin, composition, and accumulation of dissolved organic matter in a hypersaline lake of the Qinghai-Tibet Plateau. ***SCIENCE OF THE TOTAL ENVIRONMENT***. 2023, 868, 161612

Zhang, YP; Guo, XH; Zhu, XD*. Strong diurnal variability of carbon dioxide flux over algae-shellfish aquaculture ponds revealed by eddy covariance measurements. ***AGRICULTURE ECOSYSTEMS & ENVIRONMENT***. 2023, 348, 108426

Zhang, YY; Yu, SE; Wang, WL; Yang, LE; Lu, QQ; Xie, CT; Liu, T; Dong, YW*. Temperature sensitivity of marine macroalgae for aquaculture in China. ***AQUACULTURE***. 2023, 567, 739262

Zhang, Z; Ahmed, MR; Zhang, Q; Li, Y; Li, YF*. Monitoring of 35-year mangrove wetland change dynamics and agents in the sundarbans using temporal consistency checking. ***REMOTE SENSING***. 2023, 15, 625

Zhang, ZH; Li, DH; Xie, RZ; Guo, RY; Nair, S; Han, H; Zhang, GJ; Zhao, Q; Zhang, LH; Jiao, NZ; Zhang, YY*. Plastoquinone

synthesis inhibition by tetrabromo biphenyldiol as a widespread algicidal mechanism of marine bacteria. ***ISME JOURNAL***. 2023, 17: 1979-1992

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Zheng, YH; Zhuang, W*; Du, Y*. Extreme sea level changes over the tropical western Pacific in 1.5 °C and 2.0 °C warmer climates. ***FRONTIERS IN MARINE SCIENCE***. 2023, 10, 1130769

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

MARINE SCIENCE. 2023, 10, 1211804

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

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

Zhou, Y; Meng, XY; Chen, FY; Xiong, M; Zhang, WB; Wang, KJ*. Newly discovered antimicrobial peptide scyampcin$_{44-63}$ from *Scylla paramamosain* exhibits a multitargeted candidacidal mechanism *in vitro* and is effective in a murine model of vaginal candidiasis. ***ANTIMICROBIAL AGENTS AND CHEMOTHERAPY***. 2023, 67, e00022-23

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

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

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

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

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

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

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

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

BLUE CARE members conducted a survey of the seagrass plant community at sunset.
(Photo by ZHANG Mao)

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