



中國海洋大學  
OCEAN UNIVERSITY OF CHINA

# OCEAN UNIVERSITY OF CHINA NEWSLETTER

Issue 6  
Fall 2020 & 2021





Ocean University of China Newsletter  
Issue 6  
Fall 2020 & 2021

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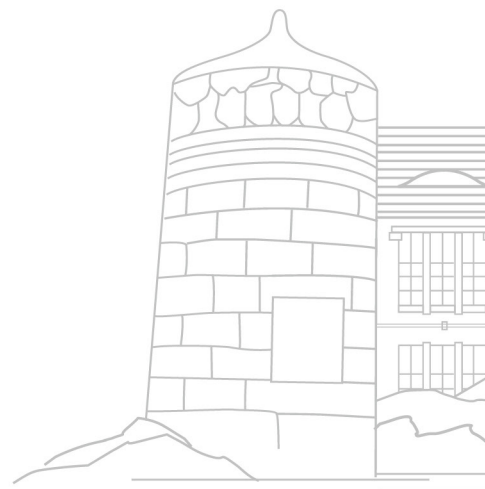
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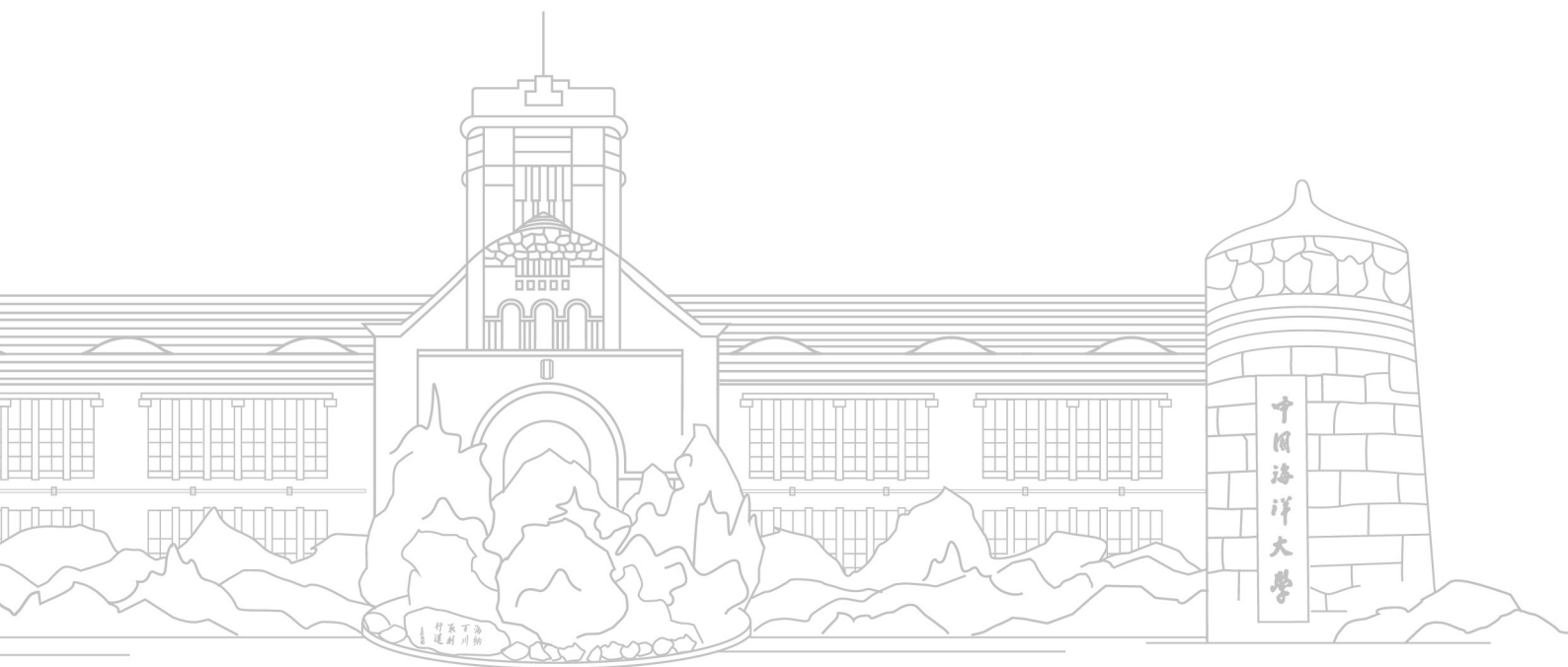




海纳百川  
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*Ocean embraces streams all;  
exploring promises reaching far.*

Ocean University of China (OUC) is a key comprehensive university with strengths in oceanography and fisheries. We are part of China's plan of building world-class universities and academic programs. We have more than 30,000 full-time students and over 3,700 faculty and staff members. We are the cradle of China's marine professionals. A large number of China's marine specialists are among our alumni. We boast a number of research institutes and a fleet of research vessels. Attaching great importance to international exchanges and cooperation, we have established cooperative ties with 270 universities and research institutes in 45 countries and regions.





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# *News & Events*

# Academics

## *Academician Li Huajun Awarded Top Prize at the 2019 Qingdao Science and Technology Award Conference*



In December 2020, the 2019 Qingdao Science and Technology Award Conference was held. Prof. Li Huajun, Academician of the Chinese Academy of Engineering and Vice President of OUC, won the highest prize. He is the first OUC scientist to be the Qingdao Science and Technology Award laureate during the 13th Five-year Plan period (2016-2020), and the fourth OUC scientist to ever receive this honor. Xu Jia, Associate Professor of OUC's College of Chemistry and Chemical Engineering, was awarded the first prize of the 2019 Qingdao Natural Science Award, with her work in "Research on the Preparation of High-efficiency Membrane Materials for Seawater Desalination and Key Membrane Integration Technologies". Prof. Xu Tao from OUC's School of Medicine and Pharmacy won the second prize under the same category with his research on "Strategic Application of Transition Metal Catalysis in the Synthesis of Active Marine Natural Products". Prof. Han Baoqin from OUC's College of Marine Life Sciences won the first prize of Qingdao Scientific and Technological Progress

Award for her work on "Derivatization of Marine Glycosaminoglycan (GAGs) and Its Innovative Use in High Value-added Products". It is noteworthy that

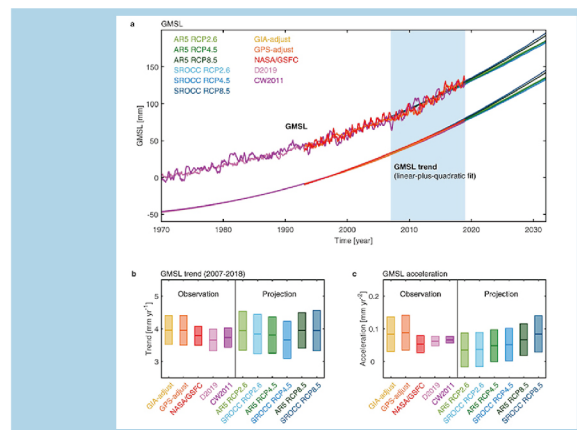
Xu Jia and Xu Tao are young scholars of the post-1980s generation. The Conference also commended the winners of the 2019 National Science and Technology Award and Shandong Province Science and Technology Award First Prize. Prof. Liu Yong from OUC's College of Engineering and Prof. Wei Zhiqiang from OUC's College of Information Science and Engineering were invited to the Conference as representatives of the above-mentioned award-winning projects.





## New Progress Made in the Study of the AMOC change at the MOE Key Laboratory of Physical Oceanography

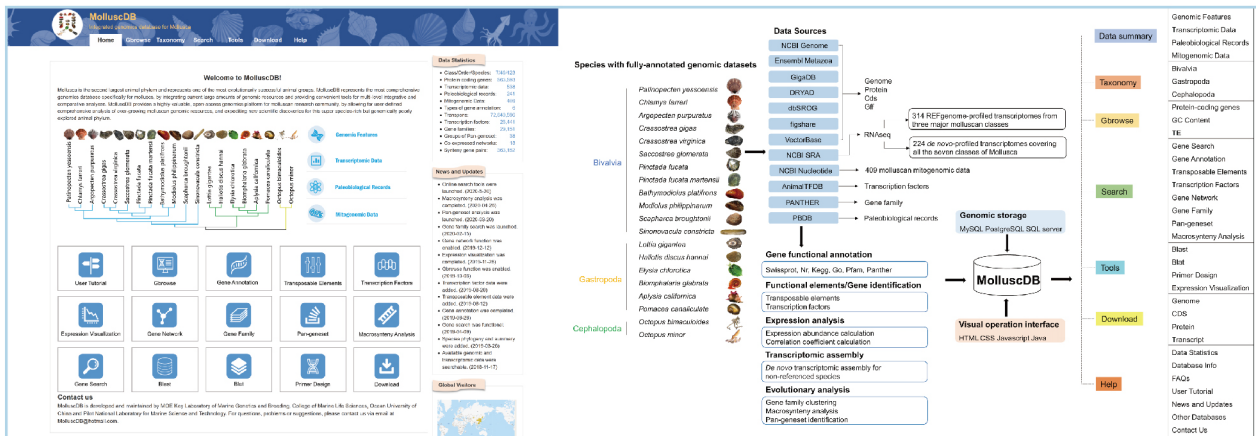
On September 14th, 2020, Nature Climate Change, a leading journal on climate change research, published on its website a new study titled “Weakening Atlantic Overturning Circulation Causes South Atlantic Salinity Pile-up”. The research is the first to use a climate variable from outside of the North Atlantic, namely the South Atlantic salinity pile-up, to establish the change indicators for Atlantic Meridional Overturning Circulation (AMOC). It is important to the understanding of the changes of ocean circulation in the context of global warming. AMOC is an important component of the Earth system, and its changes have profound impacts on the global climate and human society. This study focused on the salinity changes in the Southern Hemisphere oceans. Through diagnostic analysis of observational and model data, it has been found that the relative salinity changes in the South Atlantic Ocean are very much correlated with AMOC changes. Combined with the sensitivity test of ocean models, the study further revealed the physical mechanism that linked the two: the weakened AMOC signal forced by the North Atlantic buoyancy flux propagated from the North Atlantic subpolar to the South Atlantic; when the signal reached the South Atlantic, it dispersed by reducing the upper ocean salinity level, causing a bigger salinity “pile-up” in South Atlantic compared with other oceans at the same latitude. The salinity variance in this ocean basin mainly attributed to the weakened AMOC dynamic, instead of the changes in local net precipitation.



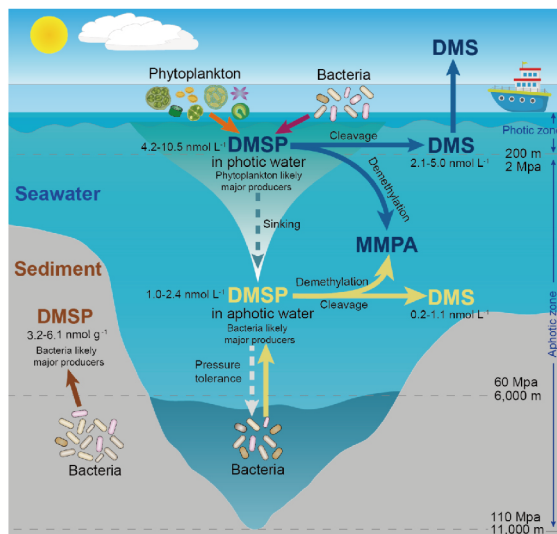
## OUC Research Team Released World's First Comprehensive Molluscan Genomics Database

On October 23rd, 2020, Nucleic Acids Research, a top open access journal on nucleic acids published on its website a study authored by Academician Bao Zhenmin and his team from the OUC's Key Laboratory of Marine Genetics and Breeding of the Ministry of Education. The paper, titled “MolluscDB: an integrated functional and evolutionary genomics database for the hyper-diverse animal phylum Mollusca” introduced the first comprehensive molluscan genomics database in the world. MolluscDB, by extensively compiling and integrating current molluscan genomic / multi-omics resources and developing multiple analyzing tools, presents an integrative and comprehensive molluscan genomics platform that covers the most varieties of species, includes the richest multi-omics resources, and provides the most convenient toolkits. MolluscDB collects and integrates nearly 1000 omics resource datasets from 123 species with their geographical distribution ranging from land, freshwater, offshore water to deep-sea and encompassing most of the publicly available molluscan omics resources. MolluscDB will allow the molluscan community to cope with the ever-growing omics resources, expedite discovery of important genetic resources, promote understanding of marine organism evolution, and provide strong support for molluscan genetic breeding.





## OUC Team Published Research Results on DMSP in Nature Communications



On September 16th, 2020, the team led by Prof. ZHANG Xiaohua at OUC's College of Marine Life Sciences published a paper titled "*Bacteria are important dimethylsulfoniopropionate producers in marine aphotic and high-pressure environments*" in the internationally renowned multidisciplinary journal, Nature Communications. This latest research marked yet another significant finding in how ocean bacteria could drive sulfur cycles, following her team's discovery that marine bacteria could synthesize DMSP and identify the key genes (Nature Microbiology, 2017, 2:e17009). According to the research, the abundance of DMSP-producing bacteria increased with depth, and reached the highest in the deep sea sediment, while the DMSP-degrading bacteria showed the opposite trend, indicating a possible stress protection from DMSP to the bacteria. Furthermore,

deep ocean bacterial isolates showed enhanced DMSP production under increased hydrostatic pressure; survival rate of the bacterial isolates decreased significantly once *dsyB* gene responsible for the bacterial DMSP synthesis was knocked out, yet restored after the exogenous addition of DMSP. This research identified and confirmed for the first time DMSP's new function of stress protection, indicated heterotrophic bacteria as the key DMSP producers in deep seawater and sediment, and revealed the new process and mechanism of bacterial involvement in deep sea sulfur cycle. This work provided evidence to re-estimate the global DMSP production, flux and its climatic effects, bearing important scientific significance in the thorough comprehension of deep sea bacteria's role in sulfur cycle.

## OUC's New Carbon Cycle Research Published in *Nature Communications*



On October 7th, 2020, the team led by Prof. Wang Xuchen published a paper titled “*Dissolved black carbon is not likely a significant refractory organic carbon pool in rivers and oceans*”, explaining the latest findings of the carbon cycle, in *Nature Communications*. Prof. Wang’s team is a member of OUC’s Key Laboratory of Marine Chemistry Theory and Technology. Black carbon (BC), a common residue of incomplete combustion of biomass and fossil fuel, is widely dispersed in natural environment. Defined as a group of condensed byproduct chemicals, BC is thought to be chemically stable and hardly biodegradable, thus representing a refractory fraction of organic carbon (OC)

cycle. It can exist in the environment for a long time and is harmful to the environment and human health. As a result, its role in the global carbon cycle and its environmental impacts have received considerable attention. Dissolved BC (DBC), could represent a significant fraction of BC mobilized and transported by rivers into the ocean. Using carbon isotope method, this research systematically looked into the distribution and the carbon isotopic feature of DBC from four major rivers in Mainland China (Yangtze, Yellow, Pearl, and Heilongjiang rivers), two mountainous rivers in Taiwan province of China, as well as the Yellow Sea, the East China Sea and the Mariana Trench in the Northwest Pacific. Combining long-period laboratory experiment of BC dissolution and microbial degradation, the research found that the DBC transported by rivers mainly came from BC produced by incomplete combustion of terrestrial vegetation with predominantly young  $^{14}\text{C}$  age. The BC in experiment could be absorbed and degraded by bacteria, thus showing that it was not the refractory fraction of DOC (dissolved OC) in rivers and oceans. This research has provided great significance for an in-depth understanding of how DBC is transported by rivers and what role it plays in carbon cycle in the ocean.

## OUC's Academician Li Huajun Won Top Provincial Science Award

On the morning of April 16th 2021, the news that CAE academician and OUC Vice President Li Huajun won the highest award was announced at the 2020 Shandong Provincial Science and Technology Innovation Conference held in Jinan. In his address as a representative of the award winners, Li Huajun pointed out that China has now embarked on a new trajectory of high-quality development amid a new wave of global technological revolutions and industrial reforms, and building China into a

top maritime power would be an honourable mission for all. In the field of maritime programmes, despite China’s great achievements, the country still lagged behind other leading countries in marine research, particularly in its marine-related core competitiveness. He continued to appeal to all Chinese researchers to keep in mind the provincial-level targets, seize the opportunity arising from China’s transformation from old growth drivers to new ones, set good examples in advocating spirit of





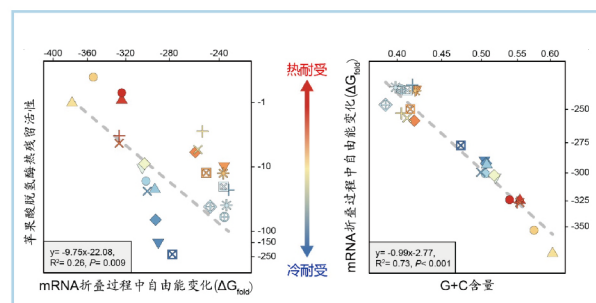
science, good studying atmosphere and innovation-aspiring environment. He encouraged members of the science community to achieve more original research outcomes with a pioneering and dauntless spirit, break more bottlenecks, and commercialize more innovation outcomes, with an aim to build momentum for Shandong's quality development and China's endeavour to build itself into a S&T powerhouse. OUC also won three second provincial prizes on natural science with research projects including the "Research on Feature Analysis

and Representation Mechanism of the Multi-source Complex Images" by Prof. Dong Junyu from the OUC Faculty of Information Science and Engineering/Haide College, "Research on the Interfacial Chemistry from Marine Bioactive Gases and Organic Compound" by Prof. Yang Guipeng from the OUC College of Chemistry and Chemical Engineering as well as "Study on the Synthesis and Metabolic Regulation of Renewable Biofuels in *Saccharomycetes*" by Prof. Chi Zhenming from the OUC College of Marine Life Sciences.



## Important Progress Made by Prof. Dong Yunwei's Team Published by PNAS

Prof. Dong Yunwei's team from the OUC Fisheries College made important progress in the research on thermal adaptation of shellfishes RNA, with a paper titled Thermal Adaptation of mRNA Secondary Structure: Stability Versus Lability published on the PNAS (Proceedings of the National Academy of the Sciences of the United States of America). The study aimed to estimate the adaptive evolution of orthologous mRNAs in marine mollusks from different tide levels and latitudes (between the equator and Antarctica) with adaptation temperatures spanning an almost 60 °C range. The research project marked yet another major breakthrough in the study on the thermal adaptation mechanism of marine life macromolecule and the geographical distribution of marine life. Its findings opened up an avenue of exploration in molecular evolution and raised interesting questions about the interaction between temperature-adaptive changes in mRNA sequence and in



temperature-adaptive changes in mRNA sequence and in the proteins they encode. Prof. Dong Yunwei's team has been committed to the fundamental studies on marine ecology for a long period, in which multiple technical methods including experimental control, computational biology and mathematical modelling were adopted to help gain more understanding on the temperature-adaptive mechanisms in macromolecule and build up an innovative cross-disciplinary research system. Moreover, the paper started a systematic debate over the question concerning "marine lives' temperature adaptive mechanism and geographical distribution" and made breakthroughs over the temperature-adaptive mechanisms in macromolecule



## *Two OUC Research Outcomes Listed among Top Ten Achievements in Oceanology and Limnology*

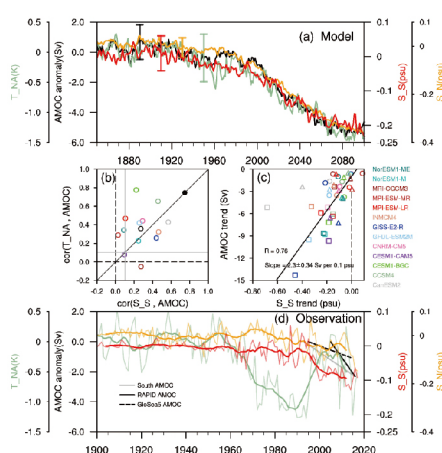
On February 1st, 2021, the 2020 Top Ten Achievements in Oceanology and Limnology in China were announced, two of which belong to OUC. This has been the seventh time in a row for OUC's research outcomes to enter the list, showing the university's academic dominance and influence in the field. The two OUC projects were both initiated by the College of Marine Life Sciences, namely the *"Significant Progresses in the Studies of the Unique Life Characteristics, Extreme Environmental Adaptation and Ecological Effects of Marine Microorganisms"* by Prof. Zhang Yuzhong's team, as well as the *"Important Breakthroughs in the Research on the Origin and Evolution of Marine Larvae"* by Prof. Wang Shi. This year marked the eighth anniversary for the event since its inception in 2013. The event, sponsored by the Chinese Society for Oceanology and Limnology (CSOL) and organized by the CSOL branches and directors, selected the top 10 yearly achievements based on the CSOL directors' recommendations and votes.

## *Prof. Dong Shuanglin's Team Harvested Salmon from Cold Water Mass for the First Time*



On June 21st, 2021, in a cold water mass (CWM) located more than 120 nautical miles away from the West Coast New Area of Qingdao, the first batch of salmon were harvested from the "Deep Blue No. 1" cage in the Qingdao National Deep Sea Green Farming Pilot Zone. The salmon cultivation and harvest would not have been a success without the technological support from Prof. Dong Shuanglin's team in OUC. Dating back to the "Twelfth Five-year Plan" period (2011-2015), Prof. Dong and his team started their trial in breeding high-quality trout using the Yellow Sea cold water mass resources. Ten years' efforts finally came to fruition: Dong's team set up a salmon cultivation cycle, in which fish breeding was done in Yimeng mountainous area, and seedlings were raised in the Yellow sea. The team has also established a complete set of technical system in terms of species selection, breeding, disease control, feed R&D, and equipment design. The harvest from the "Deep Blue No. 1" cage marked the first success for China to achieve a large-scale harvest of high-value fish from high seas and deep water, with the salmon averaging over 4 kilos in weight and meeting EU import standards in quality. Transported by the cold chain logistics, the harvest could complete its farm-to-table cycle within 12 hours for the locals, and within 36 hours for other consumers in other part of the country, far quicker than any logistics and deliveries from foreign countries. Their technologies made it possible for the first time in history to farm salmons in low-latitude warm waters, and provided a secure access for consumers to high-quality made-in-China salmons. It is expected that by 2025, the project, totalling some five billion yuan in investment, will be built into a centralized and integrated offshore farming platform, with a batch of large deep-water intelligent cages installed for large-scale offshore aquaculture, and give birth to a 10 billion-scale high seas/deep water aquaculture cluster.

## Important Advance Achieved by OUC Lab in Sea Level Change Studies

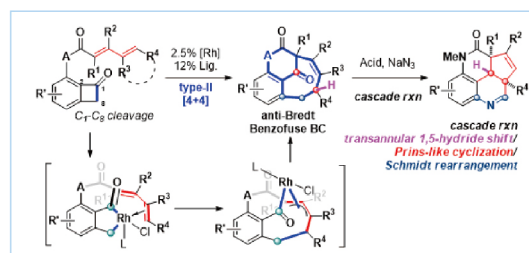


In February 2021, a research team led by Chen Xianyao from the MOE Key Laboratory of Physical Oceanography made important progress in the study of global sea-level change and systematically evaluated the ability of climate models to simulate future sea-level changes for the first time in the world. *Nature Communications*

published an online report on the results on February 12 this year titled *Reconciling global mean and regional sea level change in projections and observations*. As an important indicator of global climate change, sea level reflects the comprehensive influence of different climate systems such as ocean, atmosphere, glacier, ice sheet and land water storage. The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) and Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) simulated and forecasted global mean sea level (GMSL) and regional sea-level change for historical and future periods. By comparing observational data, it could be concluded that significant improvements in global and regional sea level modelling over historical periods have been achieved, but there hasn't been any systematic assessment of future sea level prediction capabilities. Chen's research findings enhanced the public confidence in the simulation and prediction of sea level changes for the next decade, provided scientific basis for policy-makers against the future sea-level rise, and undoubtedly put OUC on the map of international studies on sea-level changes.

## New Progress on Endocyclic Compound Made by Key Laboratory of Marine Drugs

In May 2021, *Nature Communications* published the research by Prof. Xu Tao's team from the OUC School of Medicine and Pharmacy and the MOE Key Laboratory of Marine Drugs under the title of "Regioselective Activation of Benzocyclobutenones and Dienamides Lead to Anti-Bredt Bridged-ring Systems by a [4+4] Cycloaddition". In this study a new method was developed to form bridged-ring compounds containing anti-bredt enyl [5.3.1] by the C1-C8 bond activation mediated by transition metal Rh(I), which has huge application potentials in the field of total synthesis of



marine natural products in complex bridged-ring systems. Bridged-ring compounds rich in bridge-head double bonds widely exist in many natural products and have great potential for pharmaceutical use, such as Taxol (a broad-spectrum antitumor drug) and Pleuromutilin (for antibacterial and anti-inflammatory purposes). The Bredt-rule is usually used to describe the tension of bridged-ring structure, while breaking through this rule (i.e., anti-Bredt rule) and redefining the description of bridged-ring tension based on it has always been a very challenging research orientation in the field of organic synthesis.



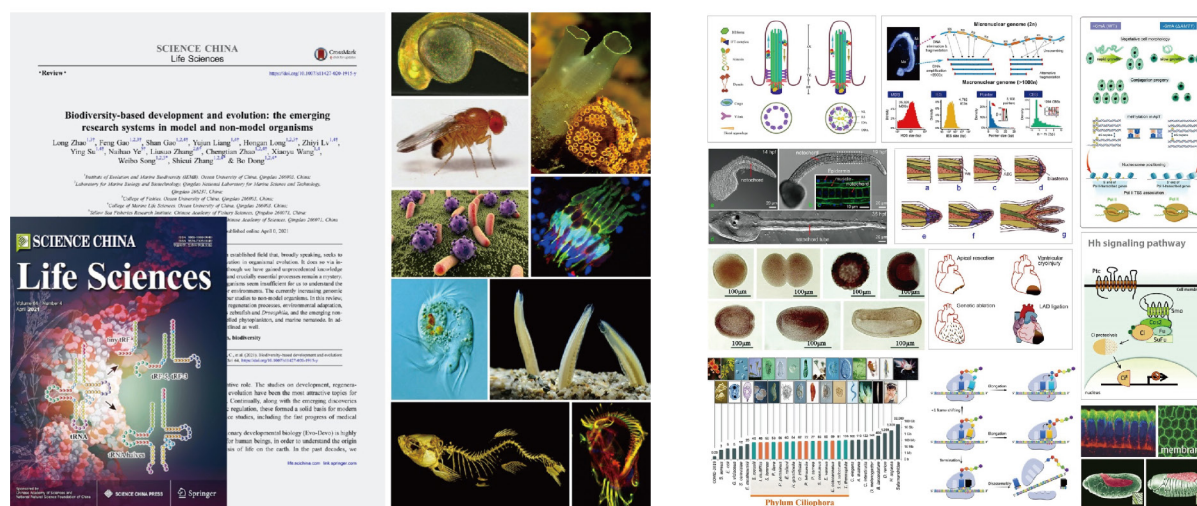
## Important Progress from Prof. Zhang Yuzhong's Team Published in Nature Microbiology

In October 2021, Prof. Zhang Yuzhong and his team from the OUC College of Marine Life Sciences and the Center for Frontier Studies of Deep-Sea and Earth System, in cooperation with Shandong University and other institutions, published a paper in *Nature Microbiology* titled *Acrylate Protects a Marine Bacterium from Grazing by a Ciliate Predator*. Predation and defence between predator and prey is one of the most important interactions in the field of microorganisms, and the chemical defence mechanisms of bacteria against predation by producing biotoxic substances widely exist in the marine system. The dimethylsulphoniopropionate

(DMSP) in marine ecosystem is one of the most abundant content of organic sulfur compounds. In addition to participating in the global sulfur cycle and climate regulation, DMSP also plays many important physiological and ecological roles. The research team led by Prof. Zhang Yuzhong has been engaged in marine microbiology and microbial oceanography for a long time. In recent years, a series of research achievements have been made concerning the coupled carbon, nitrogen and sulphur cycle mediated by marine microorganisms. This paper signals yet another important step forward by the team in the field of marine microbiology and microbial oceanography.



## OUC Scholars Published Paper on Biodiversity in Science China Life Sciences

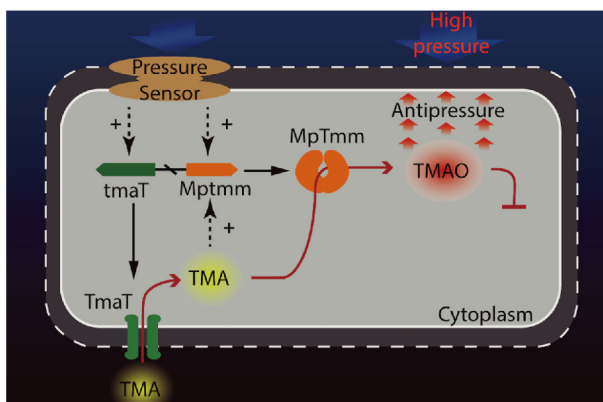




At the special invitation of Science China Life Sciences, a leading science journal in China, 14 scholars led by the Laboratory for Evolution & Development under the OUC Institute of Evolution & Marine Biodiversity (IEMB) co-authored a 45-page English-language review paper, titled “*Biodiversity-based development and evolution: the emerging research systems in model and non-model organisms*” and published it on the journal’s website. The paper consisted of 12 chapters, which systematically and comprehensively analysed and summarized the development, regeneration, evolution, epigenetic modifications, stress and mutation, developmental signalling regulation, and omics characteristics

and mutation of non-classical model creatures including amphioxus, ascidian, ciliate, salamander, procaryotic and eucaryotic microorganisms, and classical model creatures including zebrafish and fruit fly. In addition, the paper presented the outlook of recent hot topics and future research direction. In particular, the paper pointed out that research in the field of marine biodiversity, development and evolution needs to be expanded from model organisms to non-model organisms, in order to gain a deeper understanding of animal adaptive evolution through studying more representative species at the molecular, omics, phenomenological and mechanistic levels.

## OUC Team Published Paper on Deep-sea Bacteria in Science Advances



In March 2021, Prof. Zhang Yuzhong and his team from the OUC College of Marine Life Sciences and the Center for Frontier Studies of Deep-Sea and Earth System published a paper in Science Advances titled *Oxidation of Trimethylamine to Trimethylamine N-oxide Facilitates High Hydrostatic Pressure Tolerance in a Generalist Bacterial Lineage*. After its release, Nature Research Highlights conducted a spotlight report on the paper under the title *How deep-sea bacteria thrive under pressure*. The paper mainly studied the Myroides Profundi D25, and it was found that the strain could absorb TMA in the deep-sea environment by using the TMA transporter TmaT, and then induce the expression

of MpTmm, the TMA monooxygenase in the bacterial cell, and oxidize TMA to TMAO for the produced TMAO to accumulate in the cell. Under the high pressure in the deep ocean, TMAO can protect protein and other biological macromolecules to maintain normal conformation and perform biological functions, thus enabling D25 strain to tolerate high hydrostatic pressure in deep ocean, maintain survival and growth. Expression of TmaT-MpTmm protein in Escherichia coli and Bacillus subtilis can significantly improve the stress tolerance of E. coli and B. subtilis strains. Bioinformatics analysis showed that TmaT and MpTmm homologous proteins were widely distributed in marine bacteria, especially bacteroidetes, suggesting it might be a pressure tolerance strategy commonly adopted by deep-sea bacteria, which has important theoretical significance.



## The “Blue Book of Marine Economy” Formally Released



In September 2021, the press conference for the release of “Blue Book on Marine Economy: Analysis Report on China’s Marine Economy (2021)” was held at the Ocean University of China. The book paints a comprehensive picture of China’s efforts and achievements in promoting high-quality development in marine economy, as well as its significant contribution to addressing global climate change and achieving sustainable development. The book includes the following independently researched chapters: General Report, Macro-level Analysis, Industries-based Analysis, Regions-based Analysis, and

Focused Report. Among them, “The General Report” dissects how China’s marine economy has developed in 2020. “The Macro-level Analysis” includes the appraisal of the status quo of China’s marine economy, its engagement and cooperation programs with foreign counterparts as well as the state-level policies during the 13th Five-year Plan period. “The Industries-based Analysis” takes a deeper look into different industries under the concept of marine economy, including marine fishery, marine oil and gas drilling, marine pharmacy and biomedical development, marine energy development, seawater desalination and comprehensive utilization, shipbuilding and ocean engineering equipment manufacturing, marine transportation and marine tourism, “The Regions-based Report” includes a pulse-feeling of the growth dynamics in Northern Marine Economic Circle, the Eastern Marine Economic Circle, the Southern Marine Economic Circle, and the Guangdong-Hong Kong-Macao Greater Bay Area. Last but not the least, the “Focused Report” dives into several heated topics including the Impact of COVID-19 on the development of China’s marine economy, the support of the financial sector on China’s Marine Economy, international marine industries, and the policy orientation of China’s marine economy during the 14th Five-Year Plan period. As an annual analysis and consultation report on the development of China’s marine economy at the national level, the Book provides an insightful collection of marine think-tank wisdoms to China’s social and economic development.





## *The “Blue Book of Arctic Report: Report on Arctic Development (2020)” Formally Released*

In December 2021, the press conference for the release of the “Blue Book of Arctic Report: Report on Arctic Development (2020)” (hereinafter referred to as the “2020 Report”) and the “Young Scholars Forum on Arctic Issues” were held at Ocean University of China. The 2020 Report was yet another signature work of the OUC Polar Research Center, the 7th since the report’s first release in 2014. Following the previous format, the 2020 Report focuses on the major events in the Arctic between 2020 and early 2021, and summarizes how the Arctic countries reacted and responded to COVID-19 pandemic. The 2020 Report included the following chapters: Governance, Laws and Regulations, Safety and Security, Countries-based Introduction and Chronology of Major Events in the Arctic Region. In 2020, the COVID-19 pandemic swept the globe and affected, to varying degrees, the security, economy growth, scientific development and other aspects of the Arctic countries. However, it also brought new opportunities for emerging

industries such as online education, logistics, and internet. Therefore, Arctic countries should focus on the acute problems shadowed by the pandemic, intensify cooperation in public health, science and other related fields, and jointly promote regional development and prosperity. The “Blue Book of Arctic Report: Report on Arctic Development” series are an epitome of OUC Polar Research Center’s research in and unwavering commitment to polar studies and governance.



## *NSSF Approves 2 More Major Projects at OUC*

In December 2021, the National Social Science Fund (NSSF) announced its 2021 list of major projects. Two projects submitted by OUC faculty were approved, including the “Research on China’s Strategy of ‘Developing Deep Blue Fishery’ in the Context of China’s Push for a Stronger Marine Economy” by Prof. Han Limin, Vice President of OUC Institute of Marine Development and Professor of School of Management, as well as the “Research on the Companies’ Debt Issues in Countries along the Belt and Road in the Post-COVID19 Era” by Prof. Wang Zhuquan, Vice Dean of the School of Management. Up till now, 21 state-level social science projects have been granted to OUC, including 10 major projects approved by the NSSF. As a researcher closely following the urgency of developing marine economy in China and deeply engaged in the studies of marine economy and fishery management, Prof. Han Limin has actively pushed for the formulation and implementation of the “Deep Blue Fishery” Strategy, in order to empower China’s fishery industry to sail from coastal waters into the deep and high seas. The Strategy is undoubtedly the necessary choice for transforming and upgrading China’s fishery industry, and building China into a powerhouse of marine economy. His research project has great significance in helping China improve its marine resources sustainability, expand China’s outreach of the marine economy, ensure high-quality aquatic products supplies and national food security, safeguard the country’s maritime rights and interests, and enhance the world’s capability of ocean management. Based on the actual needs of China’s market economy and company development, Prof. Wang Zhuquan has extended his research frontiers into two distinctive fields: capital efficiency and financial risk, as well as stakeholder accounting and management of government’s social capital”. His project aims at conducting an in-depth discussion about the company debt issues troubling BRI countries in the post pandemic world while featuring economic and political complexities.





# Conferences

## *The 2019-2020 Annual Symposium on the Major Research Plan on West-Pacific Earth System Multispheric Interactions*



During November 1-2 2020, the 2019-2020 Annual Symposium on the Major Research Program of National Natural Science Foundation of China (NSFC) on "West-Pacific Earth System Multispheric Interactions" (WESPMI) was held in Zhuhai, Guangdong. The symposium was hosted by the Department of Earth Sciences of the NSFC, organized by Ocean University of China and co-organized by Sun Yat-sen University Zhuhai Campus. Six academicians and more than 130 experts and scholars from 28 research institutes in China attended the symposium. At the meeting, Academician Wu Lixin, Vice President of OUC, reported the overall project layout and funding status of the Program on behalf of the Program Steering Group. Since its approval in August 2018, WESPMI Program, initiated by Academician Wu Lixin and other experts, has been conducting cross-scale and multidisciplinary research on three key scientific topics: 1) the impact of complex topography in the West Pacific Ocean on ocean dynamics and climate system; 2) the cross-circle material and energy exchange processes at the fluid-solid interface in the West Pacific Ocean; 3) West Pacific plate subduction and deep

Earth fluid-solid interactions. It aims to make original contributions to the establishment of the theory of multi-spheric interaction of the Earth system. Up to now, 64 projects have been funded, with a total research funding of 133 million RMB. The success of this meeting has laid a good foundation for the optimal layout of the project and the smooth implementation of the work in the future.



## *China Fisheries Alliance for New Agriculture Established in Qingdao*

On September 26 2020, China Fisheries Alliance for New Agriculture was officially established in Qingdao. The Alliance is a non-profit organization launched by OUC. The purpose of the Alliance is to transform and upgrade the discipline of fisheries to meet the new needs of the industry. To achieve this goal, the Alliance will promote the reform of the curriculum system, practical teaching and collaborative education to provide strong talent support for the development of fisheries and rural revitalization. The Alliance has brought together 27 universities, 15 enterprises, 7 research institutes and associations. Upholding the principles of joint contribution, shared benefits, equality and win-win cooperation, the Alliance pools quality teaching resources and research strength of universities, enterprises, research institutes and industry associations. It will improve the structure of the discipline and accelerate the cultivation of leading talent in this field.



## *Symposium on the Health Protection of the Ocean and Its High-quality Sustainable Development was held at Ocean University of China*



During 25-26 November 2020, OUC and City University of Hong Kong (CityU) co-organized the Symposium on the Health Protection of the Ocean and Its High-quality Sustainable Development cum 1st Forum of Qingdao Hong Kong Marine Environment and Ecology Joint Research Centre for Young Scientists and Postgraduates in Ocean University of China. The symposium was conducted both in face-to-face and real-time online mode, the participants in this event consisted of 60 prominent scientists and more than 200 research students from 15 academic institutes. At the opening ceremony, Prof. Yu Zhigang, President of OUC and Prof. Guo Wei, President of CityU made welcome remarks. The two Presidents mentioned the importance of coastal ocean health and sustainable development. They

encouraged researchers to work together in many research areas of common interest to contribute to the protection and sustainable use of the ocean and marine resources and to promote cooperation and exchange in areas related to marine environmental protection and sustainable development. In the plenary session, 10 distinguished scholars were invited to give plenary talks on noteworthy and cutting-edge research topics such as management of emerging chemicals of concern, coastal ocean health and sustainability, ecological engineering for enhancing marine biodiversity, and applications of aquatic biomarkers. In the discussion session, Experts and young scholars shared ideas on coastal ocean health and high-quality innovative development.





## *The Inaugural Meeting of the Union of Marine Academic Journals of Chinese Universities Held in Qingdao*

On 29 September, the inaugural meeting of the Union of Marine Academic Journals of Chinese Universities was held in Qingdao. Dr. Wang Jianmin, OUC's Vice President for Financial Affairs, attended the meeting. He emphasized the importance of marine academic journals in disseminating marine science, technology and culture and in serving the country's maritime strategy. He said that the academic journals are facing new opportunities and challenges, which requires them to be more closely united and learn from one another. The purpose of founding the Union is to seek more opportunities and jointly develop the publishing industry related to marine science and technology. He called upon all Union members to make full use of the platform and strive for in-depth exchanges, close cooperation, co-construction and win-win results to break new grounds. Secretariat of the

union is located in the Journal Society of Ocean University of China. The ten universities represented by the council include the University of Chinese Academy of Sciences, Ocean University of China, Xiamen University, Shanghai Ocean University, Guangdong Ocean University, Hainan University, Jiangsu Ocean University, Zhejiang Ocean University, Dalian Ocean University and Hainan Tropical Ocean University. The meeting was moderated by Dr. Yang Limin. More than 40 scholars and experts attended the meeting, including the directors of 23 marine academic journals from the ten universities and the members of the Journal Society of Ocean University of China. They conducted extensive exchanges and in-depth discussions on the experience and strategies of running marine academic journals at universities.



## *10th Anniversary of the Institute of Evolution & Marine Biodiversity cum the 2nd Meeting of the 2nd Academic Committee*



On 28 November 2020, the Institute of Evolution & Marine Biodiversity (IEMB) of OUC celebrated its tenth-anniversary and held the second meeting of the second academic committee at Yushan Campus. Prof. Yu Zhigang, President of OUC, attended the meeting and delivered a speech. He pointed out that IEMB, as a pilot institution for the inter-college cooperation of OUC, has been working on basic biology research and has earned its international reputation by its remarkable achievements in several cutting-edge research fields since its establishment in 2010. It has made great contributions to the development of the related disciplines of basic biology. Since the meeting of the Academic Committee in 2017, IEBM has made a series of new achievements mainly in the following two directions: 1) the diversity and evolution of important taxonomic groups of marine organisms, and 2) the development and evolution of the organisms at evolutionary nodes. A number of innovative results have been produced in the fields of molecular systematics and epigenetics of ciliates, community structure and ecological functions of marine microbial diversity, early development of model animals and molecular evolution, which have been published in top



journals in the field and have made a significant impact at home and abroad. IEBM is now working on 64 national, provincial and ministerial projects, and has achieved remarkable results in team building and talent training. Furthermore, through exchange and cooperation programs, IEBM has deepened its cooperation with relevant research institutions at home and abroad, while its international influence has been further increased by organizing international academic conferences.

## *The 10th China-Russia Arctic Forum Held Successfully*

The 10th China-Russia Arctic Forum was successfully concluded in September, 2021. The Forum was co-hosted by St. Petersburg State University of Russia and Ocean University of China, with the support from Arctic Research Center of the Yamal-Nenets Autonomous District and the Northern Forum, an NGO and observer state of the Arctic Council. Focusing on the theme of “Bilateral and Multilateral Cross-region Cooperation in the Arctic”, the Forum has invited representatives from more than 30 universities, research institutes and companies of China and Russia to have a virtual meeting on the future development and cooperation in the Arctic. Scholars from both countries have conducted heated discussions on the trending issues regarding the Arctic. In the newly added session “Cooperation in Arctic Research and Education”, both sides have reviewed the fruitful results achieved by the Chinese and Russian universities in this aspect, and expressed hopes to step up the bilateral research cooperation and talent exchanges, especially with the Ocean University of China. As the China-Russia Arctic Forum celebrates its 10-year anniversary this year, scholars from both countries are trying to make this Forum a comprehensive platform that integrates academic exchange, education cooperation, as well as industry and consultation services.





## *Campaign and High-level Summit on Building Marine Biomedicine Pharmacy Held in Qingdao*

From June 10th to 11th, 2021, a campaign and a high-level summit on building a marine biomedicine pharmacy were held at the Qingdao Pilot National Laboratory for Marine Science and Technology (QNLN). The Blue Pharmacy Development Summit, co-hosted by QNLN, OUC, and Chinese Pharmaceutical Association, and co-organized by Qingdao Marine Biomedical Research Institute, and OUC School of Medicine, invited many biomedicine academicians and experts to make presentations on how to make use of the marine resources to develop new drugs and medical devices. Delegates shared their insights and wisdom from the perspective of scientific and technological advancement, industrial support and project management. The “Blue Pharmacy Development” Initiative aimed to expedite the rise of biomedical industry in China, and support innovative projects that could scientifically, systematically, holistically and orderly exploit the marine resources for better innovation in marine biomedicines. In the past three years, the concerted efforts from the government, research institutes and the industry have got the “Blue Pharmacy Development” Initiative firing on full cylinders. A number of projects have showed a lot of promise in the market: Sodium Oligomannate Capsules (®GV-971) for the treatment of Alzheimer’s disease has received its first approval; a number of original new drugs and innovative medical devices, represented by the antitumor drug BG136,

are being developed in an orderly manner; marine pharmacology and health-related industry are also developing rigorously, producing many functional foods such as the food for medical special purposes (FMSP), health food, and cosmeceutical products.





## *“Marine Science Development Strategization: 2021 to 2035” Plenary Meeting Held in Qingdao*

On April 10th, 2021, a plenary meeting of the NSFC-CAS project “Marine Science Development Strategization: 2021 to 2035” led by OUC was held in Qingdao. The project, co-sponsored by the National Natural Science Foundation of China (NSFC) and Chinese Academy of Sciences (CAS) was officially kickstarted in Beijing in January 2020, in an aim to study two themes: 1) major disciplines identified by the NSFC-funding system; and 2) emerging and frontier fields as well as disruptive technologies. For now, 18 major discipline-related researches have been approved, 4 of which are in the geosciences, namely the earth science, resource and environmental science, space science, and marine science; and 20 frontier-field related researches have been endorsed. On the plenary meeting, comments and suggestions from the experts have been extensively solicited on the first draft of the Strategization Report, as well as on how to “tackle the deficiencies and prioritize the next-stage work” in terms of marine-related disciplines development, future marine science and technology development planning, as well as the structuring and mechanism-designing of the funding system. As a



result, the Meeting has laid a solid foundation for the upcoming mid-term inspection and final project completion. The Strategization Report will be published as a monograph included in the “National Science Thinktank: Serial Books on Academic Leadership”. In his concluding remarks, Academician Wu Lixin acknowledged the project progress and continued to note that the Strategization Report shall be more focused on the role of marine science in China’s science and technology innovation system, and more systematically show how marine science can drive China’s cutting-edge research, meet the country’s strategic demands, fuel economy development and safeguard people’s health.

## *OUC and the CES Co-hosted the 6th China Summit Forum on Human Factors Engineering*



From September 11th to 12th, 2021, the 6th China Summit Forum on Human Factors Engineering was held at Qingdao International Conference Center. The forum, co-hosted by the Chinese Ergonomics Society (CES) and OUC, was attended by over 20 CAS and CAE academicians, and almost 300 delegates from government agencies, research institutes and companies with an aim to find a way forward. Prof. Wu Lixin, CAS Academician and OUC Vice President, attended the opening ceremony as the honorary chairman of the Forum and delivered a keynote speech. He noted that human factors engineering, by making compre-



hensive use of multi-disciplinary research methods and means, is committed to the research, technological innovation and design application of human-machine environment systems. It will usher in a new era of development, but also face new challenges and undertake new missions. Under the theme of “Towards a Stronger Country and a More Beautiful Future”, the forum has innovated the content and form of each session, by designing specific segments for Guest

Presentations, Youth Salons and three sessions themed “Human Factors Theory and Technology”, “Human Factors Design and Evaluation of Complex Systems”, and “Human Factors and Intelligent Life”, respectively. In addition, the participants conducted in-depth discussions on how to promote theoretical innovation and discipline development of human factors engineering, support national strategies and serve local economy.

## 2020-2021 China-Japan High-level Scientists Workshop on Marine Environment Held in Qingdao

On July 2nd, 2021, the 2020-2021 China-Japan High-level Scientists Workshop on Marine Environment was held in Qingdao International Academician Park, with nearly 30 scientists from China, Japan, Australia and other countries and regions participating offline and more than 10,700 people joining online. OUC Vice President and CAE academician Li Huajun attended the event and delivered a speech. In his speech, Li said that OUC has conducted fruitful educational cooperation with dozens of Japanese research institutions such as the Tokyo University of Marine Science and Technology as well as the University of Tokyo, and carried out a series of academic exchange

activities in the marine field. The event brought together many famous experts and outstanding young scholars specialized in ocean and aquatic studies in China and Japan. Undoubtedly, the event would give birth to new exchange opportunities and more achievements on both sides. Featuring the theme of marine environment and climate change, fisheries and marine resource conservation, and ocean micro-plastics treatment, leading researchers and young scientists made keynote presentations. Experts at the round-table sessions also shared their experiences, discussed scientific frontier issues, and exchanged their opinions and suggestions on international cooperation in related fields.





## *OUC Held the Symposium on Ocean Carbon Sink and Carbon Reduction*



On August 13th, 2021, the Symposium on Ocean Carbon Sink and Carbon Reduction was convened at the OUC. During the symposium, CAS academician and OUC Vice President Wu Lixin noted that as an active response to China's ambitions on carbon peaking and carbon neutrality, OUC should give full play to its strengths in basic marine research and interdisciplinary integration. To that end, OUC should set out a roadmap incorporating the following four aspects: firstly, to enhance its basic research and deepen its studies over the mechanism of marine carbon cycle in order to learn more about the extreme climate changes; secondly,

to prepare for the deep decarbonization in the energy sector, and focus on studying the multi-energy complementation from marine renewables; thirdly, to explore the theories and technologies to be carbon negative, and increase the ocean's capability as a carbon sink; and fourthly, to provide support as a thinktank for policymakers. By leveraging the strengths of OUC-based organizations including the Institute for Advanced Ocean Study and the Institute of Marine Development, OUC would speed up the pace of establishing the OUC Carbon Peaking and Neutrality Interdisciplinary Study Center, in order to facilitate its collaboration with the leading businesses, while providing theoretical and technological support for China's push towards carbon peaking and neutrality. Nine OUC experts from nine research fields, namely oceanography, meteorology, chemistry, geoscience, environmental science, IT, engineering, aquaculture and economics delivered presentations on three themes: Key Processes and Mechanisms of Ocean Carbon Sink, Typical Usage Examples of Increasing Ocean Carbon Uptake and Monitoring Carbon Cycle, as well as the Efficiency of Marine New Energies and Eco-enrichment in Carbon Reduction and Energy Conservation. After the presentations, experts and scholars also discussed the issues related to ocean carbon sink and carbon reduction.

## *“Driving Quality Higher Education Development through Data: GFUP 2021 Preparatory Meeting” Held at OUC*

On March 29th, 2021, OUC as the main organizer of the Global Forum of University Presidents 2021 (GFUP 2021) welcomed Mr. Wu Yingce, Director of the Business Development Department of the China Association of Higher Education (CAHE) and other delegates to discuss the arrangements on the upcoming Forum at OUC Laoshan Campus. At the preparatory meeting for the Forum, Prof. Wang Jianmin, member of the OUC CPC Standing Committee and Vice President for Financial Affairs, pointed out that the Forum was of great significant to OUC and the university would prepare contentiously to deliver success to the event, in the hope that the event would inspire

more innovative ideas for OUC. Wu from CAHE added that a high-quality development trajectory would be what empowers tertiary education. As an answer to the government's call during the 14th Five-year Plan Period to “build a quality higher education system”, information technologies epitomized by AI and big data would provide a bigger source of power and play a major role in building smart campuses, innovating education models and reforming appraisal mechanisms. In addition, he shared detailed requirements for the preparation, and encouraged all to join hands to achieve the quality development for China's higher education.

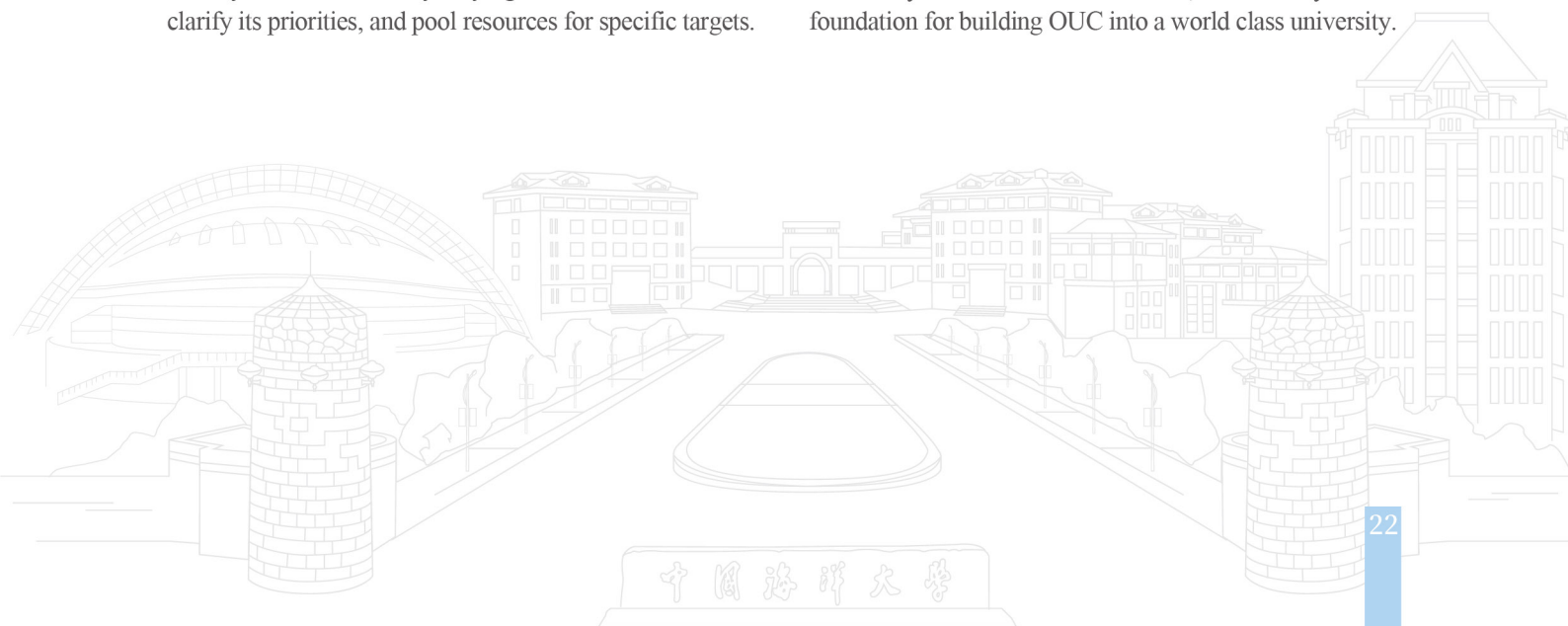


## *“Seminar on Supporting Major National Strategies and Serving Local Socioeconomic Development” and “New Semester Preparation Meeting” Held in OUC*



From August 21st to 22nd, 2021, the Seminar on Supporting Major National Strategies and Serving Local Socioeconomic Development as well as the New Semester Preparation Meeting were held at OUC. Prof. Tian Hui, Secretary of the OUC CPC Committee, reiterated OUC's responsibility to serve the country and community. He stressed that OUC attaches great importance to serving the country. Now that governments at various levels have called for building strengths in the marine R&D, OUC shall make full advantage of its unique position and take the historical opportunities. Rooted in the local community in Qingdao and Shandong Province, OUC shall aim higher to serve the country and the world, by staying alert to its deficiencies, clarify its priorities, and pool resources for specific targets.

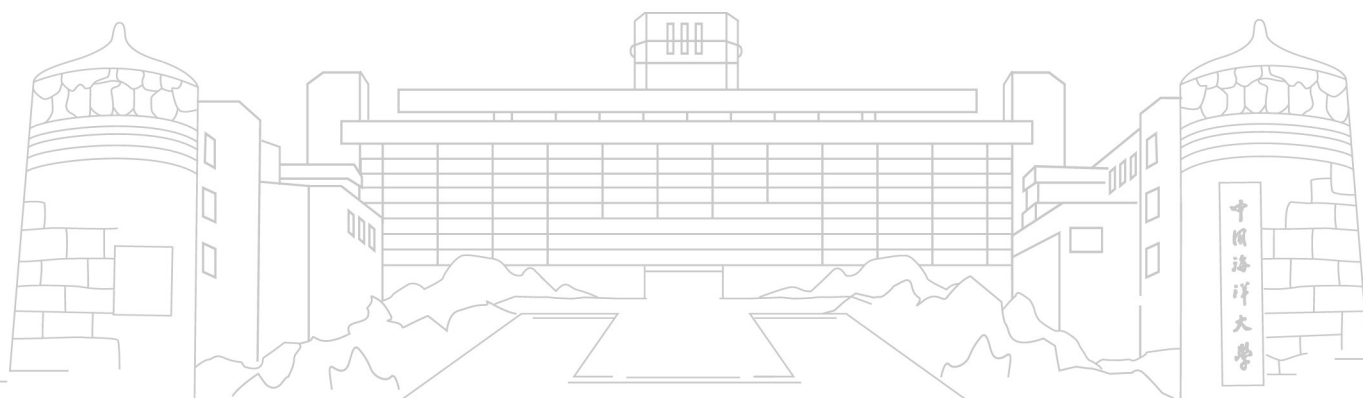
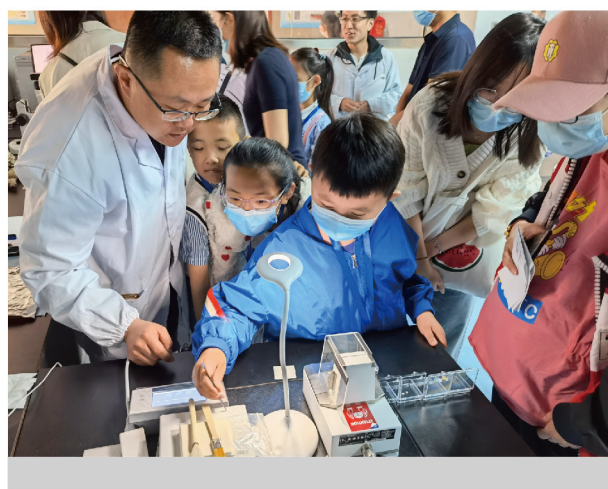
OUC President Yu Zhigang added that serving the country and local community has always been important in the university's blueprint, and all should study the government policies and visions, with a stronger sense of service. He also noted that all should keep keenly aware of the international and national situations, increase communication, conduct in-depth analysis of the existing problems to find solutions, build taskforces, make innovations and resolve the bottlenecks on a case-by-case basis. He encouraged all to optimize the university's 14th Five-year Plan in serving the country, society and local socioeconomic growth, streamline the process, prioritize the work, fully stimulate the vitality and form the momentum, so as to lay a solid foundation for building OUC into a world class university.



## 2021 Science and Technology Week Held at OUC

In order to facilitate the popularization of science, enhance the scientific competence of the public, and raise more awareness of OUC's S&T achievements, OUC launched the 2021 Science and Technology Week between May 22nd and May 30th, under the theme of "For Better Scientific Popularization and in Celebration of the CPC Centenary". The week-long event included many public-friendly arrangements such as marine science lectures and science museum activities. The event has welcomed some 500 primary and middle school students, as well as ordinary citizens, opening them a window to the magic of marine science. Echoing OUC's initiative, several OUC-affiliated

institutions such as the Key Laboratory of Physical Oceanography, the Key Laboratory of Marine Chemistry Theory and Technology, the Key Laboratory of Submarine Geosciences and Prospecting Techniques, the Key Laboratory of Marine Drugs, and the Chinese Maritime Power Museum also carried out various open-day activities, including exhibitions, interactions, on-site experiments, and science lectures. The event was widely acclaimed by the public, as it not only educated the public on the latest S&T achievements, but also enhanced the public understanding about the spirit, methodologies and competence in science.







中国海洋大学  
OCEAN UNIVERSITY OF CHINA

# *Spotlight*



## *OUC Presented with National Science and Technology Progress Award 2020*



On the morning of November 3, 2021, the 2020 National Science and Technology Progress Awarding Ceremony was held in the Great Hall of the People in Beijing. The project under the title of “Analysis of Efficacy Components of Sea Cucumber and Application of Deep Processing Technology” led by the team of Prof. Xue Changhu of Ocean University of China (OUC) won the second prize of National Science and Technology Progress Award. This was the fourth national science award that OUC has Prof. Xue Changhu has been committed to the research of aquatic product processing and storage for over 30 years as China’s first home-grown PhD and Postdoctoral researcher in this field. Under his leadership, the team explores cutting-edge topics in the field and has produced fruitful outcomes. They have been working hard on the theories and technologies for the efficient utilization of bulk marine aquatic product resources in coordination with China’s leading institutes and businesses including the Biology Institute of Shandong Academy of Sciences, the Yellow Sea Fisheries Research Institute of Chinese Academy of Fishery Sciences (YSFRI), and the Fishery Machinery and Instrument Research Institute of Chinese Academy of Fishery Sciences (FMIRI).

With 16 years of exploration and experience in the joint research program, great breakthroughs were achieved. The chemical structure of the efficacy components and nutritional functions of sea cucumber were demonstrated, the technology system on nutrition preservation and deep processing was built, the efficient preparation technology of efficacy components was developed, and the product quality standard system was established.

The program has driven sea cucumber industry into mass production for a number of large sea cucumber processing companies, helped build up the industrialized processing technology system of sea cucumber, realized the breakthrough in quality processing of sea cucumber with pipeline operation, and promoted the transformation and upgrading of China’s sea cucumber industry. Based on the analysis and delicate processing techniques, oral solution, capsules, lozenges and granules are now among the series of deep processing sea cucumber products by China’s large-and-medium-sized sea cucumber processing companies. And the technology systems are already on the way to working with listed companies, bringing business income in billions.

OUC has won many national awards over the past years, demonstrating growing strength in innovation while serving local economic and social development. Its research progress in the efficient utilization of marine food resources is especially worth noting. It has contributed significantly to the upgrading of China’s aquatic product processing and to the “Healthy China Initiative”. The achievements made over the years mark important steps on OUC’s path towards a





world-class university.

In its work on science and technology, OUC always pushes forward the converging of research disciplines, develops industry leaders and builds innovative teams. A unique working pattern of “identifying, analyzing, educating, promoting and assisting” talented research staff has been formed by the university in its work on research staffing. OUC fully supports the development of scientists and promotes the education of quality research staff with high-level research practices. As a result, in prospective fundamental studies and key technology development processes, many talented people and research breakthroughs are springing out to serve key national strategies and region-

al socioeconomic development.

institutions such as the Key Laboratory of Physical Oceanography, the Key Laboratory of Marine Chemistry Theory and Technology, the Key Laboratory of Submarine Geosciences and Prospecting Techniques, the Key Laboratory of Marine Drugs, and the Chinese Maritime Power Museum also carried out various open-day activities, including exhibitions, interactions, on-site experiments, and science lectures. The event was widely acclaimed by the public, as it not only educated the public on the latest S&T achievements, but also enhanced the public understanding about the spirit, methodologies and competence in science.

## *OUC's Research on Children's Literature and International Exchanges in the Field*

The International Research Center for Children's Literature (IRCCL) at Ocean University of China (OUC) was started in April 2004. The center is committed to broadening the research of children's literature, conforming to the “going global” strategy for Chinese culture, and enhancing the international influence of Chinese children's literature. In 2021, the center has made a series of remarkable achievements in multiple areas such as scholarly exchanges, expert introduction, and translation and publication, making great contributions to the internationalization of Chinese children's literature research.

First, Prof. Zhu Ziqiang, director of IRCCL, won the 18th International Brothers Grimm Award in June this year. It is regarded as the most prestigious award for children's literature research in the world for the development of research on children's literature theory, sharing the same status as Hans Christian Andersen Award, which focuses on writing for children. So far, there have been eighteen winners from around the world, all of whom are outstanding scholars in children's literature research. The committee mentioned in the prize announcement that “Prof. Zhu has been developing an international approach to the research and teaching of children's literature in China, all the while



introducing Chinese children's literature to the world”. Besides, Chinese Children's Literature in the Golden Age, a bilingual monograph written by Prof. Zhu, is disseminated worldwide and has played a significant role in increasing the understanding of scholars from other countries toward Chinese children's literature.

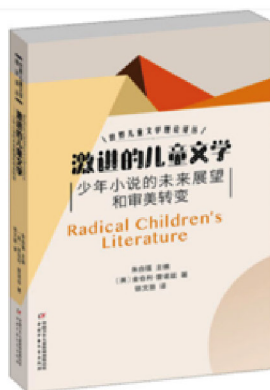
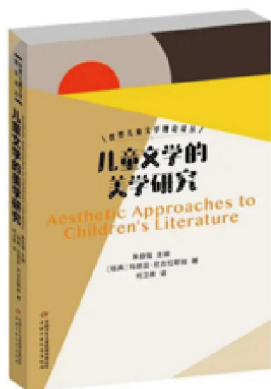


Secondly, the center has held The Third International Children's Literature Symposium in October this year, receiving more than 100 papers from 44 universities in over 10 countries. The symposium is held every two years, and began with the first China-US Children's Literature Symposiums (Qingdao), co-organized by OUC and Texas A&M University in 2012. Nowadays, this symposium has become an important platform for scholars from different countries to exchange the latest progress of children's literature research. The theme of this year is "Interdisciplinary Studies of Children's Literature". The cross-border, cross-cultural, and cross-language issues discussed have not only promoted the exchange of ideas between Chinese and foreign scholars, but also enriched the theoretical significance and practical value of children's literature research.

Besides, the center has invited a large number of internationally renowned scholars of children's literature to give lectures. In June this year, Prof. Kimberly Reynolds, the winner of the International Brothers Grimm Award and former chair of IRSCL, delivered a lecture entitled "Transgressive Illusions and Radical Visions: Circuses in Twentieth-century Children's Literature". Prof. John Stephens, the winner of the International Brothers Grimm Award and former editor-in-chief of International Research in Children's Literature(A&HCI), and Prof. Karen Coats, the director of the Centre for Children's Literature at the University of Cambridge, have also been invited to present their papers.

Lastly, the center has been actively introducing classical and cutting-edge monographs of international children's literature research, including *Aesthetic Approaches to Children's Literature* by Maria Nikolajeva, *Radical Children's Literature: Future Visions and Aesthetic Transformations in Juvenile Fiction* by Kimberly Reynolds, *Contemporary Children's Literature and Film* by Kerry Mallan, and *Feeling Like a Kid: Childhood and Children's Literature* by Jerry Griswold. All these books have been published by China Juvenile and Children's Publishing House, further promoting the development of Chinese children's literature theory and enhancing the exchange and integration of Chinese and western research methods.

The international exchange and cooperation of children's literature research is of great significance in this era. IRCCL has adopted multiple means to promote the internalization of Chinese children's research. In the future, more participation from international scholars is needed to solve major problems and enrich research of children's literature.







# *International Collaboration*



## *China-Norway Marine University Consortium Alliance Inaugural Meeting held at OUC*

**Ushering in a new chapter of Sino-Norwegian cooperation in marine-related fields**



On October 20, 2021, the inaugural meeting of China-Norway Marine University Consortium Alliance (hereinafter referred to as the Alliance) was held at OUC. Leaders from the Department of International Cooperation and Exchanges under the Ministry of Education of China, the Embassy of China in the Kingdom of Norway and the Royal Norwegian Embassy in Beijing, and the 23 member institutions met online to witness the establishment of alliance and jointly ushered in a new chapter of the two countries' cooperation in marine-related fields. OUC and the University of Bergen (UiB) serve as the Secretariats of the Alliance.

Fang Jun, Deputy Director General of the Department of International Cooperation and Exchanges under the Ministry of Education, attended the meeting and extended his congratulations. He pointed out that Norway is China's important partner in education. The two countries have signed a number of bilateral agreements and achieved fruitful outcomes in joint talent cultivation and research cooperation. Since maritime cooperation has always been a highlight, it is especially meaningful that OUC and UiB

jointly built the alliance with marine-related universities on the two sides. With a focus on such areas as marine science, fisheries and ocean engineering, the Alliance will serve as an international innovation platform, promote substantive cooperation in marine education between the two countries and build a maritime community with a shared future. It is expected that the Alliance will make mid-and-long-term development plans, deepen cooperation in marine-related disciplines among member universities, and facilitate the development of marine undertakings of the two countries.

Prof. Tian Hui, Secretary of CPC Committee of OUC, delivered a welcome speech and expressed his gratitude to the leaders of the Ministry of Education for their guidance and the leaders and experts of member universities for their full support. He noted that the ocean offers solutions to the challenges that humanity faces. Both China and Norway are important maritime countries. Promoting cooperation in marine-related education and research opens up new ways of addressing the challenges. The establishment of the alliance is of great importance to both two countries and the world. OUC will fulfill its responsibilities as the Chinese





Secretariat and work closely with member universities. It will seize the opportunity of UN Decade of Ocean Science for Sustainable Development to improve the mechanism for cooperation and exchanges, with an endeavor to make the alliance a good example of China-Norway educational cooperation. He called on all parties to join efforts to promote maritime peace and prosperity.

Mr. Magnus Jorem, Counsellor for Science and Education of Royal Norwegian Embassy in Beijing, Mr. Chang Quansheng, First Secretary and Ms. Huang Jie, Second Secretary of Embassy of China in the Kingdom of Norway delivered speeches and expressed their congratulations on the establishment of the alliance. They promised support to the work of the alliance and expressed the hope for the alliance to serve as a platform of cooperation in marine science and education between the two countries.

Prof. Li Huajun, Vice President of OUC and Academician of the Chinese Academy of Engineering signed the agreement for the co-establishment of the alliance with Prof. Nils Christian Stenseth, on behalf of the member institutions.

Prof. Dag Rune Olsen, Rector of University of Tromsø-The Arctic University of Norway, and former Rector of UiB, delivered a speech on behalf of the Norwegian members. He reviewed his visit to OUC a few years ago. He said that he was impressed by OUC's achievements in marine exploration and development. He said that cooperating in marine-related fields a response to the call of the times. Thanks to the foresight of the two Ministries of Education and the joint efforts made by the member universities, the alliance will surely become an important platform that promotes talent cultivation, academic and cultural exchange,

es, quality resource sharing, and coordinated development.

Prof. Wang Min, Director of the Chinese Secretariat and Vice Dean of OUC's College of Life Sciences, and Prof. Nils Christian Stenseth, Chairman of the Board of the Norwegian Marine University Consortium, co-hosted the meeting. Prof. Wang and Dr. Susanna Pakkasmaa, Executive Officer of the Norwegian Marine University Consortium, reported on the preparations and progress on behalf of the two sides, presented research interests, and put forward follow-up work suggestions.

The China-Norway Marine University Consortium Alliance is an innovative platform for international cooperation initiated by OUC after the launch of the International Alliance of Marine-Related Institutions (IAMRI). The Chinese and Norwegian Ministries of Education have given strong support to the establishment of the alliance. In June 2019, the Ministry of Education of China and the Ministry of Education and Research of Norway formally agreed at the third meeting of the China-Norway joint working group on education that the two sides should build a China-Norway Marine University Consortium Alliance, with OUC and UiB taking the lead. The alliance will focus on marine-related areas such as marine science, fisheries and ocean engineering, and promote bilateral cooperation in talent cultivation, research, transformation of research findings and cultural exchange. At the fourth meeting of the joint working group on education held in June 2020, China and Norway reached an agreement to further clarify the objectives. The establishment of the alliance ushers in a new chapter of education and research cooperation, and contributes to a maritime community with a shared future.

The Chinese member universities include Ocean University of China, Shanghai Ocean University, Dalian Ocean University, Zhejiang Ocean University, Hohai University, Xiamen University, Tongji University, East China Normal University, Nanjing University, Sun Yat-sen University, and China University of Geosciences (Wuhan). The Norwegian member universities are: University of Bergen, University of Tromsø – The Arctic University of Norway, Nord University, Norwegian University of Science and Technology, Western Norway University of Applied Sciences, University of Stavanger, University of Agder, University of Oslo, University of South-Eastern Norway, Norwegian School of Economics, and Oslo Metropolitan University.

## International Exchange and Outreach at POGOC Lab



The Key Lab of Polar Oceanography and Global Ocean Change (POGOC Lab) spearheads all arctic research teams at Ocean University of China (OUC). POGOC Lab was jointly established by the Chinese Arctic and Antarctic Administration (CAA) and OUC in 2005 with its research focus on such seven fields as the change process of arctic ocean and sea ice, southern ocean circulation / sea-ice interaction, changes in global oceans, climate change in the polar areas and its global impact, remote sensing of polar ice and snow, polar ecology and biological resources, arctic politics, as well as law and economics. As a polar research team that boasts interdisciplinary development, POGOC Lab has become the backbone in these research fields in China while gradually developing into a pillar of the international arctic research. In addition to actively engaging itself in China's polar expedition and research, the POGOC Lab has also participated in extensive international cooperation with an aim to expand the scope of research and promote the advancement of polar research. Given the remote geographical location and harsh environment in the polar regions, China cannot conduct its research without global collaboration. To that end, POGOC Lab has made significant efforts in promoting international cooperation.

With the support from CAA, OUC has always been an active participant in the Chinese arctic expeditions. In its latest participation in China's 11th Arctic Scientific Expedition in 2020, OUC conducted researches focusing on arctic physical oceanography and sea fog detection while deploying DTOP facilities in the region. During China's scientific expeditions, substantive cooperation on arctic research has

been extended with institutions including the University of Washington, the Alfred Wegener Institute, the University of Manitoba, Norwegian Polar Institute, and Korean Polar Research Institute.

Between 2014 and 2018, led by OUC Professor Zhao Jinping, the POGOC Lab worked with Norwegian research institutes and carried out five field trips to the Nordic Sea to mainly conduct surveys around the Greenland Sea convection zone and Jan Mayen. The surveys were primarily done onboard ships, which covered 200 survey stations and involved deploying one set of air-sea interaction buoy and three sets of submerged buoys. Moreover, the POGOC team also deployed its self-designed disposable radiosonde to observe the optical structure of low-altitude clouds in the Nordic Sea for the first time. Based on the data collected, in-depth research was carried out on important issues including water exchange between Greenland Sea and Norwegian Sea, as well as strong air-sea interaction in the Nordic Sea, laying a solid foundation and providing good opportunities for further research and deepened cooperation between China and Norway in the future.

In 2019, on behalf of OUC, Dr. Li Tao and graduate student Zhu Jiali participated in the Multidisciplinary Drifting Observatory for the Study of Arctic Climate (MOSAIC) expedition which represented the largest Arctic expedition so far in human history. During the expedition, the OUC team successfully deployed five sets of independently developed DTOPs at the Eurasian Basin of the Arctic Ocean, helping China obtain first-hand data on the region's subglacial maritime environment for the first time, and







making concrete contributions to the MOSAiC expedition. In recent years, OUC has played an active role in the China-Russia cooperation in Arctic researches. The university participated in the Sino-Russian joint expeditions to Laptev Sea and East Siberia Sea in 2016 and 2018 respectively with aims to carry out research on physical oceanography, freshwater diffusion path, bottom water in winter, water mass evolution process and transport path, as well as the contribution of shelf water to Arctic Ocean water. The expeditions represented China's first visit to the Russian shelf sea, and a new step towards more understandings about the uncharted waters.

China-Russia Arctic Forum, founded and chaired by OUC Professor Guo Peiqing is an epitome of OUC's active engagement in the bilateral cooperation. The Forum, jointly initiated by OUC and Saint Petersburg State University in 2012, is an annual event with the two universities hosting the Forum in turns. Celebrating its 10th anniversary this year, the Forum has become an important platform for regular exchanges for the delegates of universities, research institutes, government departments, and business communities in the two countries. Themed "Bilateral and Multilateral Cross-region Cooperation in the Arctic", this year's Forum was held online. Chinese and Russian representatives from some 30 universities, research institutes and companies shared their insights and outlooks on the future of Arctic and

how to further bilateral cooperation in the region.

University of the Arctic (UArctic) is an international cooperative network based in the Circumpolar Arctic region and consisting of universities, colleges, and other organizations therefrom. Founded in July 2001 with support from the Arctic Council, UArctic has, for years, devoted itself to Arctic research and education with a goal to promote sustainable development and indigenous culture protection in the Pan-Arctic region through collaborative research. OUC became an associate member of UArctic in





2013, making it the first educational institution in China to join the organisation. By making POGOC Lab the major platform to engage with UArctic, it is conducive to OUC's efforts in developing its strength in Arctic-related subjects, facilitating more academic exchange and cooperation while enhancing its research capabilities and international presence.

In terms of Antarctic marine ecological studies, with the kind introduction by Chinese green card holder, Professor Andre McMinn from the University of Tasmania, OUC became the first Chinese educational institution to join the International Antarctic Institute (IAI). From October to December 2019, researchers from OUC travelled to the Antarctic to take part in the international expedition launched by the Victoria University of Wellington and the University of Tasmania, to study Antarctic sea ice microorganisms. OUC's involvement in the expedition has established a solid foundation for its research programs on marine viroplankton and eukaryotic microbes in the Antarctic region while providing technology support for China's plan to establish a scientific research station in the South Pole.

Rapid changes to climate conditions in the polar regions have fuelled the development of relevant subjects concerning shipping, resources development, strategy making, politics, and law, and intensified international cooperation in the polar regions. POGOC, based on China's strategic demands, will give full play to its strengths in multidisciplinary research, expand the frontiers for international cooperation, participate in international research and governance of the polar regions and attract more internationally renowned scientists in order to develop itself into a prestigious and top-notch research institute in polar science.







中国海洋大学  
OCEAN UNIVERSITY OF CHINA

*People* 

## Wen Shengchang, CAS Academician



### Wen Shengchang

*Professor of Ocean University of China and CAS Academician since 1993, was born on November 1, 1921 in Henan Province and celebrates his 100th birthday this year as a well-known physical oceanographer, educator, pioneer of the research on ocean wave and one of the founders of physical oceanography in China.*

Scheduled to study aeronautical mechanics in USA, Wen turned to ocean wave research in 1946 when he was onboard the ocean liner across the Pacific, inspired by the leaf-like swaying and undulating of the 10,000-ton ship, wondering whether the wave could be used as an endless resource if its collection was possible.

Known as Wen's Spectra in mid and late 1950s, his renowned theory on the Generalized Wind Wave Spectra and Their Applications was followed by another one on Swell Spectra. His computational method on ocean wave was well applied across the country, listed in the Seaport Hydrology (Volume I) of Hydrology (Chapter II) of Technical Specifications of Harbor Engineering published by the Ministry of Transportation in 1978 and awarded the National Second-class Prize for the Progress in Science and Technology. Wen is the first in China to study the model of marine numerical forecasting, attributed to his wave numerical model that is unique, new and hybrid, later applied in the national forecast of marine environment and awarded

the National Third-class Prize for the Progress in Science and Technology. The invention has been referred to as "a gem of oriental wisdom" by Toba Yoshiaki, an international acclaimed Japanese oceanographer.

Two of the five most important books on ocean wave in the world were accredited to Wen Shengchang. One is the Wave principle published in 1962 as the first of its kind home and abroad. The other is the 1984 edition of the







Ocean wave theory and computation principle by Wen and his colleague Yu Zhouwen, still guiding the theoretical research on ocean wave home and abroad.

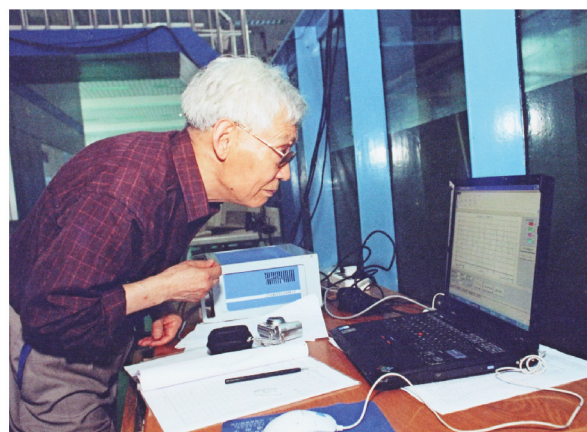
Committed to the development of education, Wen set up Wenyuan Scholarship with his donation, awarding three of the most outstanding undergraduate students at OUC. Over the past 21 years, 63 OUC students have won the scholarship. Deeply attached to his hometown, Wen donated the Ocean Hope Classroom Building to Guangshan County, Henan Province which has become a landmark of Zhuan-qiao Secondary School where students set sail for their great expectations.

Wen is also a great educator who is never tired in teaching his students, many of whom are marine scientists like Sun Fu, the first one who was granted doctorate degree in oceanography in China, and Professor Wang Bin, well-known meteorologist from University of Hawaii who won Carl-Gustaf Rossby Research Medal.

Wen Shengchang was the President of Shandong College of Oceanography (now Ocean University of China) from 1984 to 1987, a period featuring reforms and achievements in both education and international exchange, when the cooperation with University Hamburg of Germany and Oregon State University of USA produced remarkable

results. According to the 1987 work report by US marine sciences field, the cooperation with Shandong College of Oceanography is the most effective among all the cooperation projects with China.

Though acclaimed as OUC's "lighthouse", Wen keeps a low profile and remains modest. With this continuous effort and achievements, he embodies the OUC motto of "Ocean Embraces All Streams; Exploring Promises Reaching Far", as well as the mission of this community to tap marine resources for the well-being of human beings.



# *Voices*



## ***Prof. Shi Hongda, “Best Teacher of the Year”***



***Prof. Shi Hongda, an educator and researcher for the past three decades, remains committed to his original aspiration and mission of educating young people and tapping marine resources in the service of the country.***

### ***Paving the way to success for students***

Prof. Shi delivers his teaching clearly in simple words that are fascinating though academic, well documented and evidenced, with the elements of morality and integrity naturally blended into the academic theories for the purpose of cultivating students' broad-mindedness and sense of responsibility.

To cultivate innovative talent, Shi is unique in selecting and building internship bases for undergraduates and postgraduates so as to inspire their sense of innovation and research ability. He has supervised more than 100 master's and doctoral students over the past three decades. Most of them are now working in China's forefront of marine-related sciences and engineering.

### ***Strengthening the country with ocean engineering***

As a researcher in marine science and technology, Shi Hongda has made many breakthroughs in core technologies like renewable marine energy utilization in response to the national strategic demand. One of the world-class challenges is how to secure power supply on remote

islands, especially the 7,000 islands in China. Given that China is rich in marine energy, Shi and his team started exploring renewable marine energy a decade ago in Zhaitang Island off the coast of Qingdao.

On January 15, 2014, Shi Hongda's team successfully deployed a 10KW oscillating buoy array wave energy generation device on Zhaitang Island, a breakthrough that solved the long-term problems in most of the conventional devices and a giant step in developing China's renewable marine energy, laying a solid foundation for China's low-cost development of wave energy on a large scale.

Shi Hongda headed his team in building China's first 600KW marine energy pluripotent complementary island power station on Zhaitang Island, a demonstration project of using renewable marine energy for power supply on islands.

Diligent in scaling new heights and solving bottleneck problems, Shi and his team independently developed wave energy devices and successfully applied them in the demonstration projects. At present more and more people accept the concept he raised ten years ago which has become a consensus in this industry and a key principle guiding China's development and utilization of marine energy specified in the 13th Five-Year Plan on Developing Renewable Marine Energy.

### ***International cooperation and top-ranking discipline***

Shi demonstrates a global vision in his effort to promote sci-tech innovation, talent education and academic program development.



When President Xi Jinping made his official visit to the UK in October 2015, Shi delivered a presentation on China's marine energy development at the Fourth Sino-UK Annual Energy Dialogue in London, and signed the MOU on Cooperation between OUC and European Marine Energy Center in the UK, starting Sino-Euro cooperation on marine energy development and utilization.

Shi holds important posts in the academic organizations home and abroad, contributing to a number of joint education programs between the world-class universities and OUC.

Shi has contributed greatly to the development of the ocean engineering program at OUC. According to the 2020 Global Ranking of Academic Subjects, OUC ranks the 16th in ocean engineering.

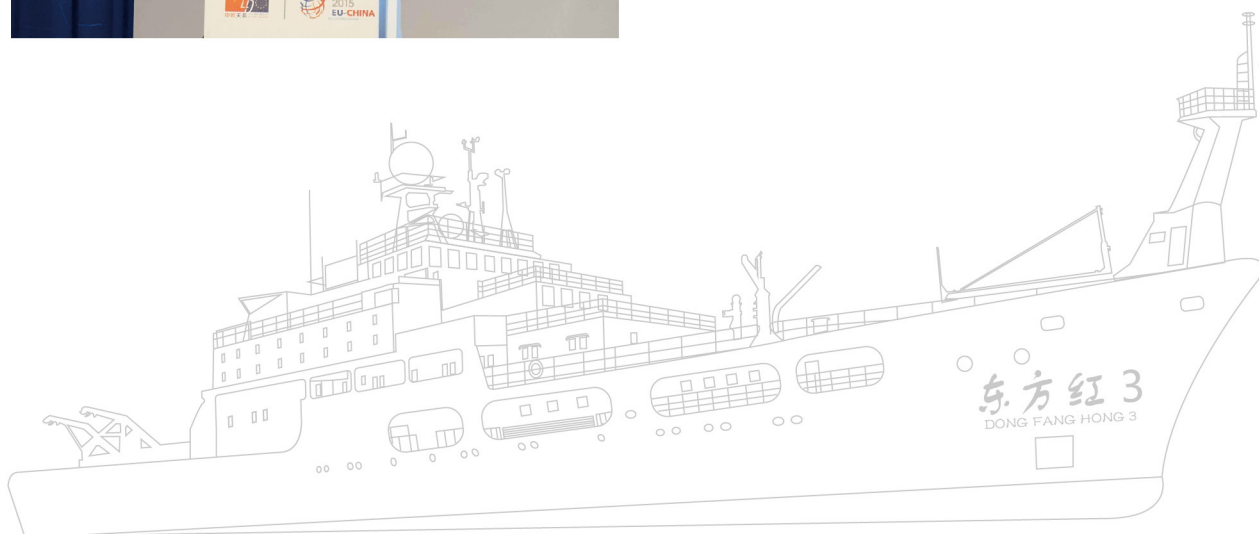
### *Cultivating morality and integrity as a model of virtue*

Great learning makes a teacher and moral integrity makes a role model — a concept preached and practiced by Shi Hongda for more than 30 years.



As a refined scholar, Shi never fails to impress everyone with his modesty and open-heartedness.

In his mind, it is easy to deliver knowledge but difficult to cultivate a person. A teacher is supposed to be a role model, influencing his students in positive ways. A teacher is also supposed to keep pace with the times and keep updating his knowledge to make his classes lively and informative.





## *OUC, a place where all impossible dreams come true*



**Wang Jiang Cheng,**  
**College of Liberal Arts, Journalism**  
**and Communication, Class of 2022**

Three years ago, I came to Ocean University of China with infinite expectations for the future. At the convocation ceremony, a senior-year student and guest speaker proudly told us that “here, you can have all your impossible dreams come true”. Like my fellow freshmen, I was anxiously waiting for all this to happen, while wondering what would be my dreams exactly.

At the end of my freshman year, I participated in a summer exchange program and went on a study trip to Oxford University and Cambridge University. It was in that summer that I was hit by an epiphany and found my call of duty. In my exchanges with students from other countries, I was surprised by the stereotypes they had about China. I was so eager to show them the real China that unknowingly, a seed of “telling China’s story to the world” took root in my heart.

In college, I worked hard and spent every minute meaningfully. My hard work paid off. I ranked first in my program and won the National Scholarship every year. I published a paper in Chinese Journal of Journalism & Communication, a CSSCI journal, as the first author. I was also among the few undergraduates who participated in the 2021 International Symposium on Translation and Communication.

I have worked as an intern for People’s Daily Online,

CNNIC and Byte Dance Group to hone my news writing skills. As an old Chinese saying goes, “without small steps, one can’t cover a thousand-mile journey.” All the news pieces written by burning midnight oil have taken me further on my journey to do excellent journalism. One of my reports was recommended by the Cyberspace Administration of China to all internet media outlets, and one of my English news reports was published on the China.org, a website dedicated to spreading the true voice of China. Looking back at the past three years of my adventures outside the ivory tower, and my endless efforts to grow inner strength, I wouldn’t be able to overcome all the obstacles and become who I am today without my deep commitment to journalistic ideals and my unswerving love to my motherland.

The summer program three years ago exposed me to cultural diversities and different ideas. Thanks to this unique experience, I was able to know where to go next, that is to be a keen observer of our times, and a faithful reporter of the authentic voice of China. If I would ever have the privilege to meet the new and young faces at the convocation ceremony, I would pass on one thing that I have learnt from my predecessor, that is you can have all your impossible dreams come true here at OUC.

## *To be the bridge*



**Zhang Xiao,**  
**College of Management, Class of 2022**

As a student of Ocean University of China, I think the spirit of “ocean” contains broadness, inclusiveness, communication and connection. During my three years at OUC, I have developed an international vision that guides my life, study, and social activities. I am honored to have the opportunity to share some of my experiences and thoughts.



Let's think about the question: What can we do to communicate the Chinese culture? In the past, I didn't think I have anything to do with this since I'm just a student. But when I was in the third year at university, I befriended with Agnes, a girl from Papua New Guinea, in a class. We talked about food, customs and culture of our hometowns. I also taught her Chinese, told her Chinese stories to help her adapt to her life in China as soon as possible. And when the class ended, I asked her: "Could you tell me what have impressed you most during the stay in China? The Chinese food, Chinese art or the examination for Chinese students?"

She said: "All of those. But in fact, it is you, the Chinese people that I will never forget. I had heard of traditional Chinese spirit before like 'welcoming friends from afar gives one great delight' or 'the ocean is vast for it refuses no rivers'. But I didn't pay any attention to them until I came here and made friends with all of you. You are all open-minded to new things, and never push me aside though I am a foreigner. And you always give me a hand whenever I need."

You played the most important role in letting me have a better understanding of the Chinese spirit." Her words made me touched and excited. I come to realize that everyone can do something for Chinese culture.

Since then, I started to participate in various speech competitions, telling Chinese stories in English and disseminating Chinese culture. Under the background of common prosperity and targeted poverty alleviation, I paid particular attention to the topic of "caring for disadvantaged groups", and won awards in the "21st Century Cup" National English Speaking Competition and the Qingdao English Public Speaking Competition for College Students. I told the Chinese story and shared the traditional Chinese values of "benevolence, righteousness, propriety, wisdom and trust" with friends from other countries.

The international vision can also be applied to study and research. My major is accounting (ACCA Program) and the textbooks and examination papers are all in English. In my daily study, I have to learn Chinese accounting standards and international accounting standards at the same time, and explore the difference between those standards. In this process, what matters most is not the learning of language or the improvement of professional skills, but the idea of "a combination of Chinese and Western elements".

Accounting is an information system and also an economic language. I always compare the similarities and differences of Chinese and international norms, and explore the reasons behind the differences, which are ultimately attributed to economic foundations and superstructures in different countries. Gradually, I have acquired a deeper understanding of national conditions as well as transnational transactions, explored the problems in different norms in comparative learning, and concluded how to learn from the experience and how to enhance the norms of each country. The cross-cultural learning and the combination of Chinese and Western ideas have benefited me a lot.

## *My Experience at OUC*



***Shan Haiyan,  
College of Economics,  
Class of 2022***

As a senior majoring in finance at School of Economics, I currently serve as the monitor of my class and the chairman of the Student Union of Ocean University of China. Over the past three years, I have excelled in academic performance with an average course score of 90 points for three consecutive years. Facing the financial globalization with an international vision, I have taken many bilingual courses with good grades, won various scholarships such as National Scholarship, first-class scholarships, and Haicheng Bangda Scholarship.

I concentrate on improving my ability to apply what I have learned to practice. Since 2019, I have been an intern at the First Institute of Oceanography of the Ministry of Natural Resources and a member of the Natural Resources Science



and Technology Innovation project team. I conducted research on agricultural income insurance in the course of practice, compared the insurance operation mode and financial subsidy policies of China and the United States, and gave suggestions for further promotion of agricultural income insurance in China, exploring new means of financial poverty alleviation.

I have the courage to explore new areas and challenge new issues. In view of the climate characteristics of global warming and the integration of international trade, I focused on the improvement of the navigation conditions of the Arctic Passage, and conducted research on the geo-environmental issues of the Arctic Passage with the help of my teachers. Building the geo-potential model, I conducted quantitative calculation on 18 stakeholder countries, explored the sustainable development path of Arctic waterways, and provided suggestions for enhancing China's ability to develop and utilize Arctic waterways. I also completed the English paper Exploration of Geo-setting feature extraction and spatial temporal pattern of the Arctic Passage. Furthermore, I expanded and applied this model to quantitatively measure the geo-potential of the ten ASEAN countries and the evaluation scores of the Antarctic region

in management and control practices.

Following the work philosophy of doing everything with a sincere heart, I have been involved in the work of the Student Union of School of Economics for three years. Through group study and cadre training, team building has been improved through strengthening the team cohesion. More than 10 large-scale activities were carried out, such as sports festival, and financial transaction month. Focusing on the main responsibilities of the Student Union, I helped to enrich the students' college life and offer academic and employment assistance.

In the past three years, my hard work has been recognized and rewarded. In the future, I will continue to study hard and pursue knowledge in my field; to be a down-to-earth and responsible person, and strive to contribute my wisdom and strength to the development of our university and our country.








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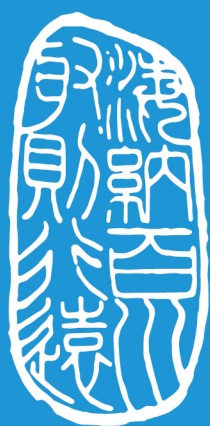


天下之水，莫大于海。  
万川归之，不知何时止而不盈；  
尾闾泄之，不知何时已而不虚。

——《庄子·秋水》

Of all the waters under heaven there are none so great as the sea. A myriad streams flow into it without ceasing, and yet it is not filled; and afterwards it discharges them without ceasing, and yet it is not emptied. (Translated by James Legge)

——The *Writings of Chuang Tzu: The Floods of Autumn*



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