



International Ocean  
Discovery Program  
China Office

# 2021 IODP-CHINA ANNUAL REPORT



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# Introduction

The International Ocean Discovery Program (IODP, 2013-2023) is an international marine research collaboration that explores Earth's history and dynamics using ocean-going research platforms to recover data recorded in seafloor sediments and rocks and to monitor subsurface environments. The IODP builds on the research of three previous scientific ocean drilling programs: Deep Sea Drilling Project (DSDP, 1968-1983), Ocean Drilling Program (ODP, 1985-2003), the Integrated Ocean Drilling Program (IODP, 2003-2013), which represent the world's largest, longest-running, and most successful international Earth science collaboration. Over the past 50 years the programs have drilled more than 4000 holes and recovered over 420 km of cores from the global ocean, which fundamentally transformed our understanding of Earth's history and continues to revolutionize Earth science as a whole.

Currently, IODP depends on three platform providers to implement expeditions: *JOIDES Resolution* (JR), *Chikyu*, and Mission-Specific Platform (MSP). These IODP drilling facilities are mainly funded by 7 agencies: The U.S. National Science Foundation (NSF), Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT), The European Consortium for Ocean Research Drilling (ECORD), China's Ministry of Science and Technology (MOST),

Korea Institute of Geoscience and Mineral Resources (KIGAM), Australian-New Zealand IODP Consortium (ANZIC) and India's Ministry of Earth Science (MoES). Together, these entities represent twenty-two nations, whose total annual contribution is approximately US\$150 million.

China became the first Associate Member of ODP in 1998, contributing US\$500 k per year. During the IODP phase (2003-2013), China contributed US\$1 million to the program every year. Since the start of IODP in 2013, China substantially increased its annual contribution to US\$3 million, and has 2 berths for each JR expedition and 1 berth for each MSP expedition, as well as 6 members for the IODP SEP and EPSP Panels.

Over the past 23 years, Chinese scientists have been very active in participating in IODP expeditions and research. More than 150 scientists from 40 different universities and institutes have participated in over 60

IODP expeditions around the world. Over 1000 scientists have taken part in the post-cruise research. Chinese scientists have also contributed to more than 450 peer-reviewed papers, many of which have been published in highly ranking journals such as *Nature* and *Science*. Moreover, 4 ODP/IODP expeditions drilled in the South China Sea (ODP 184, IODP 349, IODP 367, IODP 368, and IODP 368X) have been led by Chinese scientists, which significantly promoted the developments of deep-sea research in China and introduced the Chinese community to the international scientific frontiers.

The current IODP will not be end until 2024 and IODP is heading towards a new phase post 2024. Regarding future planning, China is committed to be a new platform provider in post-2024 scientific ocean drilling, providing a new drilling platform and establishing a new Core Repository and Research Center in Shanghai. China will continue to increase its contribution to the new program and expect to strengthen collaboration with all IODP partners to achieve the goals of the "2050 Science Framework" in the next new program.





The IODP-China operations are based on three organizations: the IODP-China Work Coordination Group, the IODP-China Scientific Committee and the IODP-China Office.

IODP-CHINA ORGANIZATIONAL STRUCTURE



## The IODP-China Work Coordination Group

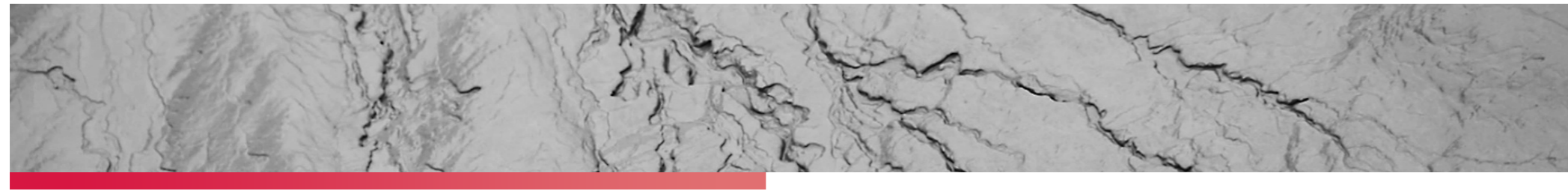
The IODP-China Work Coordination Group is leading organization responsible for the scientific planning and coordination of China's contribution to and participation in IODP, review of the IODP-China annual plan and report, and structuring of the IODP-China Scientific Committee. The IODP-China Work Coordination Group composed of 12 departments:

## Organizational Structure



The IODP-China Work Coordination Group Members

No.	Affiliation	Roles
1	Department of Social Development, Ministry of Science and Technology	Group Leader
2	Department of Science, Education and Culture, Ministry of Finance	Deputy Group Leader
3	Department of Earth Sciences, National Natural Science Foundation of China	Deputy Group Leader
4	Department of Treaty and Law, Ministry of Foreign Affairs	Member
5	Department of Boundary and Ocean, Ministry of Foreign Affairs	Member
6	Department of Science and Technology Development, Ministry of Natural Resources	Member
7	Department of Science and Technology, Ministry of Education	Member
8	Bureau of Science and Technology for Development, CAS	Member
9	Science and Technology Development Department, China National Offshore Oil Corporation	Member
10	The Administrative Center for China's Agenda 21	Member
11	Department of Basic Research, Ministry of Science and Technology	Member
12	Department of International Cooperation, Ministry of Science and Technology	Member



## IODP-China Scientific Committee

The IODP-China Scientific Committee is a strategic entity whose main responsibility is: developing a long-term scientific planning for IODP-China, reviewing of drilling proposals, evaluating applications and nominating scientists to participate in IODP expeditions and panels, and organizing IODP workshops and outreach activities. It consists of 20 highly qualified geoscientists nominated by the IODP-China Work Coordination Group.



**Chair Zhongli Ding**  
Chinese Academy of Sciences  
Academician



**Vice-chair Jun Chen**  
Nanjing University  
Academician



**Vice-chair Weilin Zhu**  
Tongji University  
Professor



**Vice-chair Zhimin Jian**  
Tongji University  
Professor



**Academic Advisor Pinxian Wang**  
Tongji University  
Academician



**Zhenmin Jin**  
China University of Geosciences (Wuhan)  
Academician



**Chengshan Wang**  
China University of Geosciences (Beijing)  
Academician



**Jiabiao Li**  
Second Institute of Oceanography, MNR  
Academician



**Kang Ding**  
Institute of Deep-sea Science and Engineering, CAS  
Professor



**Tiegang Li**  
First Institute of Oceanography, MNR  
Professor



**Yu Liu**  
Earth Science Division of NSFC  
Professor



**Xiong Pang**  
China National Offshore Oil Corporation, Shenzhen Branch  
Professor



**Xuelin Qiu**  
South China Sea Institute of Oceanology, CAS  
Professor



**Zongze Shao**  
Third Institute of Oceanography, MNR  
Professor



**Xuefa Shi**  
First Institute of Oceanography, MNR  
Professor



**Weidong Sun**  
Institute of Oceanology, CAS  
Professor



**Fengping Wang**  
Shanghai Jiao Tong University  
Professor



**Jingping Xu**  
Southern University of Science and Technology  
Professor



**Shengxiong Yang**  
Guangzhou Marine Geological Survey, MNR  
Professor



**Haiqi Zhang**  
China Geological Survey  
Professor



**Liping Zhou**  
Peking University  
Professor

Academic Secretary: Professor **Zhifei Liu** - Tongji University



## The IODP-China Office

The IODP-China Office is responsible for the liaison and coordination of IODP-China with other IODP members, providing services for the IODP-China Work Coordination Group and

the IODP-China Scientific Committee, and scientists to participate IODP activities, as well as assisting on IODP outreach activities.

The office has been

located at Tongji University since established in 2004. Currently it is staffed with a Director, assisted by a Science Coordinator, an Assistant, and an Outreach Officer.



**Shouting Tuo**  
Director



**Yangyang Li**  
Science Coordinator



**Zhaocy Zhang**  
Director Assistant



**Tingyu Wen**  
Outreach Officer

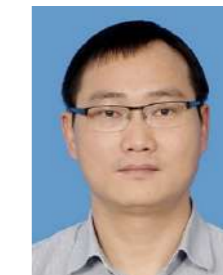
## Chinese Representatives on IODP Panels



**Jianhua Geng SEP**  
Tongji University



**Zhonghui Liu SEP**  
University of Hong Kong



**Min Xu SEP**  
South China Sea Institute of Oceanology, CAS



**Guoliang Zhang SEP**  
Institute of Oceanology, CAS



**Zhen Sun EPSP**  
South China Sea Institute Of Oceanology, CAS



**Jiangong Wei EPSP**  
Guangzhou Marine Geological Survey



**Wentao Wang JRFB**  
The Administrative Center for China's Agenda 21



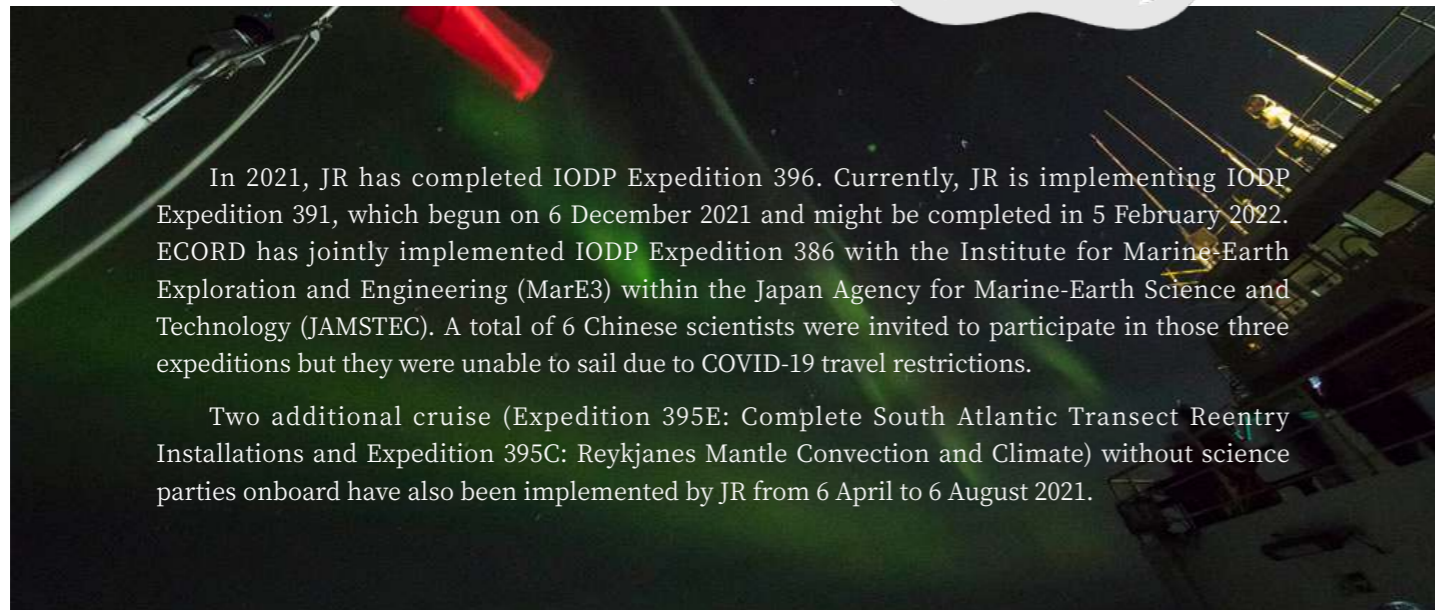
**Fengping Wang EFB**  
Shanghai Jiao Tong University

The IODP Science Evaluation Panel (SEP) and the Environment Protection and Safe Panel (EPSP) are the advisory body of IODP composed of volunteer domain experts from IODP member countries. SEP primarily reviews proposals to use the IODP drilling platforms, and EPSP primarily evaluates the environmental protection and safety of proposed or scheduled expeditions using all IODP platforms. China has 4 members on the SEP and 2 representatives at the EPSP according to the MOUs with NSF.

JRFB and EFB are the Facility Boards of JR and ECORD, which make or inform decisions on the effective use of JR and MSP, respectively. China has 1 representative on the JRFB and EFB, respectively.

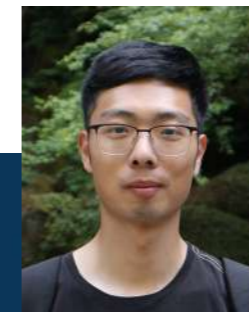


# IODP Expeditions Participation



In 2021, JR has completed IODP Expedition 396. Currently, JR is implementing IODP Expedition 391, which begun on 6 December 2021 and might be completed in 5 February 2022. ECORD has jointly implemented IODP Expedition 386 with the Institute for Marine-Earth Exploration and Engineering (MarE3) within the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). A total of 6 Chinese scientists were invited to participate in those three expeditions but they were unable to sail due to COVID-19 travel restrictions.

Two additional cruise (Expedition 395E: Complete South Atlantic Transect Reentry Installations and Expedition 395C: Reykjanes Mantle Convection and Climate) without science parties onboard have also been implemented by JR from 6 April to 6 August 2021.



**Min Luo**  
Shanghai Ocean University  
Exp. IODP 386  
Inorganic Geochemist



**Yonghong Wang**  
Ocean University Of China  
Exp. IODP 386  
Paleomagnetist



**Pengyuan Guo**  
Institute of Oceanology, CAS  
Exp. IODP 396  
Petrologist

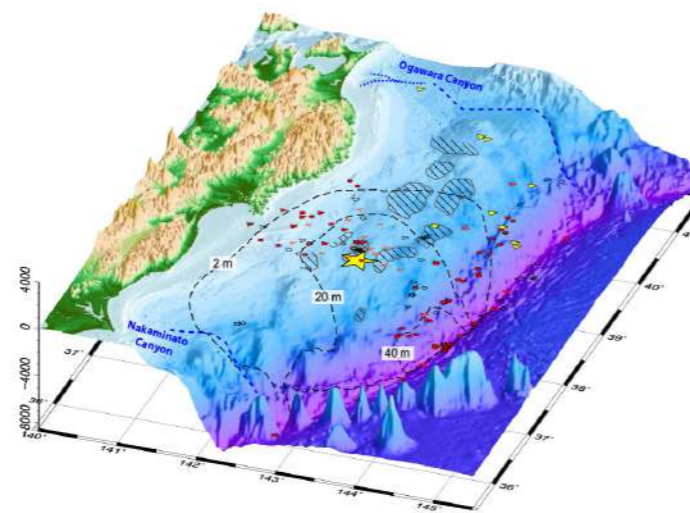


**Mengyuan Wang**  
Sun Yat-sen University  
Exp. IODP 396  
Organic Geochemist

Expedition Participation



**IODP 386**  
Japan Trench  
2021.4.13 - 6.1

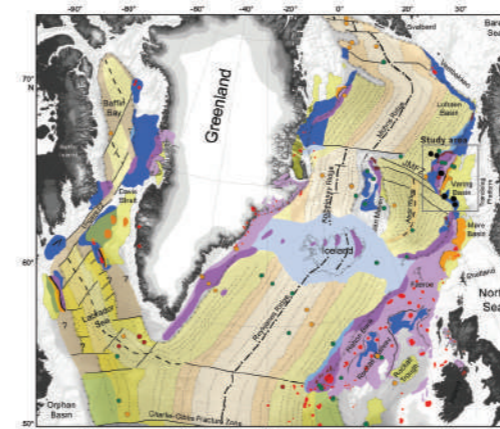


Based on Proposal 866, Expedition 386 aims at reconstructing the Late Pleistocene-Holocene history of giant earthquakes, which are major geological events with catastrophic societal consequences. This expedition was jointly implemented by the ECORD Science Operator (ESO), and the Institute for Marine-Earth Exploration and Engineering (MarE3)

within the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). The offshore phase has been conducted in Spring 2021 on the JAMSTEC R/V Kaimei, while the onshore phase is postponed to 2022 onboard the *Chikyu* due to the ongoing COVID-19 traveling restrictions.



**IODP 396**  
Mid-Norwegian  
Continental Margin  
2021.8.6 - 10.6



Based on proposals 944-Full2 and 944-Add2, Expedition 396 aimed to understand the nature, cause and climate implications of excess magmatism during the northeast Atlantic continental breakup.

The primary objectives are to: (1) determine the conditions of mantle melting; (2) determine spatial and temporal variations in along axis volcanic fluxes to test predictions made by fundamentally different geodynamic models for volcanic rifted margin formation including segmentation; (3) determine variations in the depositional environment (sub-aerial vs sub-marine) of inner and outer lava flows to test correlations between magma genesis and dynamic thermal support during late syn-rift, break-up, and early post-rift oceanic spreading; (4) assess the temporal evolution of the styles of volcanic and magmatic activity in relation to paleoclimate proxies to test the relationship between large-scale volcanism and climate change events; (5) investigate the relative importance of environmental consequences of two key processes during the initial opening of the North Atlantic: direct volcanic degassing and explosive thermogenic gas release through hydrothermal vent complexes that expel fluids derived from contact metamorphism.





Based on Proposals 890-Full2 and 890-Add, Expedition 391 primarily seeks to understand the geodynamic significance and origin of the Walvis Ridge (WR), a long-lived hotspot trail that began ~132 Ma at the opening of the South Atlantic Ocean. The drilling targets basaltic lava flows at six primary sites along the older portion of the ridge (~60, ~85, ~110 Ma) to test hypotheses about mantle plume zonation, hotspot drift, and the formation of Walvis Ridge. Basalt samples will be analyzed to document the geochemical and isotopic evolution of Walvis Ridge, especially its division into three isotopically distinct zones after ~60-70 Ma. High-precision geochronology will

**Chunfeng Li**  
Zhejiang University  
Exp. IODP 391  
Structural Geologist

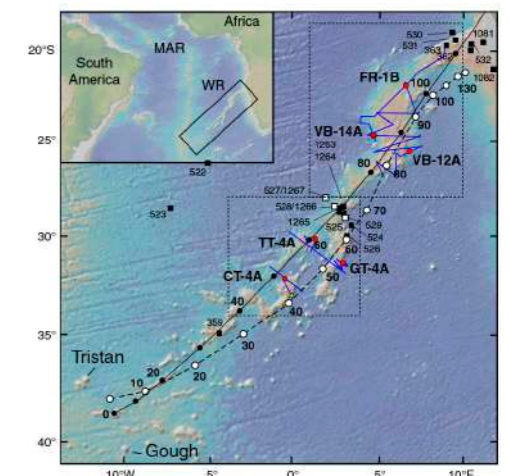
**Xiaojun Wang**  
Northwest University  
Exp. IODP 391  
Igneous Geochemist



**IODP 391**  
Walvis Ridge Hotspot  
2021.12.6- 2022.2.5

test models of ridge-hotspot interaction and examine the duration and stages of volcanism at individual sites. Finally, paleomagnetic measurements on igneous samples will constrain paleolatitude changes of seamounts along Walvis Ridge, allowing for more rigorous testing of models of hotspot motion and true polar wander.

Primary questions are (1) whether the chain splitting and isotopic zonation are consistent with magma sourced at the low shear wave velocity province (LLSVP) edge and what are the implications for the plume generation zone; (2) whether the chain is strictly age-progressive or whether there were plume pulses,



microplates, or continental fragments involved; and (3) what do the expected large shifts in paleolatitude tell us about the fixity and geodynamics of this hotspot.

## Call for Applications

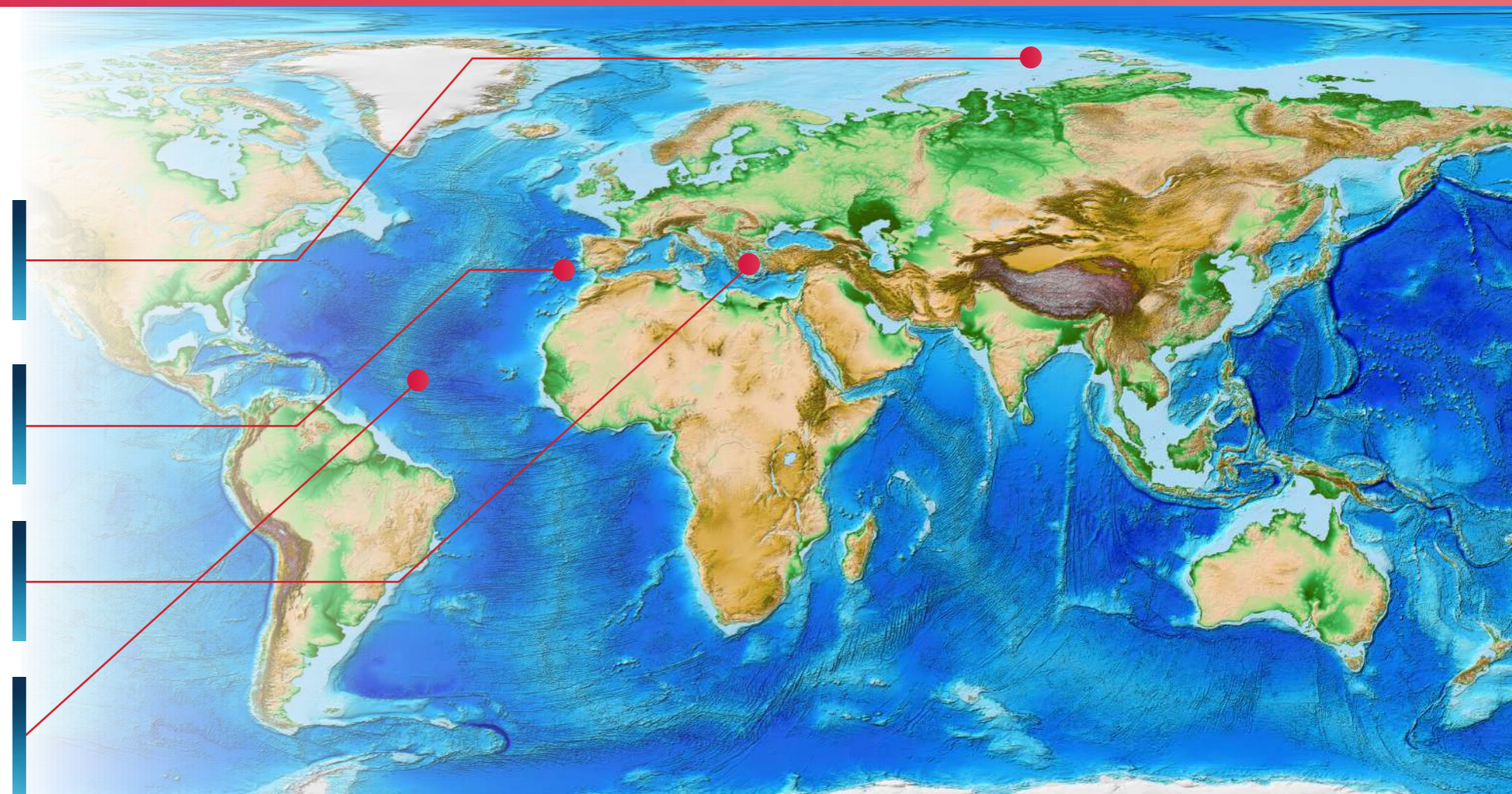
4 IODP Expeditions have opened applications, i.e., IODP 377, IODP 397, IODP 398 and IODP 399. Among above expeditions, IODP 377 and IODP 397 have issued final lists of shipboard scientists, which include 3 Chinese scientists.

**IODP 377**  
Arctic Ocean  
2022.8 - 9

**IODP 397**  
Iberian Margin  
2022.10 - 12

**IODP 398**  
Hellenic Arc Volcanic Field  
2022.12 - 2023.2

**IODP 399**  
Atlantis Massif  
2023.4 - 6





**MSP Expedition 377: Arctic Ocean Paleooceanography (ArcOP)**

**August–September 2022**

Based on IODP Proposal #708 ‘Arctic Ocean Paleooceanography’, Expedition 377 aimed at the recovery of a complete stratigraphic sedimentary record on the southern Lomonosov Ridge to meet the highest priority paleoceanographic objective: the continuous long-term Cenozoic climate history of the central Arctic Ocean. Furthermore, sedimentation rates two to four times higher than those at the site of IODP Expedition 302: Arctic Coring Expedition (ACEX) permit higher-resolution studies of Arctic climate change in the Pleistocene and Neogene. This goal can be achieved by careful site selection, appropriate drilling technology, and applying multi-proxy approaches to paleoceanographic,

paleoclimatic, and age-model reconstructions.

After postponing this expedition in 2018, the ECORD Facility Board reaffirmed that Expedition 377 remained a first-priority expedition, and recommended its implementation in Aug-Sept 2022.

Wenshen Xiao from Tongji University is invited to participate as a paleontologist for the expedition.

**JR Expedition 397: Iberian Margin Paleoclimate**

**6 October–6 December 2022**

The Iberian Margin has rapidly accumulating sediment that contains a high-fidelity late Pleistocene record of millennial climate variability (MCV). Sir Nickolas Shackleton demonstrated that piston cores from this region can be correlated precisely to polar ice cores from both hemispheres. Moreover, the narrow continental shelf off Portugal results in the rapid

delivery of terrestrial material to the deep-sea environment, thereby allowing correlation of marine and ice core records to European terrestrial sequences. Few places exist in the world where such detailed marine-ice-terrestrial linkages are possible. The continuity, high sedimentation rates, and fidelity of climate signals preserved in sediments make this region a prime target for ocean drilling. During IODP Expedition 339, Site U1385 was drilled and recovered a complete record of hemipelagic sedimentation for the last 1.43 Ma with a mean sedimentation rate of 11 cm/kyr. Based on IODP Proposals 771-Full2, 771-Add, & 771-Add2, Expedition 397 will extend this remarkable sediment archive through the Pliocene and recover a complete depth transect of five sites that will provide a complete suite of downhole records with which to study past variability in the major subsurface water masses of the North Atlantic.



**List of Chinese scientists aboard during 2022-2023**

Exp.	Name	Title	Affiliation	Position
377	Wenshen Xiao	Doctor	Tongji University	Paleontologist
397	Jiawang Wu	Associate professor	Sun Yat-sen University	Inorganic geochemist
397	Xiaolei Pang	Doctor	Peking University	Sedimentologist

Jiawang Wu (Sun Yat-sen University) and Xiaolei Pang (Peking University) are invited to join the expedition as an inorganic geochemist and a sedimentologist, respectively.

**JR Expedition 398: Hellenic Arc Volcanic Field**

**6 December 2022–5 February 2023**

The Hellenic Arc Christiana-Santorini-Kolumbo (CSK) volcanic field, which includes Santorini caldera and its Late Bronze Age eruption, provides a unique opportunity to address how subduction-related volcanism impacts life. Better understanding of island-arc volcanism requires study of the processes that drive such volcanism, and how the volcanoes interact with the marine environment. What are the links between crustal tectonics, volcanic activity, and magma genesis? What are the dynamics and impacts of submarine explosive volcanism and caldera-forming eruptions? What are the reactions of marine ecosystems to volcanic eruptions? The rift basins around the CSK field, as well as Santorini caldera, contain volcano-sedimentary fills up to several hundreds of meters

thick.

Based on IODP Proposals #932, Expedition 398 will drill six sites, four in the rifts basins and two in Santorini caldera. Deep drilling is essential to characterize and interpret the depositional packages visible on seismic images, to chemically correlate primary volcanoclastic layers in the rift fills with their source volcanoes, to fill in gaps in onland volcanic records, to provide a precise chronostratigraphic framework for rift tectonic and sedimentary histories, and to characterize the subsurface microbial life.

The application for IODP 398 has been closed on 1 November 2021, and currently JRSO is evaluating the applications.

**JR Expedition 399: Building Blocks of Life, Atlantis Massif**

**7 April–7 June 2023**

**Open for application**

The Atlantis Massif (AM) Oceanic Core Complex (30° N, Mid-Atlantic Ridge) is one of the earliest sites recognized for the extensive exposure of ultramafic and mafic rocks at the seafloor caused

by an oceanic detachment fault, and has been the focus of four IODP Expeditions (304, 305, 340T, and 357). The Lost City Hydrothermal Field (LCHF) is hosted in peridotite on its southern wall and vents alkaline fluids rich in H<sub>2</sub> as a by-product of serpentinization. The AM is therefore an ideal natural laboratory for studying tectonics, magmatism, and the interaction between the ocean and lithosphere, as well as their combined influence on ocean chemistry and the seafloor biosphere.

Based on IODP Proposals 937-Full2 & 937-Add, Expedition 399 aimed to sample fluids and rocks in a stable regime where active serpentinization may be occurring, creating the conditions where the building blocks for life (H<sub>2</sub>, CH<sub>4</sub>), and more complex organic compounds form abiotically. IODP Hole U1309D, located 5 km north of the LCHF, is the deepest (1415 m) hole drilled so far in young (<2 Ma) ocean crust, and recovered a primitive series of gabbroic rocks interpreted in part to be metasomatized peridotite.

The application for IODP 399 will close on 1 February 2022.



# Proposal Submission



**IODP Proposal Cover Sheet** 969 - Full  
 Received for: 2019-10-01

**Huatung Basin Mesozoic Ocean Relics**

Title: Drilling the Huatung Basin to probe the Meso-Cenozoic plate tectonic evolution in the Western Pacific.

Proponents: Guangfa Zhong, Chi-Yue Huang, Pinxian Wang, Serge Lallemant, Jean-Claude Sibuet, Jinyin Wu, Xixi Zhao, Zhongqiang Xu, Chao-Sheng Lu, Giacomo P. Yumul Jr., Huajiang Zhou, Gaoxian He, Mengqiang Yu, Guoliang Zhang, Karlo L. Quesada, Carla B. Dimalanta, Xuejie Li, Minghua Zhao, Ho-Han Hsu, Baojin Zhang

Keywords: plate tectonics, relic oceanic basin Area: Western Pacific

Proponent Information  
 Proponent: Guangfa Zhong  
 Affiliation: Tongji University  
 Country: China  
 Permission is granted to post the coversheet table on www.iodp.org

**MEMORANDUM OF AGREEMENT**  
 ON THE JOINT RESEARCH OF MARINE GEOLOGY IN THE GULF OF THAILAND

REFERENCE NO: DATE: 17 August 2020

AMONG

CHULA UNISEARCH, CHULALONGKORN UNIVERSITY, hereinafter called "Chulalongkorn University", 254 Chulalongkorn Research Building, 4<sup>th</sup> floor Phayathai Road, Pathumwan, Bangkok 10330, Thailand, and represented by its Director, or its Representative.

Party one,

SCHOOL OF OCEAN AND EARTH SCIENCE, TONGJI UNIVERSITY, hereinafter called "Tongji University", 1239 Siping Road, Shanghai 200092, China, and represented by its Director, or its Representative.

Party two,

AND

SEA AND LAND CORPORATION CO., LTD., hereinafter called "Sea & Land Company", 234/88 Asoke-Din Daeng Road, Bang Kapi, Huai Khwang, Bangkok 10310, Thailand, and represented by its Director, or its Representative.

**IODP Proposal Cover Sheet** 997 - Pre  
 Received for:

**Southern Mariana Deep Drilling**

Title: Southern Mariana Deep Drilling: Tectonic, geochemical and biological activities triggered by bending of the incoming plate at the world's deepest trench

Proponents: Fengping Wang, Jian Lin, Min Xu, Jiwei Li, Patricia Fryer, Xiang Gao, Ken Takai, Yigang Xu, Tiegang Li, Xueshi Qiu, Achim Kopf, Hengyou Wu, Jiangao Li, Weiwei Ding, Rui Zhang, Jinhua Li, Liang Yi, Zhiyuan Zhou, Liang Dong, Yundong Xu

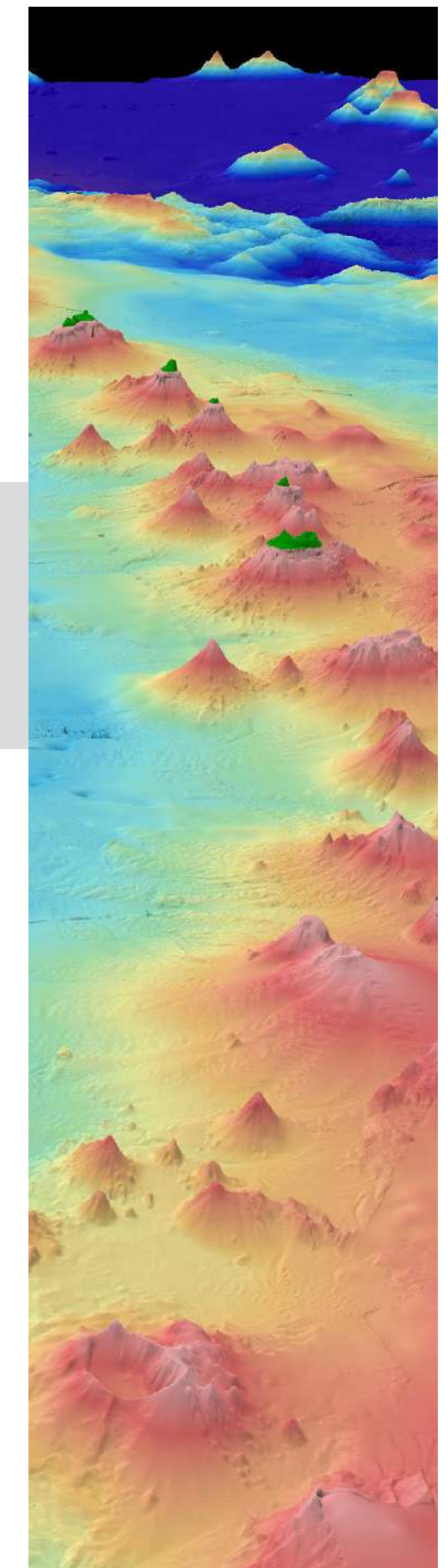
Keywords: outer rise, water-rock interaction, life Area: Mariana subduction zone

Proponent Information  
 Proponent: Fengping Wang  
 Affiliation: School of Oceanography, Shanghai Jiao Tong University  
 Country: China

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## Proposal 969-Full: Huatung Basin Mesozoic Ocean Relics

On 1 October 2021, Guangfa Zhong and Chi-Yue Huang from Tongji University, as well as other proponents have submitted one full proposal entitled "The Huatung relic Mesozoic ocean and its interaction with adjacent Cenozoic marginal seas in Western Pacific". Proposal 969 targets drilling in Huatung Basin to 1) confirm and understand the relic Mesozoic oceanic crust by age-dating and various geological and geochemical measurements of the basement samples, and 2) reconstruct the tectonic activities experienced by the Mesozoic ocean during its life cycle from formation, evolution to destruction by subduction and obduction.

## Proposal in Preparation for Submission: Sunda Shelf

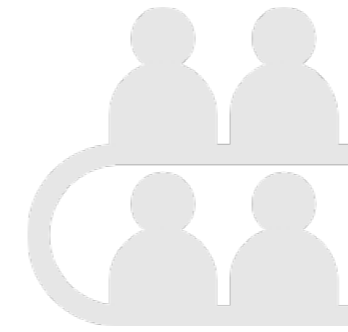
Building upon previous pre-proposal (907-Pre) submitted in 2016, Zhifei Liu from Tongji University is developing a new IODP proposal on the Sunda Shelf. The new proposal aims to reconstruct sea level change, drainage system development, and carbon cycling of the Plio-Pleistocene tropical Sunda Shelf. It is expected to be ready for submission in 2022.

## Proposal 997-Pre: Mariana Trench Water-Rock Interaction

Proposal 997-Pre is led by Fengping Wang from Shanghai Jiaotong University. This year, she is acquiring the site-survey data for the proposal. The proposal aimed to drill through the thin sediment cover (average sediment thickness is ~100 m and <200 m locally) into the oceanic crust across the outer rise of the southern Mariana Trench, where there is intensive bending faults with large offset and throw, and associated significant crustal and mantle hydration. The drilling focused on examining processes of mass transportation and cycling, and their relationships to and interactions with life along the outer rise, associated with bending initiation and fracturing.



# Conferences and Outreach Activities



## 15<sup>th</sup> Science Evaluation Panel (SEP) Meeting

The 15<sup>th</sup> SEP meeting was held from 11 to 14 January virtually. During this meeting, the SEP reviewed three Pre-proposals, five Full proposals, two Ancillary Planning Letters, and one Addendum. Zhonghui Liu (University of Hong Kong), Guoliang Zhang (Institute of Oceanology, CAS), Jianhua Geng (Tongji University) and Min Xu (South China Sea Institute of Oceanology, CAS) attended the meeting and joined the discussion on proposal reviews.

## Bilateral Meeting between IODP-China and ECORD

On 25 February, IODP-China and ECORD had a bilateral meeting to discuss ways to deepen cooperation. Over 20 representatives from IODP-China and ECORD attended the meeting, including Gilbert Camoin from ECORD Managing Agency, Dave McInroy from ECORD Science Operator, Gabi Uenzelmann-Neben from ECORD Facility Board, Antony Morris from ECORD Science Support and Advisory Committee, Pinxian Wang, Zhimin Jian, Zhifei Liu from the IODP-China Scientific Committee and Shouting Tuo from the IODP-China Office, etc..

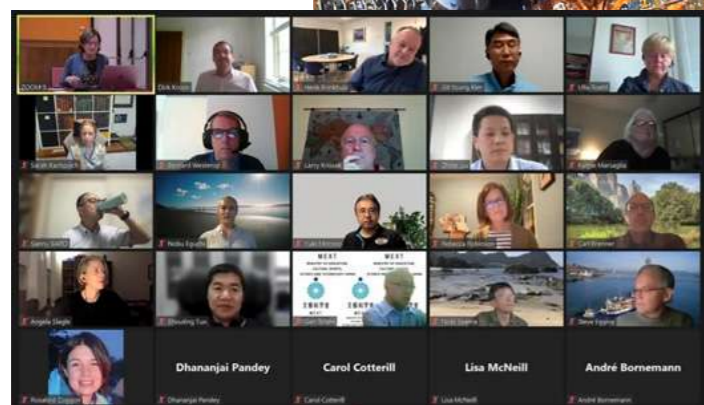
The two sides respectively summarized the important progress made in recent years and their future planning beyond 2024. Both sides agreed to continue supporting each other, strengthen cooperation in platform management and operations, a future IODP Core Repository construction, and work for more advances of joint IODP-China-ECORD proposals/projects in post-2024 scientific ocean drilling.

## 2021 IODP Forum & Program Member Office (PMO) Meeting

The IODP Forum was held virtually from 26 April to 6 May on ZOOM. A total of 9 Chinese representatives attended the Forum online: Yan Sun, Wentao Wang, Xiaomeng Jie from the MOST, Zhen Sun from South China Sea Institute of Oceanology, CAS, and Fengping Wang from Shanghai Jiao Tong University, Shouting Tuo, Yangyang Li, Zhaocy Zhang, and Tingyu Wen from the IODP-China Office. During this meeting Shouting Tuo updated the PMOs on IODP-China's latest news, including personnel change, and cooperation with Guangzhou Marine Geological Survey and Institute of Deep Sea Science and Engineering.

## 2021 JRFB Meeting

The Science Support Office hosted the JRFB meeting at the San Diego, USA and virtually from 23 to 25 June. Yan Sun, Wentao Wang and Xiaomeng Jie from the MOST, and Shouting Tuo, Yangyang Li, Zhaocy Zhang, and Tingyu Wen from the IODP-China Office attended the meeting online.



Jan

Feb

Apr

Jun

Conferences





The CIB meeting was held from 13 to 14 July on ZOOM. Shouting Tuo and Yangyang Li attended the meeting.

### Chikyu IODP Board (CIB) #8 Meeting

The 16<sup>th</sup> SEP meeting was held from 27 to 30 July on ZOOM, during which four Pre-proposals, Full proposals, Addendums Ancillary Planning Letters were discussed. Zhonghui Liu (University of Hong Kong), Guoliang Zhang (Institute of Oceanology, CAS), Zhitu Ma (Tongji University) and Min Xu (South China Sea Institute of Oceanology, CAS) joined the discussion on proposal evaluation.

### 16<sup>th</sup> Science Evaluation Panel (SEP) Meeting

The EFB meeting was held from 29 to 30 September both online and in Trieste, Italy. Shouting Tuo and Yangyang Li from the IODP-China Office attended the meeting.

### ECORD Facility Board (EFB) Meeting#10

The IODP Forum & PMO&IG meeting were held in both virtually and in Rome, Italy. The meeting brought together over 60 participants from IODP member countries. 8 Chinese representatives attended the meeting online: Yan Sun, Wentao Wang, Xiaomeng Jie from the MOST, Zhifei Liu from Tongji University, Shouting Tuo, Yangyang Li, Zhaocy Zhang and Tingyu Wen from the IODP-China Office.

### 2021 IODP Forum & PMO& Inter-Government (IG) Meeting

During the three-day meeting, Zhifei Liu, provided updates on China's important progress toward to be a post-2024 platform provider, and he emphasized that China would continue to increase contribution to a future program and expect to strengthen collaboration with all IODP partners. Shouting Tuo introduced recent news from the IODP-China Office, including workshop organization and IODP Lecture Series.

## The 6<sup>th</sup> Conference on Earth System Science



On 7<sup>th</sup>-10<sup>th</sup> July, IODP-China Scientific Committee in collaboration with Department of Earth Sciences of National Natural Science Foundation of China (NSFC) and State Key Laboratory of Marine Geology (Tongji University) co-organized the 6<sup>th</sup> Conference on Earth System Science in Shanghai. The conference brought together more than 2,300 experts, scholars and students from 185 institutions across China to exchange the latest progress in Earth system science.

the above goal, the conference has six science themes: "Surface Earth Evolution", "Ocean and Climate", "Biogeochemical Cycles", "Earth's Deep Processes and Planetary Cycles", "Deep Sea Resources, Hazards and Technologies", "Outreach and Education", including 46 different sessions. Over 1300 oral and poster presentations were given during the conference, which greatly facilitate academic exchanges and research collaboration across disciplines. The IODP-China Office organized a booth at the conference and exhibited the history, latest progress and future plan of the IODP-China, attracting many visitors to the booth.

The conference aims to promote the integration of ocean and land, past and present, life science and earth science, as well as science and technology. To achieve





## IODP Lecturer Series



To promote the scientific achievements of ocean drilling to a large audience within Chinese universities/institutes, the IODP-China Office initiates and organizes IODP Lecturer Series in 2021, which focus on the major scientific themes of the IODP Science Plan. The office invites experts in the field of IODP science to present the exciting discoveries related to the main scientific themes.

This year, 5 experts have been invited to give presentations:

- **The IODP Scientific Accomplishments in Plate Tectonics and Geodynamics**  
Weiwei Ding | Second Institute of Oceanography, MNR
- **The IODP and Paleoceanography**  
Jun Tian | Tongji University
- **International Scientific Ocean Drilling: Past, Present and Future**  
Shouting Tuo | the IODP-China Office
- **Review and Prospect of Deep Biosphere Research**  
Fengping Wang | Shanghai Jiao Tong University
- **Scientific Ocean Drilling and Origin of the Oceanic Lithosphere**  
Guoliang Zhang | The Institute of Oceanology, CAS

As of December 2021, a total of 4 lectures including 12 presentations have been given in 4 different Chinese universities: Northwest University, Peking University, Lanzhou University and Southern University of Science and Technology. The lectures fascinate a large crowd of students and early-career scientists. Through presentations, the participants learned about the history, scientific achievements and future of IODP. The lectures inspire the next generation of scientists to get involved in IODP activities that all might lay the cornerstones for a future IODP-China.

Any university/institute in China interested in application to host a lecture should contact Zhaocly Zhang or Yangyang Li by email ([iodp\\_china@tongji.edu.cn](mailto:iodp_china@tongji.edu.cn)) or by phone (021-65983441).





# Publications of Chinese Scientists



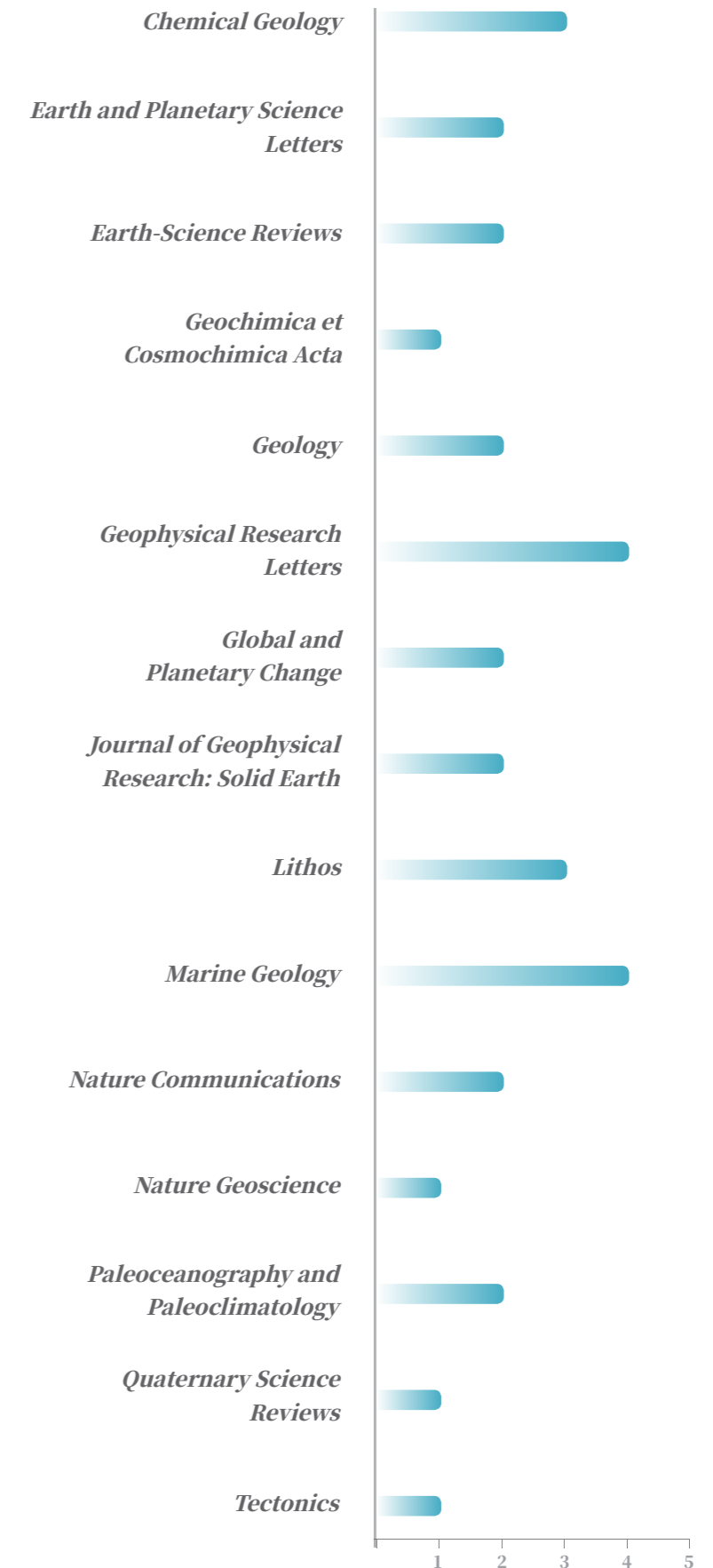
Chinese scientists have contributed to 79 first author publications that used materials and/or data from DSDP/ODP/IODP expeditions, of which 55 papers were published in English Journals, and 24 papers were published in Chinese journals.

Pearson Paul N.. Three dimensional analysis of ontogenetic variation in fossil globorotaliiform planktic foraminiferal tests and its implications for ecology, life processes and functional morphology. *Marine Micropaleontology*, 2021, 165: 101989.

8. Feng Han, Lu Huayu, Carrapa Barbara, et al. Erosion of the Himalaya-Karakoram recorded by Indus Fan deposits since the Oligocene. *Geology*, 2021, 49(9): 1126-1131.
9. Guo Qimei, Kim Jin-Kyoung, Singh Arun D., et al. Benthic foraminiferal response to orbital-scale variability in primary productivity off the Portuguese margin over the last 1.3 Myr. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 2021, 577: 110532.
10. He Yuxin, Wang Huanye. Terrestrial material input to the northwest shelf of Australia through the Pliocene-Pleistocene period and its implications on continental climates. *Geophysical Research Letters*, 2021, 48(17): e2021GL092745.
11. He Yuxin, Wang Huanye, Liu Zhonghui. Development of the Leeuwin Current on the northwest shelf of Australia through the Pliocene-Pleistocene period. *Earth and*

## English Paper

1. Cao Licheng, Jiang Tao, He Jingke. Fingerprinting sand from Asian rivers to the deep central South China Sea since the Late Miocene. *Geological Society of America Bulletin*, 2021, 133(9-10): 1964-1978.
2. Chen Shuangshuang, Gao Rui, Wang Zewei, et al. Coexistence of Hainan plume and stagnant slab in the mantle transition zone beneath the South China Sea spreading ridge: Constraints from volcanic glasses and seismic tomography. *Lithosphere*, 2021, 2: 6619463.
3. Chen Shuangshuang, Liu Jiaqi, Gao Rui, et al. Geochemistry of Cretaceous basalts from the Ontong Java Plateau: Implications for the off-axis plume-ridge interaction. *Chemical Geology*, 2021, 564: 119815.
4. Chen Wenhuan, Yan Yi, Carter Andrew, et al. Stratigraphy and provenance of the Paleogene syn-rift sediments in central-southern Palawan: Paleogeographic significance for the South China margin. *Tectonics*, 2021, 40(9): e2021TC006753.
5. Cui Yuchi, Shaolei, Yu Mengming, et al. Formation of Hengchun accretionary prism turbidites and implications for deep - water transport processes in the northern South China Sea. *Acta Geologica Sinica- English Edition*, 2021, 95(S1): 55-65.
6. Deng Jianghong, Zhang Lipeng, Liu He, et al. Geochemistry of subducted metabasites exhumed from the Mariana forearc: Implications for Pacific seamount subduction. *Geoscience Frontiers*, 2021, 12(3): 101117.
7. Duan Baichuan, Li Tiegang,



IODP-China publications by journal (Major publications)



- Planetary Science Letters, 2021, 559: 116767.
- 12.** Huang Jie, Sarnthein Michael. One million years of seasonal seesaw in East Asian monsoon winds. *Quaternary Science Reviews*, 2021, 274: 107277.
- 13.** Jiang Shijun, Cui Ying, Wang Yasu. Carbon cycle variability in tropical Atlantic across two Early Eocene hyperthermals. *Geoscience Frontiers*, 2021, 12(2): 521-530.
- 14.** Li He, Arculus Richard J., Ishizuka Osamu, et al. Basalt derived from highly refractory mantle sources during early Izu-Bonin-Mariana arc development. *Nature Communications*, 2021, 12(1): 1723.
- 15.** Li Jiabiao, Ding Weiwei, Lin Jian, et al. Dynamic processes of the curved subduction system in Southeast Asia: A review and future perspective. *Earth-Science Reviews*, 2021, 217: 103647.
- 16.** Liao Renqiang, Liu He, Zhu Hongli, et al. MORB-like delta Fe-56 values unveil the effect of subduction on the South China Sea basalts. *Chemical Geology*, 2021, 569: 120124.
- 17.** Liu Haiyang, Xue Yingyu, Zhang Guoliang, et al. Potassium isotopic composition of low-temperature altered oceanic crust and its impact on the global K cycle. *Geochimica et Cosmochimica Acta*, 2021, 311: 59-73.
- 18.** Liu Lin, Zhang Xiumei, Wang Xiuming, et al. Wave propagation characteristics in gas hydrate-bearing sediments and estimation of hydrate saturation. *Energies*, 2021, 14(4): 804.
- 19.** Liu Wei, Gai Congcong, Feng Wanyi, et al. Coeval evolution of the Eastern Philippine Sea Plate and the South China Sea in the Early Miocene: Paleomagnetic and provenance constraints from ODP Site 1177. *Geophysical Research Letters*, 2021, 48(14): e2021GL093916.
- 20.** Lu Yang, Wang Dunfan, Jiang Xiaodong, et al. Paleoenvironmental significance of magnetofossils in pelagic sediments in the equatorial Pacific Ocean before and after the Eocene/Oligocene boundary. *Journal of Geophysical Research: Solid Earth*, 2021, 126(9): e2021JB022221.
- 21.** Meng Xianbo, Shaolei, Cui Yuchi, et al. Sedimentary records from Hengchun accretionary prism turbidites on Taiwan Island: Implication on late Neogene migration rate of the Luzon subduction system. *Marine and Petroleum Geology*, 2021, 124: 104820.
- 22.** Pei Renjie, Wolfgang Kuhnt, Ann Holbourn, et al. Monitoring Australian Monsoon variability over the past four glacial cycles. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 2021, 568: 110280.
- 23.** Peng Nana, Dang Haowen, Wu Jiawang, et al. Tectonic and climatic controls on the Plio-Pleistocene evolution of sediment discharge from Papua New Guinea. *Marine Geology*, 2021, 441: 106627.
- 24.** Song Zehua, Wan Shiming, Christophe Colin, et al. Paleoenvironmental evolution of South Asia and its link to Himalayan uplift and climatic change since the late Eocene. *Global and Planetary Change*, 2021, 200: 103459.
- 25.** Sun Liheng, Sun Zhen, Zhang Yunying, et al. Multi-stage carbonate veins at IODP Site U1504 document Early Cretaceous to early Cenozoic extensional events on the South China Sea margin. *Marine Geology*, 2021, 442: 106656.
- 26.** Sun Youbin, McManus Jerry F., Clemens Steven C., et al. Persistent orbital influence on millennial climate variability through the Pleistocene. *Nature Geoscience*, 2021, 14(11): 812-818.
- 27.** Tang Linggang, Su Xiang, Yang Yiping, et al. Sedimentary response to sea level and climate changes in the inner sea of Maldives carbonate platform over the past 30 kyr. *Palaeoworld*, 2021, 30(3): 573-582.
- 28.** Tian Dongmei, Liu Xuewei. Identification of gas hydrate based on velocity cross plot analysis. *Marine Geophysical Research*, 2021, 42(2): 11.
- 29.** Wang Duo, Ding Xuan, Bassinot Franck. Observations of contrasted glacial-interglacial dissolution of foraminifera above the lysocline in the Bay of Bengal, northeastern Indian Ocean. *Acta Oceanologica Sinica*, 2021, 40(1): 155-161.
- 30.** Wang Mengyuan, Wang Huanye, Zhu Zhixin, et al. Late Miocene-Pliocene Asian summer monsoon variability linked to both tropical Pacific temperature and Walker Circulation. *Earth and Planetary Science Letters*, 2021, 561: 116823.
- 31.** Wu Jiawang, Liu Zhifei, Yu Xun. Plagioclase-regulated hydrothermal alteration of basaltic rocks with implications for the South China Sea rifting. *Chemical Geology*, 2021, 585: 120569.
- 32.** Xie Hui, Zhou Di, Shi Hongcai, et al. Lithospheric stretching-style variations and anomalous post-rift subsidence in the deep water sub-basins of the Pearl River Mouth Basin, northern South China Sea. *Marine and Petroleum Geology*, 2021, 23: 105140.
- 33.** Xu Ke, De Vleeschouwer, Vahlenkamp, et al. Reconstructing Eocene Eastern Indian Ocean dynamics using ocean-drilling stratigraphic records. *Paleoceanography and Paleoclimatology*, 2021, 36(2): e2020PA004116.
- 34.** Xu Naixiao, Zhang Lingmin, Zhou Huaiyang, et al. Mosaic zircon petrochronology and implications for the ultra-slow spreading process of Southwest Indian Ridge. *Lithos*, 2021, 106052.
- 35.** Xu Shihua, Zhao Xixi, Li Yongxiang, et al. Pulsed vertical displacement and subsequent shearing in the forearc of the Costa Rican convergent margin: Evidence from paleomagnetic results of IODP site U1413. *Marine Geology*, 2021, 441: 106606.
- 36.** Xu Zhaokai, Wan Shiming, Christophe Colin, et al. Enhancements of Himalayan and Tibetan erosion and the produced organic carbon burial in distal tropical marginal seas during the Quaternary glacial periods: An integration of sedimentary records. *Journal of Geophysical Research: Earth Surface*, 2021, 126(3): e2020JF005828.
- 37.** Yan Quanshu, Ge Zhenmin. Mineral geochemistry of basaltic rocks from IODP Expeditions 334 and 344: Implications for magmatic processes of Cocos Ridge segment being subducted beneath the Middle America Trench. *Minerals*, 2021, 11(7): 769.
- 38.** Yang Ce, Dang Haowen, Zhou Xiaoli, et al. Upper ocean hydrographic changes in response to the evolution of the East Asian monsoon in the northern South China Sea during the middle to late Miocene. *Global and Planetary Change*, 2021, 201: 103478.
- 39.** Yang Fan, Huang Xiaolong, Xu Yigang, et al. Cryptic zoning in primitive olivine as an archive of mush fluidization at mid-ocean ridges. *Lithos*, 2021, 390-391: 106121.
- 40.** Yang Jing, Nie Junsheng, Garzanti Eduardo, et al. Climatic forcing of Plio-Pleistocene formation of the modern Limpopo River, South Africa. *Geophysical Research Letters*, 2021, 48(14): e2021GL093887.
- 41.** Yu Junhui, Yan Pin, Qiu Yan, et al. Oceanic crustal structures



and temporal variations of magmatic budget during seafloor spreading in the East Sub-basin of the South China Sea. *Marine Geology*, 2021, 436: 106475.

42. Zhai Lina, Wan Shiming, Colin Christophe, et al. Deep-water formation in the North Pacific during the late Miocene global cooling. *Paleoceanography and Paleoclimatology*, 2021, 36(2): e2020PA003946.

43. Zhang Cuimei, Sun Zhen, Gianreto Manatschal, et al. Syn-rift magmatic characteristics and evolution at a sediment-rich margin: insights from high-resolution seismic data from the South China Sea. *Gondwana Research*, 2021, 91: 81-96.

44. Zhang Cuimei, Sun Zhen, Manatschal Gianreto, et al. Ocean-continent transition architecture and breakup mechanism at the mid-northern South China Sea. *Earth-Science Reviews*, 2021, 217: 103620.

45. Zhang Weiqi, Dick Henry J.B., Liu Chuanzhou, et al. MORB Melt Transport through Atlantis Bank Oceanic Batholith (SW Indian Ridge). *Journal of Petrology*, 2021, 62(6): egab034.

46. Zhang Xubo, Lin Jian, Behn Mark D.. Mantle heterogeneity and melting processes in the

South China Sea: Thermal and melting models constrained by oceanic crustal thickness and basalt geochemistry. *Journal of Geophysical Research: Solid Earth*, 2021, 126: e2020JB020735.

47. Zhang Yancheng, Zheng Xufeng, Kong Deming, et al. Enhanced North Pacific subtropical gyre circulation during the late Holocene. *Nature Communications*, 2021, 12: 5957.

48. Zhao Debo, Wan Shiming, Lu Zhengyao, et al. Delayed collapse of the North Pacific Intermediate Water after the glacial termination. *Geophysical Research Letters*, 2021, 48, e2021GL092911.

49. Zhao Jiawei, Xiao Long, Xiao Zhiyong, et al. Shock-deformed zircon from the Chicxulub impact crater and implications for cratering process. *Geology*, 2021, 49(7): 755-760.

50. Zhao Zhigang, Zhang Hao, Cui Yuchi, et al. Cenozoic sea-land transition and its petroleum geological significance in the Northern South China Sea. *Acta Geologica Sinica- English Edition*, 2021, 95(S1): 41-54.

51. Zhong Guangfa, Zhang Di, Zhao Luanxiao, et al. Current states of well-logging evaluation of deep-sea gas hydrate-bearing sediments

by the international scientific ocean drilling (DSDP/ODP/IODP) programs. *Natural Gas Industry B*, 2021, 8(2): 128-145.

52. Zhong Yuan, Zhang Guoliang, Jin Qizhen, et al. Sub-basin scale inhomogeneity of mantle in the South China Sea revealed by magnesium isotopes. *Science Bulletin*, 2021, 66(7): 740-748.

53. Zhong Yuan, Zhang Guoliang, Lv Weixin, et al. Iron isotope constraints on the lithological heterogeneity of the upper mantle in the South China Sea. *Journal of Asian Earth Sciences*, 2021, 220: 104934.

54. Zhong Yuan, Zhang Guoliang, Zhong Lifeng, et al. Post-spreading volcanism triggered by CO<sub>2</sub> along the South China Sea fossil spreading axis. *Lithos*, 2021, 404-405: 106478.

55. Zhu Xiangyu, Liu Xuwei. Morphology identification of gas hydrate from pointwise Lipschitz regularity for P- and S-wave velocity. *Energy Reports*, 2021, 7: 8062-8074.

#### Chinese Paper

56. Dong Hongkun, Wan Shiming, Liu Chang, et al. Mineralogical and geochemical constraints on the origin of late Miocene rhythmic reddish-brown and greenish-gray sedimentary layer in the northern South

China Sea. *Earth Science Frontiers*, 2021, Online.

57. Gao Yangdong, Xiang Xuhong, Zhangxiangtao. Cenozoic sedimentary evolution and its geological significance for hydrocarbon exploration in the northern South China Sea. *Natural Gas Geoscience*, 2021, 32(5): 645-656."

58. Gong chenglin, Liu Li, Shao Dali, et al. Seesaw styles of step changes in depositional patterns of Bengal-Nicobar Fan since the late Miocene and their source-to-sink genetic mechanisms. *Earth Science Frontiers*, 2021, Online."

59. Hu Xin, Wang Jiahua, Li Jiangyan, et al. Origin and metabolic characteristics of deep seabed biosphere strain *Virgibacillus Pantothenticus* 19R1-5. *Journal of Shanghai Ocean University*, 2021, Online.

60. Hu Zhaobin, Wei Jiangong, Xie Zhiyuan, et al. Progress of global sea level change by International Ocean Drilling. *Earth Science Frontiers*, 2021, Online.

61. Jin Ye, Fang Nianqiao, Yuan Xiaobo, et al. An alternative perspective of the origin of oxide gabbros from ocean ridge: The case of the ODP 735B core from the Southwest Indian Ridge. *Earth Science*

*Frontiers*, 2021, 28(1): 334-352.

62. Kong Liru, Luo Min, Chen Duofu. A tracing study of sediment diagenesis in the Hikurangi subduction zone, New Zealand: Evidence from Sr isotope of pore fluid. *Marine Geology & Quaternary Geology*, 2021, 41(6): 115-123.

63. Li Chunfeng, Zhou Duo, Li Gang, et al. Geodynamic Problems in the Western Pacific and Future Scientific Drill Targets. *Earth Science*, 2021, 46(3): 759-769.

64. Lin Guanyu, Jin Xiaobo, Liu Chuanlian. Early and Middle Miocene calcareous nannofossils and ocean carbon reservoir research in the northern South China Sea. *Acta Micropalaeontologica Sinica*, 2021, 38(2): 197-208.

65. Liu Xuesong, Chen Xuegang, Sun Kai, et al. Provenance of U1431 sediments from the eastern subbasin of the South China Sea since Middle Miocene. *Earth Science*, 2021, 46(3): 1008-1022.

66. Ma Pengfei, Liu Zhifei, Tuo Shouting, et al. Present status, characteristics, and compilation significance for the data of Scientific Ocean Drilling. *Advances in Earth Science*, 2021, 36(6): 643-662.

67. Shi Xuefa, Qiao Shuqing, Yang Shouye, et al. Progress

in sedimentology research of the Asian continental margin (2011 – 2020). *Bulletin of Mineralogy, Petrology and Geochemistry*, 2021, 40(2): 319-336.

68. Shang Wei, Su Xin, Bai Chenyang, et al. Correlation of clay minerals and gas hydrate saturation in sediments from the Hydrate Ridge, Eastern Pacific ocean. *Geoscience*, 2021, Online.

69. Song Haonan, Zhang Yongcong, Han Xibin, et al. Provenance and climatic changes of the Natal Valley, Southeastern Africa since MIS12: the clay minerals records from Hole U1474, IODP361. *Marine Geology & Quaternary Geology*, 2021, 41(4): 142-156.

70. Tuo Shouting, Wen Tingyu, Zhangzhao, et al. The experience of scientific ocean drilling operation and its enlightenment to China. *Advances in Earth Science*, 2021, 36(6): 632-642.

71. Wang Fei, Wu Yanmei, Ding Weiwei. Sedimentary budget and controlling factors of the northwest and southwest sub-basins, the South China Sea. *Earth Science*, 2021, 46(3): 986-1007.

72. Wang Xiaoyan, Li Baohua, Huang Baoqi. Discrepancy in the planktonic foraminiferal





## Postgraduate Cultivation

No.	Name	Thesis Title	Affiliation	Supervisor
<b>Master</b>				
1	Feng Peijun	Response of diatom assemblages from Qi'ao Island to the climate changes in Pearl River Delta over the past 300 years	Jinan University	Jiang Shijun
2	He Lei	Grain size and clay mineral compositions of Miocene oceanic red beds in the South China Sea and their paleoenvironmental significance (IODP Site U1502)	Tongji University	Liu Zhifei
3	Liang Dong	Organic geochemistry proxies for reconstruction of paleo-climate revolution in northern South China Sea during Middle Miocene	Tongji University	Li Li
4	Lin Guanyu	Evolution of the Miocene calcareous nannofossil assemblages and paleoceanography research in the South China Sea	Tongji University	Liu Chuanlian
5	Luo Shunkai	The Geochemical characteristics of Fe-Mn crust from the Gagua Ridge and its implication to paleoceanography	Tongji University	Zhou Huaiyang
6	Song Haonan	Provenance and climatic changes of the Natal Valley, Southeastern Africa since MIS12: the clay minerals records from Hole U1474, IODP361	Second Institute of Oceanography, MNR	Han Xibin
7	Wang Yijing	Paleo-environmental responses to T60 tectonic movement in the northern South China Sea during the late Oligocene to early Miocene	Tongji University	Jian Zhimin
8	Ye Shengbin	Quaternary water structure changes based on foraminiferal oxygen and carbon isotopes in Southwest Pacific	Tongji University	Li Li
9	Zhang Kai	Middle-Late Miocene benthic foraminifera and its significance on the bottom water property in the South China Sea	Nanjing Institute of Geology and Palaeontology, CAS	Li Baohua
10	Zhao Xi	Study of mineralogy and mechanism of water-rock interaction of volcanogenic massive sulfide deposit in Brothers Submarine Volcanos Caldera, New Zealand	Nanjing University	Cai Yuanfeng
11	Zhou Hailing	Effect of Marine sediment capillary pressure on the occurrence of natural gas hydrate	Shanghai Ocean University	Cao Yuncheng

assemblages from the northern, southern and western South China Sea since MIS 12 and its implication in marine paleoenvironmental study. *Acta Micropalaeontologica Sinica*, 2021, 38(1): 63-71.

**78.**Zhao Xi, Cai Yuanfeng, Pan Yuguan, et al. The study of coloration mechanism of "blue clay" from submarine Brothers Volcano in New Zealand and its geological significance. *Geological Review*, 2021, 67(5): 1332-1344.

**73.**Wang Yijing, Jin Haiyan, Jian Zhimin, et al. The response of paleo-water depth to T60 tectonic movement in the northern South China Sea during the late Oligocene to early Miocene. *Haiyang Xuebao*, 2021, 43(5): 79-87.

**79.**Zhao Renjie, Yan Quanshu, Zhang Haitao, et al. Chemical composition of sediments from the upper plate at the southern Central American subduction zone and its geological significance. *Acta Petrologica Sinica*, 2021, 37(7): 1949-1963.

**74.**Wei Xinyuan, Luan Xiwu, Ran Weimin, et al. Fault characteristics and tectonic evolution model of the East Timor trough. *Geological Bulletin of China*, 2021, 40(2-3): 364-375.

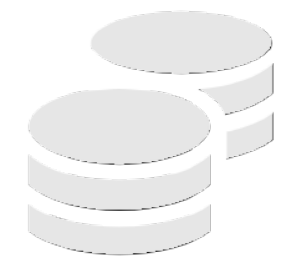
**75.**Xiong Liang, Xie Wenwei, Yu Yanjiang. Key technology of drilling casing in ocean drilling. *Marine Geology Frontiers*, 2021, 37(3): 74-80.

**76.**Xiong Zixiang, Zhu Junjiang, Yang Guoming, et al. Distribution, classification, and origin of Neogene deep oceanic red beds. *Marine Sciences*, 2021, 45(6): 22-33.

**77.**Zhang Cuimei, Sun Zhen, Zhao Minghui, et al. The crustal structure and tectono-magmatic evolution of the northern South China Sea. *Earth Science*, 2021, Online.







# Financial Summary

No.	Name	Thesis Title	Affiliation	Supervisor
<b>Phd</b>				
1	Feng Han	Erosion of the Himalaya-Karakoram recorded by Indus Fan deposits since the Oligocene	Nanjing University	Lu Huayu
2	Liao Renqiang	Geochemical characteristics of Cenozoic basalts from the South China Sea and implications for magma evolution	The Institute of Oceanology, CAS	Sun Weidong
3	Lyu Xuan	Deepwater sedimentation of the Miocene oceanic red beds in the central basin of the South China Sea and its regional environmental and tectonic significance	Tongji University	Liu Zhifei
4	Song Zehua	Paleoenvironmental evolution of South Asia revealed by sediment record in the southern Bay of Bengal since the late Eocene	The Institute of Oceanology, CAS	Wan Shiming
5	Wang Yasu	Applications of Calcareous Nannofossils to Menezoic-Cenozoic Biostratigraphy and Paleooceanography in China: Examples from southern Tibet, Western Tarim Basin and the South China sea	Jinan University	Jiang Shijun
6	Wang Yijie	High-resolution terrigenous clastic records and their tectonic and environmental evolution significance since the Oligocene in the South China Sea	Tongji University	Liu Zhifei
7	Zhang Weiqi	Nature and accretion mechanism of the lower oceanic crust at variable magma supply	University of Chinese Academy of Sciences	Liu Chuanzhou
8	Zhao Renjie	Geochemical studies on sediment offshore Costa Rica drilled during Integrated Ocean Drilling Program (IODP) Expeditions 344	Shandong University of Science and Technology	Yan Quanshu
9	Zheng Zihan	Numerical simulations on the control effects of sedimentation rate and deep methane flux on hydrate accumulation	University of Chinese Academy of Sciences	Wei Gangjian, Chen Duofu

### Acronyms

CAS: Chinese Academy of Sciences  
 MNR: Ministry of Natural Resources  
 NSFC: National Natural Science Foundation of China  
 More info <http://www.iodp-china.org/En>



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Cover: The JOIDES Resolution docked with the sunset, Expedition 395E. (Credit: Sandra Herrmann, IODP JR50)

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