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Design: Xiamen Inrui Art & Design Co., LTD

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AIR 2025 ENHANCEMENT



# 提升

ENHANCEMENT



ANNUAL  
IMPACT  
REPORT  
**2025**



• 陈嘉庚先生 Mr. Tan Kah Kee  
(1874-1961)

# In Honor of Tan Kah Kee

## 千古颂嘉庚

“嘉庚”号科考船 (RV *TKK*)，2015年3月开工建造，2016年5月下水暨命名，2017年4月正式交付并投入使用，是由厦门大学拥有完全知识产权的3000吨级海洋科学综合考察船。以“嘉庚”号命名，是为了缅怀厦门大学校主、著名爱国侨领陈嘉庚先生 (Mr. Tan Kah Kee)。

Construction began in March 2015, launched and named in May 2016, officially delivered and put into service in April 2017, research vessel Tan Kah Kee (RV *TKK*) is one of the most advanced and versatile research vessels in China. Xiamen University (XMU), as the owner, possesses the full intellectual property rights of its one-of-a-kind design. The new vessel was named in memory of our great founding father, the renowned patriotic overseas Chinese leader Mr. Tan Kah Kee, who established XMU in 1921. Since then, having a modern, highly capable research ship has been a century-long dream for generations of XMU's oceanographic community.

# Mission

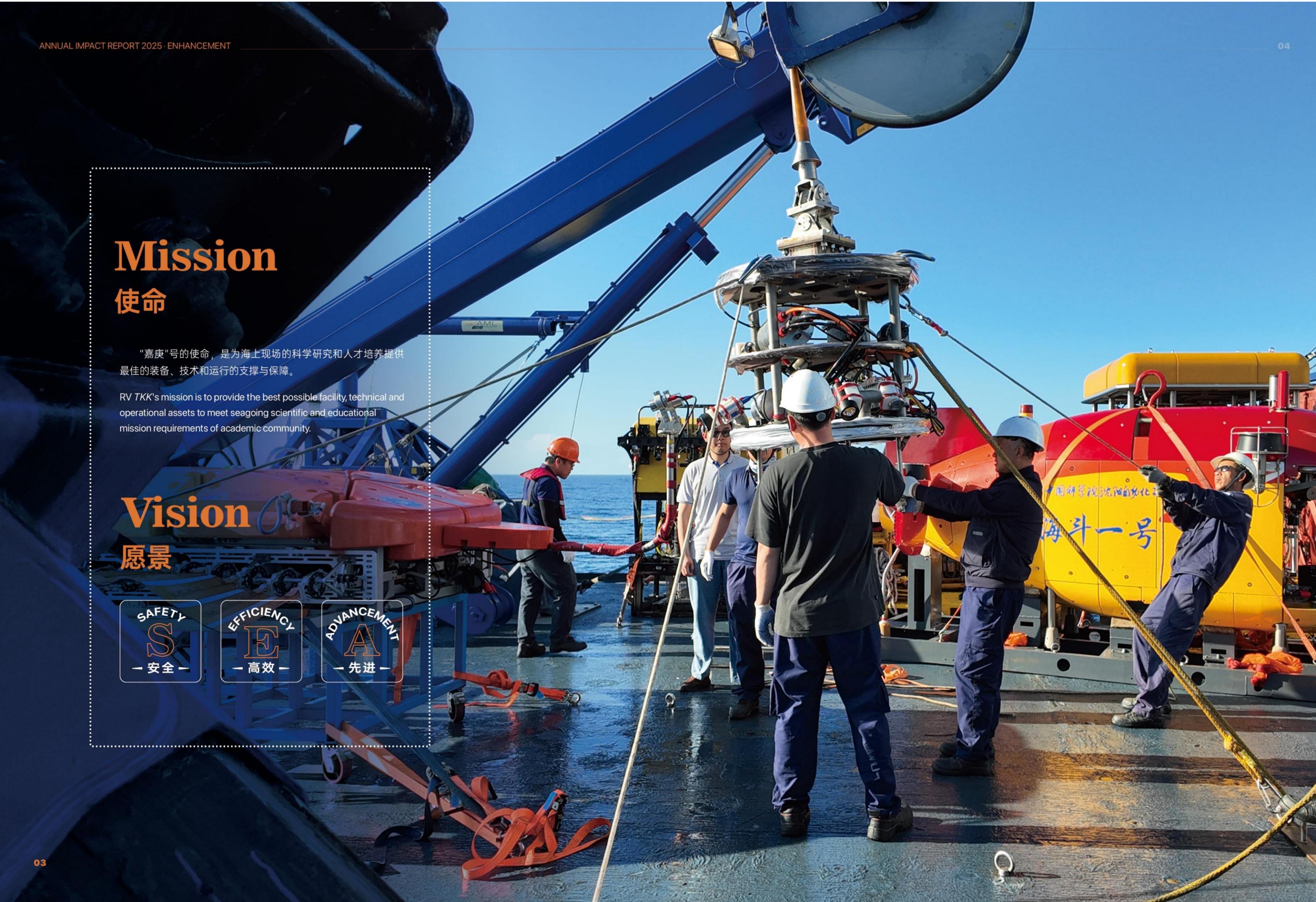
## 使命

“嘉庚”号的使命，是为海上现场的科学研究和人才培养提供最佳的装备、技术和运行的支撑与保障。

RV TKK's mission is to provide the best possible facility, technical and operational assets to meet seagoing scientific and educational mission requirements of academic community.

# Vision

## 愿景



# From The Director

## 寄语



“嘉庚”号的2025，与往年一样，忙忙碌碌，收获满满。

今年恰逢中国和印度尼西亚两国建交七十五周年，“嘉庚”号成功到访印尼并两度停靠雅加达港。她成为第一艘在雅加达面向公众开放并开展海洋科普活动的中国科考船；她还从这里出发，搭载中国和印尼两国科学家远赴爪哇海开展海洋地球物理研究。这是“嘉庚”号执行的第一个从国外港口启航的国际联合科考航次。

在这一年里，“嘉庚”号的运行与管理，在诸多方面又得到了进一步的提升。

在爪哇海的国际联合科考航次中，“嘉庚”号的技术队伍与科考团队一道，成功实施主动源地震勘测和可控源电磁探测，大大提升了这艘3500吨级科考船的海上综合作业能力，将业界普遍认为的“不可能”变成了可能。特别值得一提的是，他们实现了在短短的70个小时内完成43套OBS和OBEM的100%成功回收，再次提高了科考船甲板回收作业效率的记录！

与“嘉庚”号合作的深海无人潜器一族，又增添了全海深自主遥控潜水器海斗一号和新一代仿生ARV西谷II号。年初的KK2501航次，开展了海斗一号的全流程作业演练和西谷II号的深海功能性试验。秋初的KK2511航次，则是在基金委共享航次计划支持下的海斗一号科学应用“专场”。在南海西南海盆的泥火山处发现了海底漏气，据推测可能是首次发现了活跃的低温热液现象。

这些工作成果不仅是“嘉庚”号近底探测能力提升的体现，更标志着该船已经与当前主流无人系统（UAV、USV、UUV、ROV、AUV及ARV）成功实现

全面的支撑和融合作业能力。她的角色，已经由传统的海洋综合科考船，演化成为科考装备母船。打个形象的比喻——这就像古代闽台沿海渔业与海运中常见的“子母型船”在现代海洋科考中的“复刻”。

我们在运行船舶安全管理体系方面，整体成效也有了可喜的提升。自主开发的“海嘉船舶综合信息系统”，正在被赋予新的使命与功能——逐步地实现由船舶管理软件数字化、智能化地协助船员和探测技术员，更准确地履行实施体系所对应的各项日常工作程序与流程。

在2025年，“嘉庚”号还第一次穿越赤道，造访南半球。她的航线在海洋中所触及的四极，有三个（最北、最东、最南）在这一年里有了突破和延展。

我们期望在新的一年里，“嘉庚”号能够呈现出全方位的拓展。她所承载的海洋研究，不仅仅有空间上的拓展、业务范围的拓展，也有在国际合作领域的拓展。我们也同样期待，持续推进在科考船运行管理范式上的拓展。

王海杰

2025年12月31日

The year 2025 aboard the RV *TKK* was, as always, bustling with activities and rich in accomplishments.

Marking the 75th anniversary of establishment of diplomatic relations between China and Indonesia, RV *TKK* successfully made two port calls in Jakarta. She became the first Chinese research vessel that opened to the public and hosted ocean science outreach activities in this city. She also departed from Jakarta, carrying scientists from both China and Indonesia to conduct marine geophysical research in the Java Sea. This marked the first international joint research expedition for RV *TKK* to set sail from a foreign port.

Over the past year, the operation and management of RV *TKK* have seen further enhancements in numerous aspects.

During the international joint cruise in the Java Sea, the STS technicians collaborated with scientists to successfully implement active seismic surveys and controlled-source electromagnetic (CSEM) surveys. This significantly enhanced the operational capabilities of this 3,500-ton research vessel, turning what was widely considered “mission impossible” in the domestic academic community into reality. Particularly noteworthy is their achievement of 100% successful recovery of 43 sets of OBS and OBEM equipment within just 70 hours, setting a new record for deck recovery efficiency on a research vessel!

Deep-sea unmanned vehicles deployed onboard RV *TKK* have expanded to include the full-ocean-depth autonomous and remotely-operated vehicle (ARV) Haidou-1 and the new-generation bionic ARV Xigu II. During the KK2501 cruise, full operational trials for Haidou-1 and deep-sea functional tests for Xigu II were conducted. Supported by the NSFC ship-time sharing program, the KK2511 cruise in early autumn served as a dedicated scientific application mission for Haidou-1. Seafloor gas seeps were discovered at a mud volcano

in the southwestern basin of the South China Sea (SCS), potentially indicating the first identification of active low-temperature hydrothermal flow in this region.

These achievements not only demonstrate the enhanced sea-bottom observational capabilities of RV *TKK*, but also signify her successful integration with major unmanned systems (UAV, USV, UUV, ROV, AUV and ARV) for comprehensive support and collaborative operations. Her role has evolved from a conventional general-purpose oceanographic research vessel to a seagoing science gear carrier. To draw an analogy, this mirrors the modern reincarnation of the “Mother-daughter Chong Boat” commonly seen in ancient Fujian-Taiwan coastal fisheries and maritime transport within contemporary ocean scientific research.

We have also achieved commendable overall improvements in operating the Safety Management System (SMS). The self-developed Ocean Join Integrated Ship Information System (OJIS-PMS software) is being entrusted with new missions and functions—gradually enabling the software suites as a digital and intelligent tool to assist crews and technicians in more accurately and effortlessly executing routine procedures and processes that comply with the SMS.

In 2025, RV *TKK* made her first crossing of the equator, venturing into the Southern Hemisphere. During this year, three out of the four extremes of the ship's track in the ocean were reached and extended: the northernmost, easternmost, and southernmost.

We anticipate that next year, RV *TKK* will demonstrate significant expansions. The ocean scientific studies she undertakes will not only expand in spatial and operational scope, but also in the realm of international cooperation. We also look forward to the continued advancement of the management paradigm for research vessel operations.

Haili Wang  
December 31, 2025





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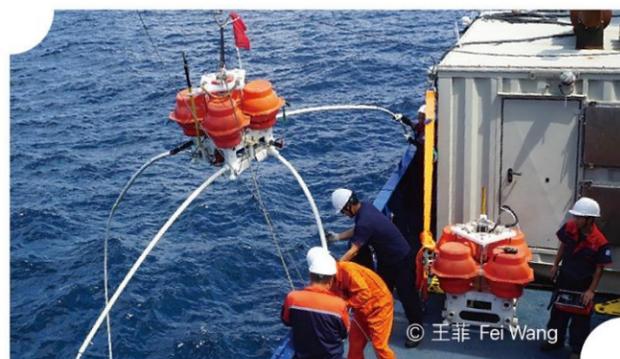
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# Enhancement

## 提升

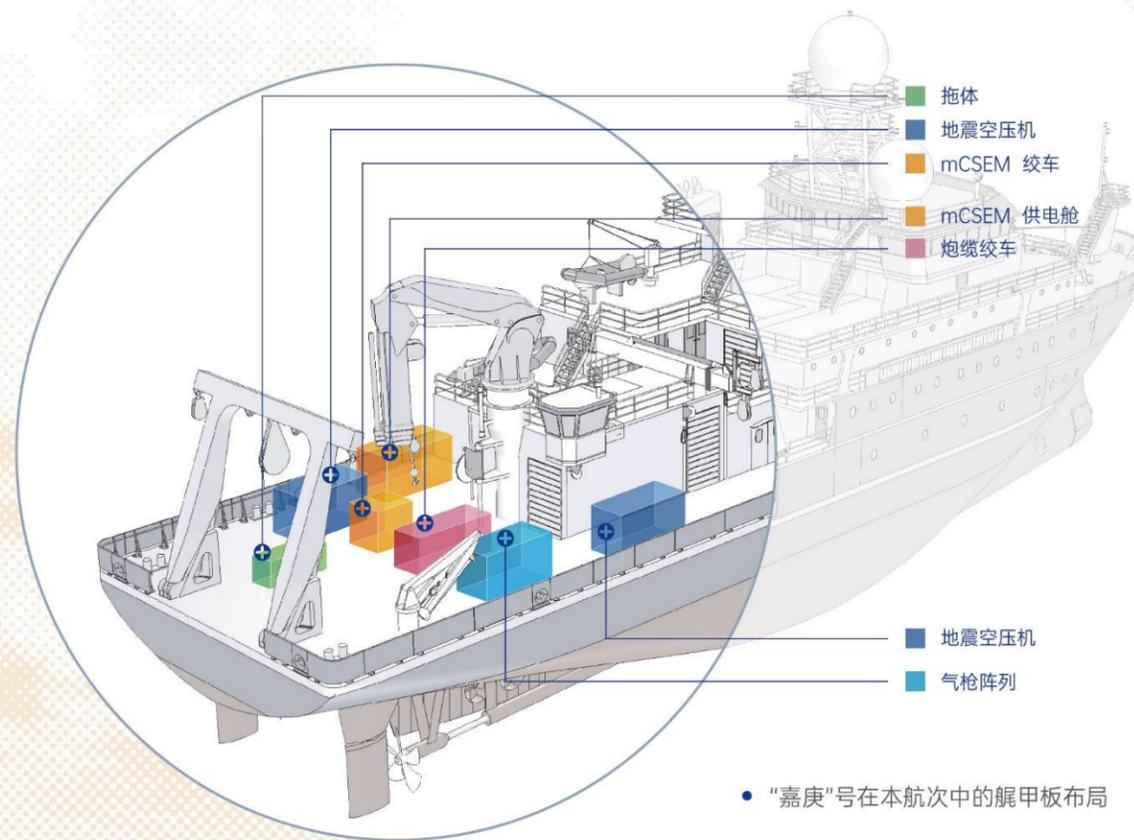
### 国内首创3500吨级综合科考船实现主动源地震与可控电磁联合勘探

China's First Active Seismic and CSEM Survey on a 3,500-ton Research Vessel



8月26日，“嘉庚”号圆满完成2025年中国—印度尼西亚（以下简称“印尼”）地质和地球物理联合科考航次（航次编号：KK2507）的各项科考任务，创造了国内3500吨级综合科考船实施主动源地震和可控源电磁探测的成功先例！

On August 26, the 2025 China-Indonesia Joint Geological and Geophysical Expedition (Cruise ID: KK2507) was accomplished onboard RV *TKK*. This cruise marked a pioneering achievement: the first successful geophysical exploration with OBS and OBEM conducted on a 3,500-ton research vessel in China.



“嘉庚”号在本航次中的艉甲板布局

### 多措并举提升“嘉庚”号甲板空间使用率和探测作业效率

Maximizing Deck Space and Operation Efficiency

在KK2507航次中，海上探测部通过周密的航前规划部署，利用精细化甲板布局实现了甲板空间的安全、高效利用，也确保了该航次中各项作业的高效进行和流畅转换。在探测作业中，海上探测部亦采用艉部和右舷双吊点交替协同作业、“回收-释放”交替协同作业等举措，在70个小时内高效完成43套OBS/OBEM回收，回收成功率100%，大幅节约了本航次船时！

During the KK2507 cruise, meticulous pre-cruise planning and optimized deck layout enabled the science team onboard to maintain a highly efficient workflow—alternating between “release” and “recovery” operations using the cranes on the aft and starboard. All 43 OBS and OBEM instruments were recovered within 70 hours, achieving a 100% recovery rate, and greatly enhancing ship-time efficiency.

## “嘉庚”号深海近底综合探测支撑能力得到进一步提升

### Comprehensive Investigating Capabilities Further Enhanced

本年度，“嘉庚”号成功搭载海斗一号全海深自主遥控潜水器（以下简称“海斗一号”）和西谷II号无人潜航器（以下简称“西谷II号”）利用多个航次完成科学考察任务。不仅进一步提升了“嘉庚”号的深海近底综合探测支撑能力，而且标志着“嘉庚”号的“空中—海面—近底”立体海洋观测矩阵的建设已初见雏形。

在“嘉庚”号2025年综合性海上装备试验航次（航次编号：KK2501）中，海斗一号开展1个技术验证潜次和3个科学应用潜次，并在近海底自主巡航探测，获取了冷泉区典型生态系统环境影像资料，为科学家开展冷泉区相关研究提供了数据和样品支撑。在本航次中，西谷II号亦在2000米海底完成了原地转弯、瞬间制动、自主规划最优航行路径等高难度动作测试。

在基金委共享航次计划2025年度南海中部海盆科学考察实验研究（航次编号：NORC2025-06）海斗一号科学应用航段中，“嘉庚”号再次搭载海斗一号在南海共在4个站位完成11次下潜，最大下潜深度达4400米，获取沉积物样品7份、近海底底层洁净水样品14份和生物样品2份，并采集到该区域典型生物与生境系统关键影像资料238GB。在南海冷泉区和泥火山区与海斗一号深潜同步开展了溶解氧、pH、营养盐、无机碳、有机碳、痕量金属、同位素、微生物生态等多项生物地球化学观测。在本航次中，海斗一号在南海西南次海盆的洋中脊泥火山处发现了海底漏气，或为南海首次发现的活动低温热液。



In 2025, significant strides had been made for RV *TKK*'s deep-sea and near-bottom investigating capabilities with the Haidou-1, a full-ocean-depth autonomous and remotely-operated vehicle (ARV), developed by the Shenyang Institute of Automation, Chinese Academy of Sciences (SIACAS), and the Xigu II, a manta ray-shaped ARV independently designed by Westlake University. These missions contributed to the development of an integrated array of "air-surface-subsea" observation system on the vessel.

During the KK2501 cruise, Haidou-1 completed one trial dive and three scientific application dives in the central SCS. The vehicle also conducted autonomous near-bottom surveys over cold-seeps, capturing rare and valuable ecosystem imagery to supports ongoing cold-seep research. Meanwhile, Xigu II completed complex maneuvers at 2,000 meters underwater, demonstrating its ability to pivot in place, stop instantly, and autonomously plan optimal navigation paths.

In addition, Haidou-1 completed 11 dives at 4 stations during the Haidou-1 Scientific Application Cruise Leg supported by the NSFC ship-time sharing program (NORC2025-06), reaching a maximum depth of up to 4,400 meters. It collected 23 samples—7 geological, 14 near-bottom clean seawater samples, 2 biological specimens, and acquired 238 GB of high-resolution seafloor imagery. Synchronous biogeochemical observations were carried out during its dives in cold-seep and mud-volcano areas, including dissolved oxygen, pH, nutrients, carbon parameters, trace metals, isotopes, and microbial ecology. Notably, the vehicle detected gas seep near a mid-ocean ridge mud volcano, potentially the first observation of active low-temperature hydrothermal flow in the SCS.

## 信息化赋能船舶智慧管理

### Smart Ship Management and Operations with Integrated Digital Systems

依托自研的“海嘉船舶综合信息系统”、“海嘉船舶综合显示系统”、“海洋观测数据管理系统”等信息系统及船岸一体化融合网络，厦门大学科考船运行管理中心（以下简称“船管中心”）实现了“嘉庚”号船岸业务信息全面高效互联互通。船舶航行管理、作业运行、设备运维、人员管理等各类信息可实时汇聚至指挥中心，为船舶状态可视、规范与智能管理提供支撑。信息化工具的全面应用，使管理体系更加规范透明——制度执行有据、流程实时监控、船舶科考信息可追溯、决策分析精准可控。信息化能力的持续提升，使“嘉庚”号的管理模式从“经验驱动”向“数据驱动”的跨越式转变。

以“海嘉船舶”信息化平台为基础，船管中心积极推进成果转化，向业内输出解决方案，至今已在近40艘商船、公务船和科考船上成功部署，并与多家合作企业签订软件著作权实施许可协议，持续扩大产品影响力。与此同时，“海嘉船舶综合信息系统”手机客户端（APP）在9月份正式上线，让船舶管理真正实现“掌上可控、随时可办”，进一步提升使用便捷度与业务流转效率。

Building on our independently developed systems—Ocean Join Integrated Ship Information System (OJIS-PMS software), Ocean Join Integrated Visualization of Ship Operation (OJIVSO), and Ocean Observation Data Management System (O<sub>2</sub>DMS), and supported by a unified ship-shore network, we have significantly advanced RV *TKK*'s digital ecosystem. Data in relation to navigation management, marine operations, equipment maintenance, and personnel administration are currently integrated in real time, enabling visualized, standardized, and intelligent ship management. These digital upgrades have brought improved transparency and efficiency to vessel operations, ensuring traceable workflow, real-time monitoring, and data-driven decision-making. With these upgrades, the management model of RV *TKK* has moved decisively from experience-based to data-driven operations.

The impact of the digital solutions continued to grow. Nearly 40 commercial, government, and research vessels nationwide have adopted the systems, and software copyright license agreements have been secured with a handful of shipping companies. The launch of the OJIS-PMS mobile app in September further empowered users to access and manage ship operations anytime, anywhere—bringing "smart ship management" within easy reach.



海嘉船舶综合信息系统  
OCEAN JOIN INTEGRATED SHIP INFORMATION SYSTEM

# 2025 By the Numbers

## 数字聚焦

12 个 232 天 30671 海里

2025年全年，“嘉庚”号共执行12个科考航次，航次作业天数232天，年度航程约30671海里。

In 2025, 12 expeditions were accomplished on RV *TKK* sailing around 30,671 nautical miles during 232 days at sea.

0°

8月4日，“嘉庚”号搭载厦门大学“海丝学堂”本科生实习航次第二航段的师生首次跨越赤道（0°）来到南半球。

8月28日，“嘉庚”号搭载印尼当地高校、科研院所的师生前往马来西亚巴生港期间，再度跨越赤道（0°）。

On August 4, RV *TKK* made her first equator crossing during the leg II of “XMU at SEA” Undergraduate Training Cruise (“XMU@Sea” Cruise), entering the Southern Hemisphere.

On August 28, the vessel crossed the equator again while transporting students and researchers from Indonesian universities and institutions to Port Klang, Malaysia.

三个 “1”

8月8日至9日，“嘉庚”号在印尼雅加达举行公众开放活动，成为第1艘在印尼面向公众开展海洋科普教育活动的中国科考船。

“嘉庚”号执行的2025年中国—印尼地质和地球物理联合科考航次（航次编号：KK2507）由印尼雅加达出发，搭载着中印尼两国科学家在印尼海域实施科考。该航次亦是“嘉庚”号执行的第1个从国外港口起航的国际联合科考航次。“嘉庚”号第1次执行主动源地震与可控源电磁联合勘探作业并取得圆满成功。

From August 8 to 9, a public Open House was held during RV *TKK*'s port call in Jakarta, becoming the first Chinese research vessel that opened to the Indonesian public.

The 2025 China–Indonesia Joint Geological and Geophysical Expedition (Cruise ID: KK2507) departed from Jakarta with Chinese and Indonesian scientists conducting fieldwork in Java Sea, marking the vessel's first international joint expedition to sail from a foreign port. The cruise also featured the first geophysical exploration based on OBS and OBEM instruments.

50.85° N 167.75° E 11.57° S

在KK2504航次中，“嘉庚”号的航迹东至东经167.75°，北至北纬50.85°，是“嘉庚”号目前航迹的最东端和最北端。

在KK2507航次中，“嘉庚”号抵达印尼爪哇海域（南纬11.57°），是“嘉庚”号目前航迹的最南端。

During the KK2504 cruise, RV *TKK* extended her operational envelope into the subarctic, reaching the vessel's easternmost point at 167.75°E and northernmost point at 50.85°N.

In the KK2507 cruise, the vessel reached 11.57° south latitude in the Java Sea, setting the current southern limit of her cruise track.

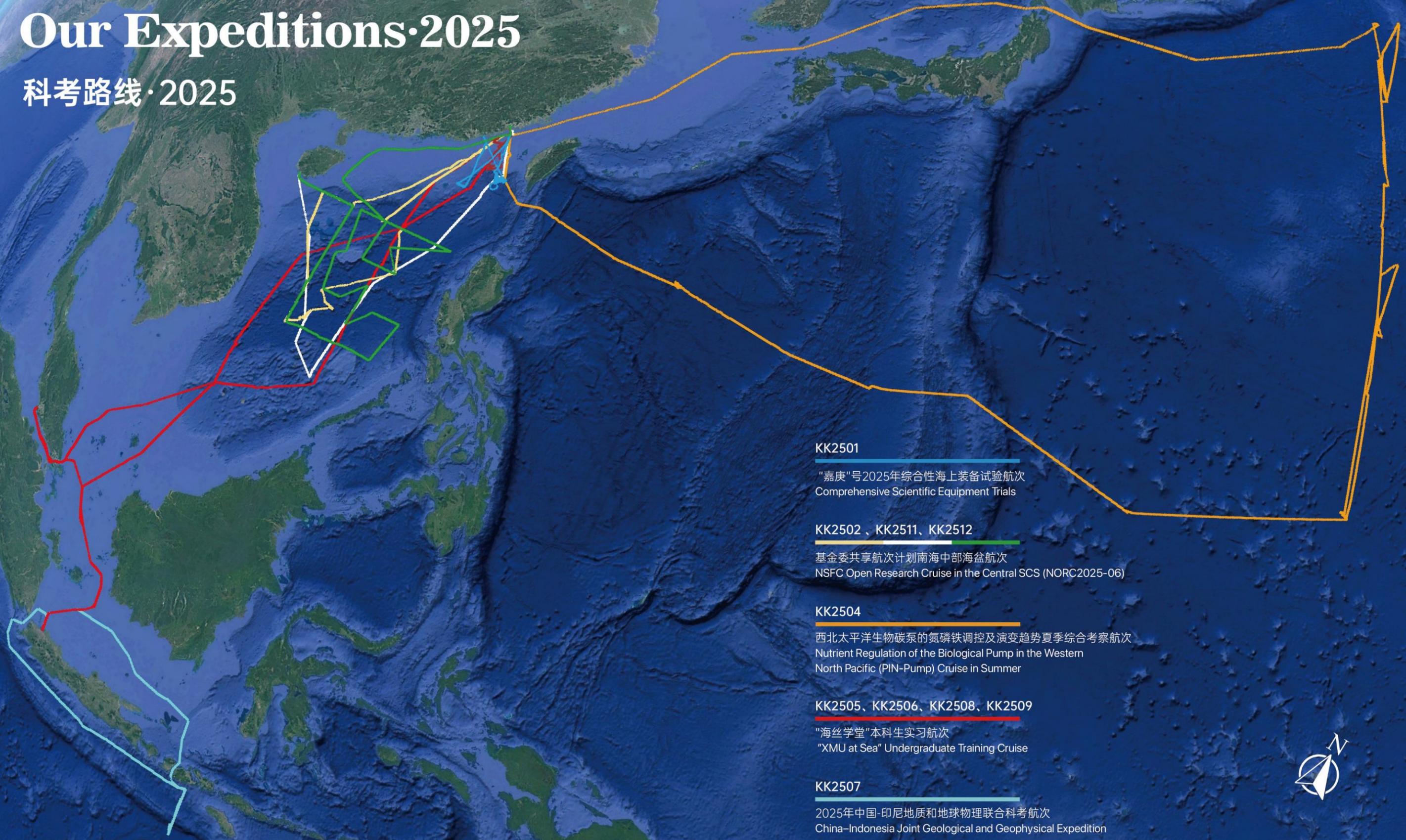
12 小时

“嘉庚”号在完成2025年中国—印尼地质和地球物理联合科考航次（航次编号：KK2507）后停靠雅加达丹戎不碌港，仅用12小时便完成人员、物资周转，并于当日夜间起航执行厦门大学“海丝学堂”本科生实习航次（航次编号：KK2508），创造了“嘉庚”号自投入使用以来最短靠离港周转时间。

Following the KK2507 cruise, port operations at Jakarta's Tanjung Priok on the RV *TKK*, including crew and supply turnover, were completed within 12 hours prior to departing for the KK2508 cruise, setting a record for the vessel's fastest port turnaround since entering service.

# Our Expeditions·2025

## 科考路线·2025



### KK2501

“嘉庚”号2025年综合性海上装备试验航次  
Comprehensive Scientific Equipment Trials

### KK2502、KK2511、KK2512

基金委共享航次计划南海中部海盆航次  
NSFC Open Research Cruise in the Central SCS (NORC2025-06)

### KK2504

西北太平洋生物碳泵的氮磷铁调控及演变趋势夏季综合考察航次  
Nutrient Regulation of the Biological Pump in the Western North Pacific (PIN-Pump) Cruise in Summer

### KK2505、KK2506、KK2508、KK2509

“海丝学堂”本科生实习航次  
“XMU at Sea” Undergraduate Training Cruise

### KK2507

2025年中国-印尼地质和地球物理联合科考航次  
China-Indonesia Joint Geological and Geophysical Expedition



# RV TKK

## "嘉庚"号科考船

"嘉庚"号为海洋科考事业提供先进的设备支撑和专业的技术支持。该船具备出色的设备收放与操控能力，采用全电力推进，装备高性能声学设备，具备高精度动力定位功能，支持信息数据远程传输，可在所有无冰洋区承担多学科海上综合考察任务。

RV TKK strives to provide safe, efficient, and advanced shipboard technical support to oceanographic expeditions. Commissioned with tailor-made low-noise electric propulsion system, the vessel has outstanding science handling abilities, equipped with state-of-the-art acoustic transducers, with highly precise dynamic positioning performance and broad-band data transmission capability, enabling it to carry out multidisciplinary field observations in global ice-free waters.



● 经济航速 / Operational Speed  
..... **11** knots

● 续航力 / Range  
..... **>12,500** nm

● 最高航速 / Maximum Speed  
..... **>14** knots

● 自持力 / Endurance  
..... **>50** days

### 主要指标

### GENERAL SPECIFICATIONS

● 船长 / Overall Length  
..... **77.70** m

● 工作甲板面积 / Area of Working Deck  
..... **432** m<sup>2</sup>

● 设计吃水 / Draft  
..... **5.0** m

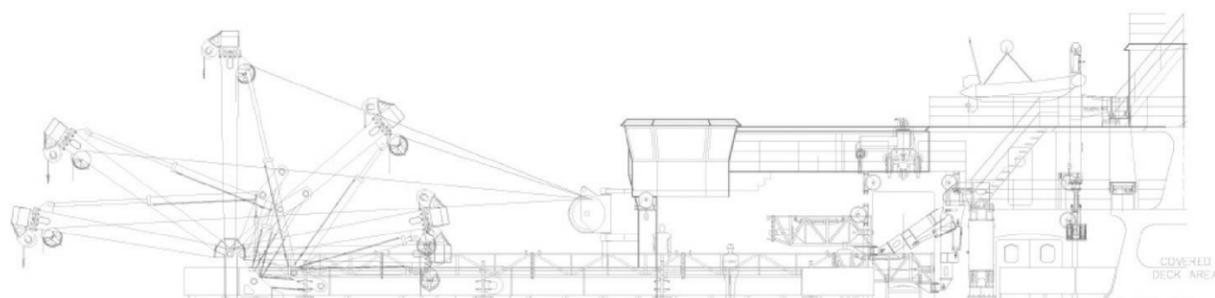
● 型宽 / Beam  
..... **16.24** m

● 实验室面积 / Area of Laboratories  
..... **407** m<sup>2</sup>

● 总吨 / Gross Tonnage  
..... **3611**

● 定员 / Capacity  
..... **54**  
(18 Crew, 36 Scientists)

# RV TKK



## 甲板作业支撑装备

### LAUNCH AND RECOVERY SYSTEM

#### 收放装备

艏部A型架: 15T  
甲板主吊: 20T@10m, 13T@15m  
右舷伸缩吊: 15T@0m, 6T@5m  
CTD收放系统: 2.5T  
船艏辅助吊: 4.5T@11.3m  
船艉辅助吊: 1T@7M  
长柱状翻转机构: 8T

#### 绞车系统

水文绞车 (铠装同轴缆:  $\phi 8.18\text{mm} \times 10000\text{m}$ )  
CTD绞车 (铠装同轴缆:  $\phi 8.18\text{mm} \times 10000\text{m}$ )  
地质钢缆绞车 (钢缆:  $\phi 14.3\text{mm} \times 15000\text{m}$ )  
光电缆绞车在 (光电缆:  $\phi 17.3\text{mm} \times 6000\text{m}$ )  
痕量金属专用洁净绞车 ( $\phi 15.25\text{mm} \times 8000\text{m}$ , 集装箱)  
大体积泵专用洁净绞车 ( $\phi 9.525\text{mm} \times 4000\text{m}$ , 集装箱)



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## 地质地球物理探测设备

### EQUIPMENT FOR MARINE GEOPHYSICS

全水深多波束测深系统-EM122 ( $1^\circ \times 2^\circ$ )  
中浅水多波束测深系统-EM710 ( $1^\circ \times 1^\circ$ )  
全水深浅地层剖面仪-SBP120 ( $6^\circ$ )  
多频高精度测深系统-EA640 (12/38/200 kHz)  
海洋重力仪-AT1M

## 水文气象调查设备

### OCEANOGRAPHIC AND METEOROLOGICAL INSTRUMENTS

声学多普勒海流剖面仪 (ADCP) -OS38/WHMariner300  
温盐深剖面观测系统 (CTD) -SBE 911plus  
走航式多参数剖面仪-MVP300  
走航表层海水多参数观测系统-SBE21  
船载C波段多普勒天气雷达系统-SCR-CPD  
船载自动气象站-AWS430



## 水下探测与取样设备

### UNDERWATER DETECTING AND SAMPLING EQUIPMENT

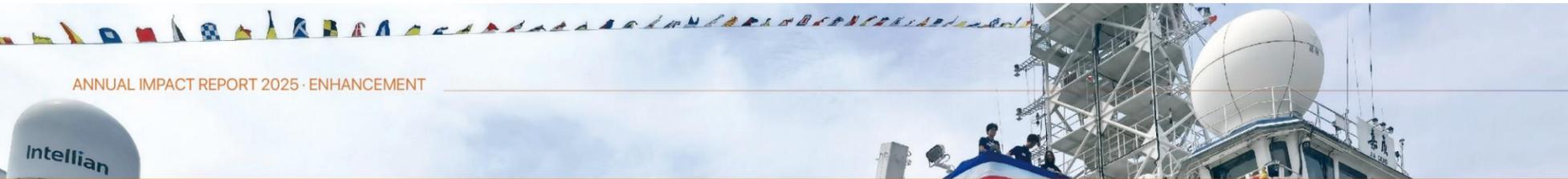
分裂波束声学探测系统-EK80(18/38/70/120/200/333 kHz)  
长岩芯重力活塞取样器-KF3T/18m  
集成化光学拖体- GT6000  
深海可移动集成抓斗取样平台-HL-ROP6000  
无人遥控潜水器 (ROV)

## 科考导航设备

### NAVIGATION EQUIPMENT

深水超短基线声学定位系统-HiPAP101  
高精度船舶导航定位姿态传感器-seapath330+/seapath380-R3/POS MV





# Open House in Indonesia

## “嘉庚”号印尼开放活动



2025年是中国同印尼建交75周年，在此特殊的时间节点，以校主陈嘉庚先生命名的厦门大学“嘉庚”号科考船，在完成2025年“海丝学堂”本科生实习航次第二航段任务后，首次停靠印尼雅加达并举办公众开放日活动，成为第一艘在印尼面向公众开展海洋科普教育活动的中国科考船！

The year 2025 marks the 75th anniversary of the establishment of diplomatic relations between China and Indonesia. At this historic moment, RV *TKK*—Tan's namesake—made her first-ever port call in Jakarta after completing the leg II of the "XMU@Sea" Cruise. It became the first Chinese research vessel to host a public Open House in Indonesia.



8月8日上午，本次公众开放日活动开幕式在雅加达丹戎不碌港邮轮码头隆重举行。中国驻印尼大使王鲁彤，印尼茂物农业大学校长阿里夫·萨特里亚，印尼国家研究创新署副主席阿马拉·奥克塔维安，厦门大学副校长史大林等嘉宾出席开幕式并致辞。开幕式结束后，与会嘉宾一同登船参观，深入了解“嘉庚”号的建造历史、内部构造和运行情况，及其对厦门大学海洋学科和中国海洋科考发挥的重要支撑作用。

On August 8, the Open House opening ceremony was held in Port of Tanjung Priok, Jakarta. Distinguished guests included H.E. Lutong Wang, Chinese Ambassador to Indonesia; Prof. Arif Satria, Rector of IPB University; Prof. Dr. Ir. Amarulla Octavian, Vice Chairman of the National Research and Innovation Agency (BRIN); and Prof. Dalin Shi, Vice President of XMU. Following the ceremony, the guests toured the vessel to gain better insights into her construction history, internal structure, and the vital role in advancing XMU's ocean science initiatives and China's ocean science research.



© 江洲 Zhou Jiang

在两天的开放日里，来自当地政府、高校、科研院所、社团、中资企业等社会各界人士登上“嘉庚”号，走进实验室、零距离接触科考设备、体验海洋科普实验。来自厦大的青年海洋学子和科学家们通过寓教于乐的方式让公众接受海洋文化的熏陶，激发公众参与海洋保护的热情，彰显中国在构建海洋命运共同体、共护海洋和平、共筑海洋秩序、共促海洋繁荣的方面的责任与担当。



© 叶天恒 Tianheng Ye

During the two-day Open House event, visitors from government agencies, universities, research institutes, local communities, and Chinese enterprises came aboard RV *TKK* to tour laboratories, explore oceanographic equipment, and participate in interactive ocean science demonstrations. Young scientists and students from XMU brought ocean culture to life through creative, hands-on activities that made it more engaging and accessible. Their efforts inspired public enthusiasm for ocean conservation and embodied China's responsibility and commitment to building a maritime community with a shared future characterized by peace, order, and prosperity.

令人印象深刻的是，在开放日期间，不少印尼当地华人及陈嘉庚先生创办或支持的学校的校友也纷纷闻讯前来参观。尽管身处异乡，他们的心始终与祖国同频、和故乡相连。在了解到中国近年来在海洋科学研究、海洋环境保护、全球海洋治理等领域取得的一系列成绩后，纷纷表达由衷的自豪，并希望他们的年轻一代能够有机会回国深造和发展。厦门大学印尼校友会副会长饶顺招女士在参观完“嘉庚”号，为聊表自己激动之情，即兴赋诗一首。

Among the visitors were many Chinese-Indonesians and alumni from institutions founded or supported by Tan. Though living far from their homeland, they remained deeply connected to their roots. Upon learning China's remarkable progress in marine scientific research, environmental protection, and global ocean governance, they expressed heartfelt pride and shared their hope that younger generations would have opportunities to pursue studies in China and contribute to the nation's development. Following the visit, the occasion was also marked by an impromptu poetic composition from Mrs. Shunzhao Rao, Vice President of Indonesia Alumni Association of XMU.

“嘉庚”号首抵雅加达  
 碧浪舟戎亦道巡，嘉庚初泊印尼津。  
 舷梯迎客连沧海，实验室探通秘珍。  
 校友共商瀚海事，邦交长忆郑和生。  
 御风漫卷千帆竞，科技为桥情愈真。  
 厦门大学印尼校友会副会长  
 饶顺招女士



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藉陈嘉庚先生之名，“嘉庚”号仍将以其独特的方式在人才培养、科学研究、社会服务等方面，在东南亚续写人文科研交流新篇，描绘“国之交在于民相亲，民相亲在于心相通”的新图景！

Carrying forward Tan's enduring legacy, RV TTK will continue to chart new courses in talent development, scientific cooperation, and cultural exchange across Southeast Asia, affirming that lasting international friendship flourishes through mutual understanding and people-to-people bonds.

# Mr. Tan Kah Kee in Indonesia

## 陈嘉庚先生在印尼



① 安全返回新加坡的陈嘉庚。  
Tan Kah Kee returned safely to Singapore.



② 《新华日报》关于重庆举行“陈嘉庚安全庆祝大会”的报道。  
Xinhua Daily report on the celebration held in Chongqing for Tan's safe return.

1941年12月7日，日本偷袭珍珠港，美国太平洋舰队的战列舰主力遭到重创。次日，美国政府正式对日宣战，太平洋战争爆发。

战火迅速蔓延至南洋群岛，马来亚沦陷，新加坡危急。时任“南洋华侨筹赈祖国难民总会”主席的陈嘉庚先生，因积极领导华侨支援祖国抗战，被日寇悬赏百万荷盾通缉，不得已而前往印尼避难。

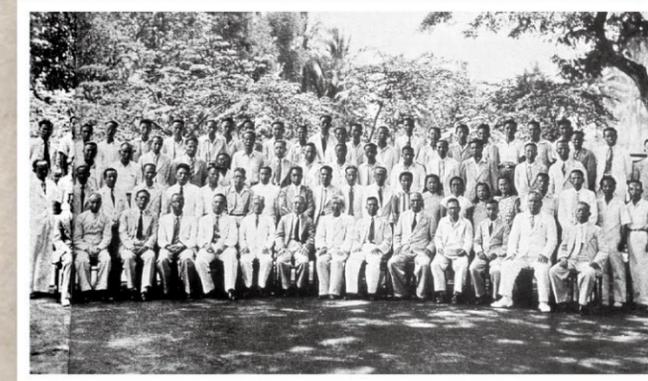
1942年2月，陈嘉庚先生几经辗转抵达爪哇西部的吧城（今雅加达），住在印尼侨领庄西言的宅院。自此至1945年日本投降，他化名李文雪，在厦门大学与集美学校校友的精心安排与掩护下避难于爪哇多地。期间，他凭借惊人的记忆力，在没有任何资料参考的情况下完成了约40万字的巨著《南侨回忆录》，系统记录了南洋华侨筹款支援祖国抗战的壮举及其个人创业报国的心路历程。



③ 《南侨回忆录》与《住屋与卫生》。  
Memoirs of an Overseas Chinese in Southeast Asia and Housing and Sanitation.



④ 《南侨回忆录》“目录”手稿。  
Draft table of contents for Memoirs of an Overseas Chinese in Southeast Asia.



⑤ 陈嘉庚途经雅加达时与厦大、集美校友合影。  
Tan with alumni from XMU and Jimei University during his stopover in Jakarta.

On December 7, 1941, the Pacific War broke out and soon spread across Southeast Asia. At the time, Mr. Tan Kah Kee, Chairman of the Nanyang Federation of China Relief Fund, was forced into exile and fled to Indonesia.

In February 1942, after a perilous journey, Tan arrived in Batavia (now Jakarta) and stayed with Mr. Tjung Sie Gan, a prominent local Chinese community leader. From 1942 to 1945, under the alias Li Wen-hsueh, he moved between several locations across Java under the protection of XMU and Jimei Schools alumni. During those years in hiding, relying only on his remarkable memory, Mr. Tan completed his autobiographical work *Memoirs of an Overseas Chinese in Southeast Asia* that runs into 400,000 characters, documenting the vital role of overseas Chinese in supporting China's war effort. The work remains a lasting testament to his unwavering commitment to education, patriotism, and national rejuvenation.



⑥ “陈嘉庚安全庆祝大会”签名册。  
Signature book from the celebration event for Tan's safe return.

# Intermediate Inspection and Dry-dock

## 修竣焕新归，再赴深蓝约

新年伊始，“嘉庚”号在福建船政马尾造船厂完成为期28天的中间检验及坞修后，于1月8日返回厦门。

本次“嘉庚”号进行的中间检验，是继2022年的特别检验后，又一次大型的船舶“体检”，包括船体结构检查、机电设备检查、安全设备检查、证书及文件检查等内容。除了中间检验外，“嘉庚”号还严格遵循船级社检验规范，涵盖甲板、轮机、探测等多领域的198项坞修工程。

At the start of the year, RV *TKK* completed a 28-day intermediate inspection and dry-dock at Mawei Shipyard in Fuzhou and returned to Xiamen on January 8. This was RV *TKK*'s first major inspection since her special one in 2022—included a comprehensive review of hull structures, mechanical and electrical systems, safety equipment, and statutory certificates. In parallel with the mandated inspection, the vessel also underwent 198 dry-dock tasks across decks, engines, and shipboard scientific equipment, all in full compliance with China Classification Society (CCS) standards.





“嘉庚”号团队、船厂施工方及各产品供应商，凝心聚力，围绕长期困扰船舶运行的痛点，制定了针对性的改造维修方案，完成了多项关键性改造工程，包括舰甲板防滑涂料的涂装及舱室内空间的优化升级。这些改造工程大大提升了船舶的科研作业效率，同时，也改善了船员和科考人员工作生活的舒适性和安全性。

在探测部重点工程中，海上探测部联合三家合作厂家完成28根各类吊机油缸的拆解与保养；同时，对v130天线和北斗天线分别进行改造和安装，更进一步提升了远洋航行时卫星通讯的稳定性和船舶航行、科考作业时的定位精度。



Working closely with the shipyard and equipment suppliers, the technicians of MarOps implemented targeted upgrades to resolve longstanding operational issues. Key improvements included renewing the anti-slip coating on the working deck and optimizing interior layouts, enhancing both operational efficiency and onboard comfort and safety.

The STS technicians worked with three partner manufacturers, completing the disassembling and maintenance of 28 hydraulic cylinders for various cranes and upgraded the antennas for Intellian v130 and BeiDou Navigation Satellite System, thereby enhancing satellite communications and positioning accuracy in support of navigation and scientific operations.





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特别值得一提的是，“嘉庚”号顺利通过了中国海事局的MLC初次审核，以及中国船级社的SMS/ISPS审核，并获得海事劳工证书、安全管理证书和国际船舶保安证书。

新舟焕彩待潮生，远海扬帆再出征。此次焕新的“嘉庚”号以全新的姿态，继续开展深远海科考任务，为我国海洋强国建设书写更生动的实践注脚。

Of particular note, RV *TKK* successfully passed the initial Maritime Labour Convention (MLC) inspection conducted by the Maritime Safety Administration of PRC, and was verified by the CCS to comply with the ISM code and ISPS code. The corresponding statutory and classification certificates have been duly issued, including Maritime Labour Certificate, Safety Management Certificate, and International Ship Security Certificate.

With enhanced capabilities and better operational reliability, RV *TKK* was set to embark on seagoing missions, contributing to build China into a stronger maritime nation.



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# Expeditions in 2025

航次专栏

## Comprehensive Marine Equipment Trials

### “嘉庚”号2025年综合性海上装备试验航次

- 航次编号: KK2501
- 航次时间: 2月17日-3月14日
- 航程: 1560海里
- 参航人员: 来自厦门大学、西湖大学、中国科学院沈阳自动化研究所的30名科考队员
- Cruise ID: KK2501
- Duration: February 17 to March 14
- Range: 1,560 nautical miles
- Participants: 30 researchers from XMU, SIACAS, and Westlake University

二月的余韵，似新春乐章中的袅袅余音，带着喜庆与希望悄然退场。“嘉庚”号亦在此时起程，奔赴南海，开启了乙巳蛇年的年度首航。本航次不仅是“嘉庚”号在完成中间检验及坞修后的首个科考航次，而且是首次在船艏和船艉的工作甲板上搭载多型深海探测设备的综合性海上装备试验航次，航次期间搭载包括两型ARV及控制集装箱、自有ROV及控制集装箱、集成化光学拖体、深海可移动集成抓斗取样平台，以及洁净分析集装箱、协同无人艇等大型水面调查装备。

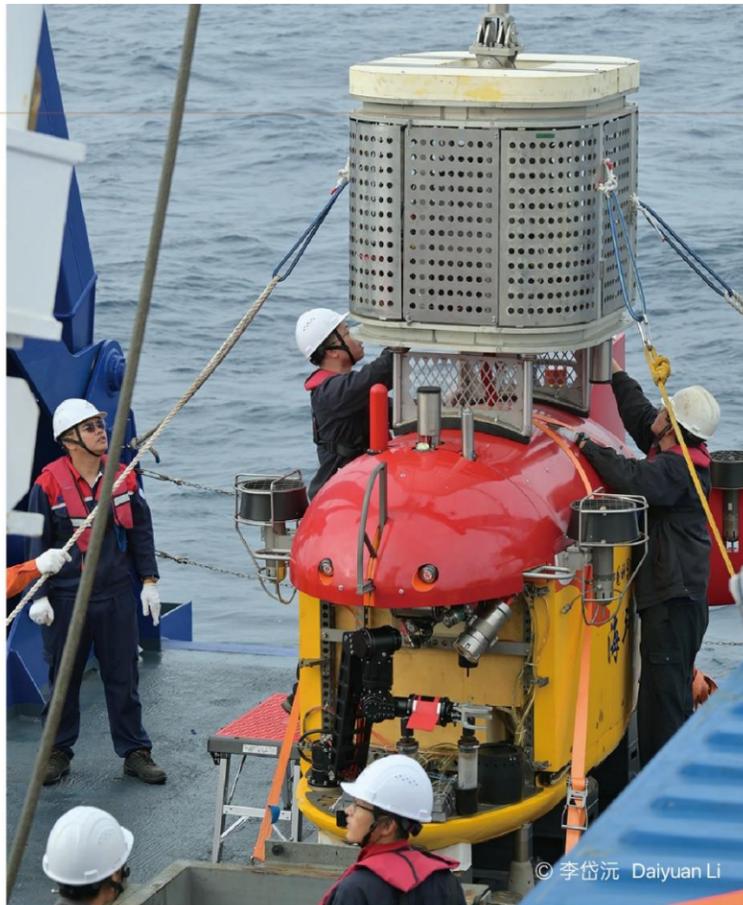
Kicking off the Year of the Snake, RV *TKK* set sail for the SCS on her first mission after completing an intermediate inspection and dry-dock. This inaugural cruise served as the vessel's first comprehensive sea trail featuring a suite of cutting-edge large deep-sea investigation and sampling equipment across the working decks, including two ARV systems with control containers, an in-house ROV and its control unit, the deep optical towing system (DOTS), the deep-sea remotely operated platform, a clean analysis lab van, and an unmanned surface vessel.

其中，海斗一号以ARV模式完成对南海北部陆坡两处冷泉区的探测与取样作业任务，最大下潜深度达1187米，获取了冷泉区沉积物样品3份，岩石结壳样品3份，近海底层层洁净水样品2份，获取了冷泉区典型生态系统环境影像资料，为科学家开展冷泉区相关研究提供了数据和样品支撑。

本航次搭载的“西谷II号”无人潜航器，也完成了一系列高难度动作测试，并在深海无氧极端环境中，凭借其搭载的小型斯特林发电机首次实现自主发电，在幽深的海底点亮了一颗“中国星”！

A major highlight was the Haidou-1, which dived in ARV mode to survey and sample on two cold-seep sites along the northern continental slope of the SCS. Reaching a depth of 1,187 meters, it collected 3 sediment samples, 3 crust samples, and 2 near-bottom clean water samples, and captured detailed images of cold-seep ecosystems, providing valuable data and specimens for ongoing research.

Meanwhile, the Xigu II successfully completed its complex maneuver tests during this cruise. Operating in the oxygen-free environment, it achieved a world-first by generating electricity with a compact miniature Stirling engine, symbolically “lighting up a Chinese star” in the deep ocean.



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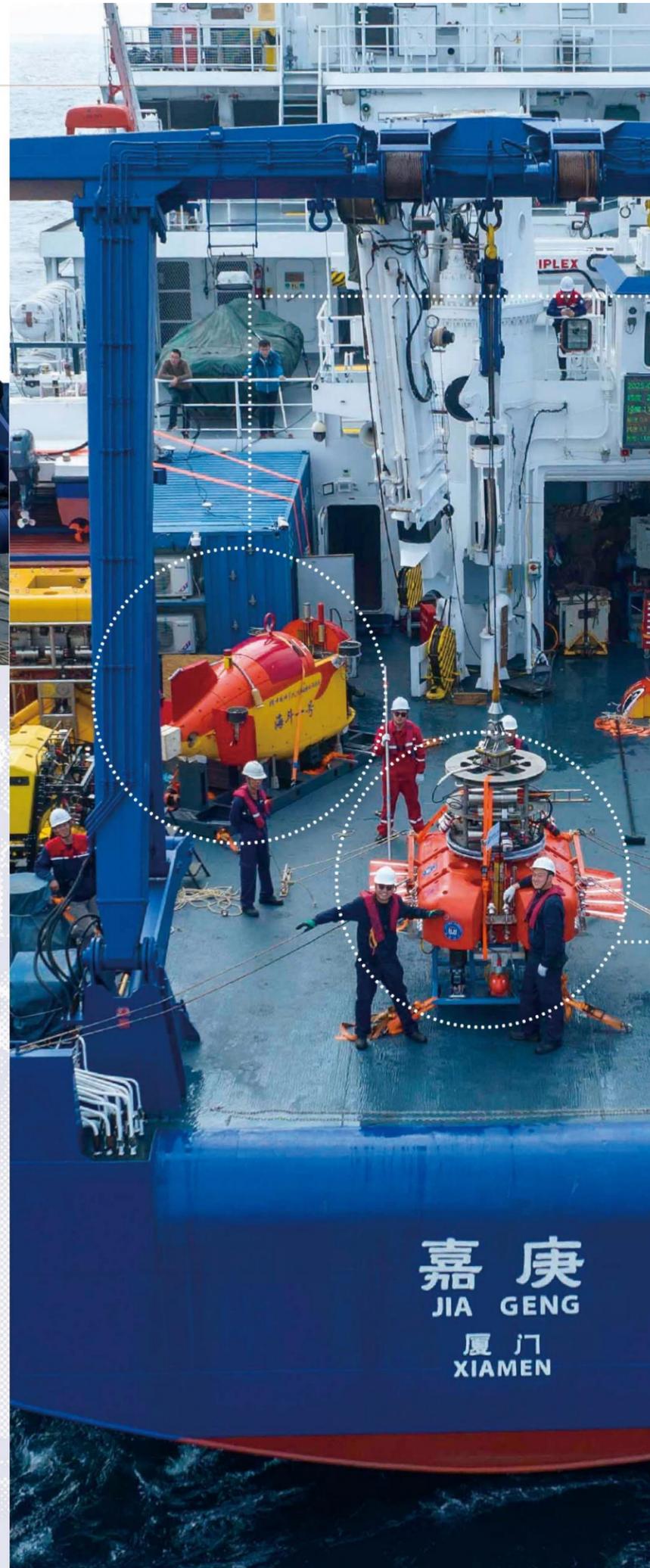
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此次年度首航，不仅完成了POS MV姿态惯导辅助的船载多波束系统偏角校准，以及船载单波束和多波束设备、浅地层剖面仪等地球物理调查设备的性能验证；也进一步探索了适合“嘉庚”号的ARV布放回收方式，为未来实施ARV探测作业积累了宝贵的经验；更通过一系列试验及优化，提升和拓展了“嘉庚”号对重载设备协同作业的支撑能力。

Additionally, the POS MV was used as auxiliary motion sensor for the shipborne multibeam sonars, further improving survey accuracy and reliability. The expedition also verified the performance of onboard marine geophysical equipment, including single- and multibeam echosounders and sub-bottom profiler. ARV deployment and recovery procedures were likewise rehearsed, enhancing the ship's capability to support coordinated operations involving heavy and complex scientific gear. Collectively, these extensive trials and operational refinements demonstrated the vessel's enhanced technical capacity and readiness for the coming scientific journey.



## 知识链接

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**海斗一号**是“十三五”国家重点研发计划“深海关键技术与装备”重点专项支持项目，能够为深渊科考提供精细调查、近海底探测和全海深轻作业能力的海洋高技术支撑。作为我国首台实现万米下潜的深海重大装备，海斗一号实现我国首台重大装备万米深潜，最大深度10908米，创造我国无人潜水器最大下潜及作业深度记录，获取我国首批全海深重要数据和样品，在国际上首次实现了全海深电动机械手万米作业和对世界海洋最深处挑战者深渊西部凹陷区的大范围全覆盖声学巡航探测，打破无人潜水器万米海底航时、航程、探测覆盖面积等多项世界纪录，标志着我国在全海深无人潜水器领域跨入国际领先水平。

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**西谷II号**是“西谷I号”的升级版本，由西湖大学自主研制。其设计灵感源自蝠鲼鱼（俗称“魔鬼鱼”），以水下智能为目标，利用自研的波动鳍实现海底自主运动，与传统的螺旋桨驱动潜水器不同，鱼型设计能够更好地适应水下环境，提高效率和灵活性，同时减少对海底生态的干扰。潜水器长3米、宽3米、高1.5米，外形紧凑，适合在复杂海底环境中作业，具备灵活的水下运动能力，复杂紊流中抗干扰能力，同时具有更强的环境融入性，隐蔽性强，以及复杂轨迹规划能力。

”

嘉庚  
JIA GENG  
厦门  
XIAMEN



## NSFC Open Research Cruise in the Central SCS (NORC2025-06)

### 基金委共享航次计划南海中部海盆航次

- 航次编号：地质地球物理航段 (KK2502)、海斗一号科学应用航段 (KK2511)、水文生化航段 (KK2512)
- 航次时间：3月29日-4月20日 (KK2502)、9月24日-10月15日 (KK2511)、10月16日-11月8日 (KK2512)
- 项目首席科学家暨地质地球物理航段 (KK2502) 首席科学家：厦门大学陈洪梅副教授
- 海斗一号科学应用航段 (KK2511) 和水文生化航段 (KK2512) 首席科学家：厦门大学唐甜甜副教授
- 航程：2316海里 (KK2502)、1800海里 (KK2511)、3369海里 (KK2512)
- 参航人员：来自20所涉海高校和研究所的81名科考人员

- **Cruise ID:** Geological and Geophysical Cruise Leg (KK2502); Haidou-1 Scientific Application Cruise Leg (KK2511); Comprehensive Biogeochemical Cruise Leg (KK2512)
- **Duration:** March 29 to April 20 (KK2502); September 24 to October 15 (KK2511); October 16 to November 8 (KK2512)
- **Chief Scientist of NORC2025-06 and KK2502:** Hongmei Chen, Associate Professor, XMU
- **Chief Scientist of KK2511 and KK2512:** Tiantian Tang, Associate Professor, XMU
- **Range:** 2,316 nautical miles (KK2502); 1,800 nautical miles (KK2511); 3,369 nautical miles (KK2512)
- **Participants:** 81 scientific researchers from 20 institutions nationwide

2025年11月上旬，“嘉庚”号完成国家自然科学基金共享航次计划2025年度南海中部海盆科学考察实验研究（航次编号：NORC2025-06）的全部科学调查任务，返回厦门。本航次共搭载来自19个依托单位的31个基金项目，并根据搭载项目的多元化需求，本航次共设置三个航段：地质地球物理航段、海斗一号科学应用航段和水文生化航段。

In early November, scientists and researchers aboard the RV *TKK* completed all missions of the NSFC Open Research Cruise in the central SCS (NORC2025-06) and returned to Xiamen. This expedition supported 31 NSFC-funded research projects from 19 institutions, and was organized into three specialized cruise legs tailored to multidisciplinary scientific objectives.



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## 地质地球物理航段

4月初，“嘉庚”号前往南海中部开展地质航段的调查工作。本航段共执行地质站位和电视抓斗作业站12个，并完成地球物理测线观测2条，其中在5个关键站位，单站作业时间超过20小时。累计开展83项舷外作业，其中箱式表层沉积物采样9次、重力柱采样18次、CTD作业36次、电视抓斗作业2次、大体积泵布放9次，原位过滤海水超过2万升，实现作业间的高效衔接与船时最大化利用。

值得一提的是，在“嘉庚”号动力定位系统（DP1）的配合下，所有重力柱采样作业均成功获取沉积物，样品长度均超过4米，保证了样品的连续性与科学研究价值。

本航段有多名项目负责人亲自上船参与采样与实验，带领研究生开展现场工作，分享多年科研尤其是野外考察经历，展现了海洋科学家严谨、乐观的科研精神。

## Geological and Geophysical Cruise Leg

In early April, RV *TKK* headed for the central SCS to conduct geological and geophysical investigations. 12 geological stations and 2 geophysical survey lines were completed, with five stations requiring over 20 hours of continuous operations. A total of 83 over-the-side operations were carried out, including 9 box corers, 18 gravity corers, 36 CTD casts, 2 operations of the deep-sea remotely operated platform, 9 deployments of LVPs, filtering over 20,000 liters of seawater in situ.

Using the vessel's dynamic positioning (DP1) system, a gravity corer was deployed to collect sediment cores—each exceeding 4 meters in length and providing continuous sediment records of high scientific value. Notably, several project PIs joined the cruise, mentoring young scientists in field sampling and on-site experiments, while sharing insights drawn from their extensive experience in oceanographic research.



© 田娟 Juan Tian



## 海斗一号科学应用航段

9月下旬，我国首台作业型全海深自主遥控潜水器海斗一号再次登上“嘉庚”号，赶赴南海开展以典型流-固界面物质交换与生态系统多样性为关键科学问题的调查。

本航段，“嘉庚”号以海斗一号深潜作业为核心，探索并建立了深潜器作业与多学科调查相结合的综合性现场研究范式。针对冷泉区高空间异质性的环境特征，开展了关键生物地球化学参数的高时空精度取样，并结合了完整的上覆水体系统观测，为揭示冷泉生态系统与邻近海洋环境的物质交换与生态效应提供了关键证据。

### Haidou-1 Scientific Application Cruise Leg

In late September, Haidou-1 vehicle rejoined RV *TKK* for interdisciplinary investigations in the central SCS. This leg focused on key scientific questions concerning material exchange across fluid-solid interfaces and ecosystem diversity.

Centered on Haidou-1's diving missions, the science team established an integrated research framework that combines submersible-based operations with multidisciplinary environmental observations. Focusing on the heterogeneous cold-seep areas, the science team completed precise biogeochemical sampling and full-depth water-column measurements, providing critical evidence for understanding material exchanges and ecological interactions within cold-seep systems and their surrounding environments.



© 陈洪梅 Hongmei Chen

## 水文生化航段

10月中旬，完成上一航段科研任务后，“嘉庚”号马不停蹄再赴南海，执行水文生化航段作业任务。期间，科考团队克服寒潮袭扰与大浪影响，顺利完成40个站位作业，开展CTD采水、分层浮游生物拖网等105项作业任务，为后续南海生物地球化学过程研究积累了宝贵资料。

尽管作业任务繁重，但在首席科学家和航段负责人的组织下，三个航段均利用科考间隙举办了“嘉庚论坛”。每位科考队员都积极参与，分享各自领域的最新研究成果与学术思考。

### Comprehensive Biogeochemical Cruise Leg

In mid-October, RV *TKK* returned to the SCS to undertake the biogeochemical investigations immediately after the previous leg. Despite cold surges and rough seas, 105 over-the-side operations at 40 stations were accomplished, including CTD casts and stratified plankton trawls, producing valuable datasets that will advance future research on biogeochemical processes in the SCS.

Amid the hustle and bustle of field scientific operations, Tan Kah Kee Forums were convened across three cruise legs. Participating scientists shared research updates and engaged in lively academic exchange. The forums helped refine emerging scientific questions and strengthened collaboration for future expeditions in the SCS.

© 海斗一号 Haidou-1



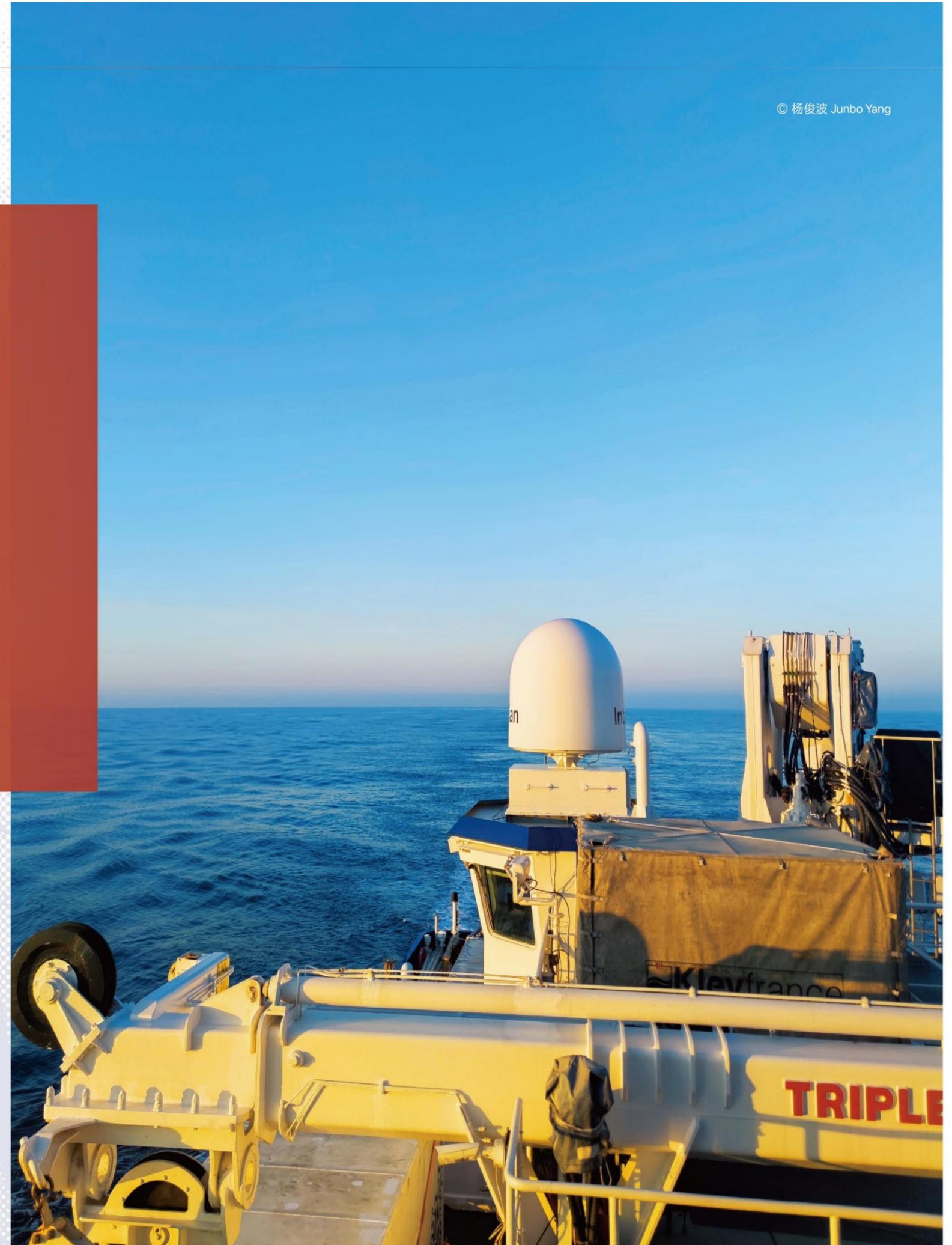
## Nutrient Regulation of the Biological Pump in the Western North Pacific (PIN-Pump) Cruise in Summer

### 西北太平洋生物碳泵的氮磷铁调控及演变趋势 夏季综合考察航次

- 航次编号: KK2504
  - 航次时间: 5月14日-7月14日
  - 首席科学家: 厦门大学温作柱副教授
  - 航程: 8659海里
  - 参航人员: 来自厦门大学、中国海洋大学、南京大学和海南大学的36名科考队员
- **Cruise ID:** KK2504
  - **Chief Scientist:** Zuozhu Wen, Associate Professor of XMU
  - **Duration:** May 14 to July 14
  - **Range:** 8,659 nautical miles
  - **Participants:** 36 scientific researchers from XMU, Ocean University of China, Nanjing University, and Hainan University

KK2504航次是“嘉庚”号执行的2025年首个西北太平洋科考航次。本航次的航迹东至东经167.75°的北太平洋副热带流涡区中心，北至北纬50.85°的亚北极海区，创下“嘉庚”号投入运行至今在太平洋航行的最东、最北记录。

As RV *TKK*'s first western North Pacific cruise of 2025, the "PIN-Pump" cruise reached 167.75°E in the North Pacific Subtropical Gyre and 50.85°N in the subarctic region, thereby extending the vessel's operational envelope to its furthest eastern and northern limits in the Pacific.





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历时近两个月，“嘉庚”号在西北太平洋开展涵盖物理、化学、生物等多学科综合观测，并在不同理化特征海区开展了营养盐、温度、光照等环境因子调控培养实验。本航次最终完成CTD作业145次、湍流混合观测36次、多层生物拖网25次、大体积泵原位颗粒物采集11次、重力柱和箱式采样5次，布放深海骑士原位培养设备1次，并进行连续走航气溶胶和海水化学、生物样品采集。

Lasting nearly two months, this cruise provided the platform for researchers aboard RV *TKK* to conduct comprehensive multidisciplinary observations covering physical, chemical, and biological processes aboard RV *TKK*. Incubation experiments were carried out to study how nutrients, temperature, and light influence marine ecosystems. 223 over-the-side operations were conducted, including 145 CTD casts, 36 turbulence observations, 25 multi-net plankton trawls, 11 in situ LVPs, 5 sediment sampler deployments, 1 Deep-sea In Situ Incubation System deployment, and aerosol sampling.



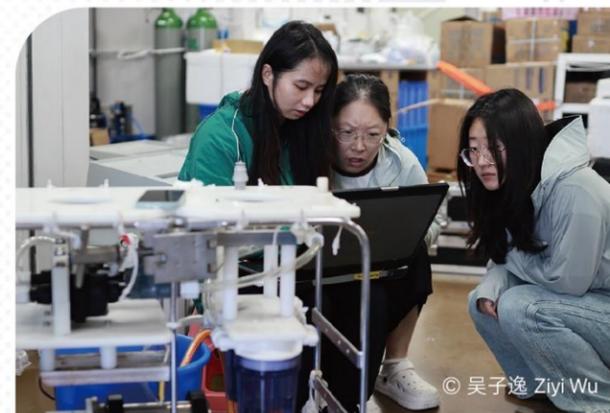
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53 © 张衍 Kan Zhang

特别值得一提的是，在亚北极海区湿冷、大雾的极端环境下，科考团队成功回收了厦门大学首套锚系沉积物捕获器，这为研究西北太平洋生物泵碳输出通量的变化规律、估算生物泵的碳输出效率及解析颗粒有机碳的降解过程和传输效率提供了宝贵的样品支撑。

Despite the cold and foggy subarctic weather, the science team successfully recovered XMU's first sediment trap, yielding valuable samples for studies of carbon export fluxes, biological pump efficiency, and the transport and degradation of particulate organic carbon in the western North Pacific.



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## "XMU at Sea" Undergraduate Training Cruise "海丝学堂"本科生实习航次

- 航次编号: KK2505、KK2506、KK2508、KK2509
  - 航次时间: 7月14日-7月18日 (KK2505)、7月23日-8月6日 (KK2506)、8月26日-8月30日 (KK2508)、8月31日-9月12日 (KK2509)
  - 首席科学家: 厦门大学白晓林副教授 (KK2505)、厦门大学周宽波副教授 (KK2506)、印尼茂物农业大学伊斯坎达尔·布迪·哈斯卡里奥博士 (KK2508)、厦门大学万显会教授 (KK2509)
  - 航程: 473海里 (KK2505)、2368海里 (KK2506)、970海里 (KK2508)、2193海里 (KK2509)
  - 参航人员: 来自厦门大学、厦门大学马来西亚分校、上海交通大学、中国海洋大学、南方科技大学、汕头大学、浙江海洋大学、福建省厦门第一中学、马来西亚理科大学、马来西亚登嘉楼大学、马来西亚国立大学、印尼茂物农业大学、印尼国家研究创新署的153名科考队员分四个航段参与本航次
- **Cruise ID:** KK2505、KK2506、KK2508、KK2509
  - **Duration:** July 14-18 (KK2505), July 23 -August 6 (KK2506), August 26-30 (KK2508), August 31-September 12 (KK2509)
  - **Chief Scientists:** Xiaolin Bai, Associate Professor from XMU (KK2505); Kuanbo Zhou, Associate Professor from XMU (KK2506); Dr. Iskandar Budhi Hascaryo from IPB University (KK2508); Xianhui Wan, Professor from XMU (KK2509)
  - **Range:** 6,004 nautical miles (KK2505: 473 nautical miles; KK2506: 2,368 nautical miles; KK2508: 970 nautical miles; KK2509: 2,193 nautical miles)
  - **Participants:** 153 students and teachers from XMU, Xiamen University Malaysia (XMUM), Shanghai Jiao Tong University, Ocean University of China, Southern University of Science and Technology, Shantou University, Zhejiang Ocean University, Xiamen No. 1 High School of Fujian Province, Universiti Sains Malaysia (USM), Universiti Malaysia Terengganu (UMT), Universiti Kebangsaan Malaysia (UKM, National University of Malaysia), IPB University, and National Research and Innovation Agency of Indonesia (BRIN)



一年一度的厦门大学“海丝学堂”本科生实习航次（以下简称“海丝学堂”航次）在7月如约而至。在今天的航次里，来自国内外不同院校的青年学子在各个航段里被划分为不同小组，在科学家的指导下开展浮游生物拖网、CTD海水采样、营养盐测定等海上探测作业项目。在航次期间组织开展的各类交流活动中，不同文化和教育背景的师生深入交流，感受厦门大学海洋学科浓厚的科研氛围和学术底蕴。

The annual "XMU at Sea" Undergraduate Training Cruise (XMU@SEA) commenced as scheduled in July, bringing together students from Chinese and international universities across four cruise legs. Guided by onboard scientists, participants completed a various of ocean observation tasks, including plankton trawls, CTD casts, and nutrient analysis, etc. Academic exchange activities held throughout the cruises, further fostering meaningful interaction among faculty and students from diverse cultural backgrounds and highlighting XMU's strong academic tradition and strengths in ocean science education and research.





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**IPB Today**  
Volume 128 Tahun 2025

**嘉庚**  
JIA GANG

LRI + MAR IPB University Adakan Scientific Joy Cruise di Atas Kapal Riset Tan Kah Kee

Lembaga Riset Internasional Kemaritiman, Kelautan dan Perikanan (LRI+MAR) IPB University bekerja sama dengan Xiamen University (XMU) China menyelenggarakan kegiatan "Scientific Joy Cruise with Tan Kah Kee Research Vessel of Xiamen University".

**BACA SELINGKAPNYA**

Penanggung Jawab: Afan Helmi Pimpinan Redaksi: Sri Nuryati Redaktur Pelaksana: Heris Sulisidiono Editor: Ruli Maha Putra Reporter: Deden Hartati, Dinah Ramdhani, Adip Sumarta, Mutiara Laila, Fajar Fotografer: Rully Budiana, M. Rizki, Wahyuni Karyono, M. Rizki, Israr, Alimatus Solikhah, Dinkorah Keliparam, Komari Rahi, dan Perencanaan Grafis: Anis Hafidha Nasution, Redaktur: L. L., Kampus IPB Ujungjaya, telepon: (0251) 842920, Email: redaksi@ipb.ac.id

与往年不同，今年的“海丝学堂”航次分为四个航段，其中第三航段搭载的均为印尼当地高校与科研院所的师生；此外，今年的航次还在8月4日和8月28日两度跨越赤道，这一特殊经历对“嘉庚”号及该航段的参航人员都具有非凡意义。

特别值得一提的是，参与第二航段的师生在“嘉庚”号印尼公众开放日活动中化身海洋科普志愿者，用寓教于乐的方式向登船参观学习的印尼各界民众宣传嘉庚精神和海洋文化，普及海洋科学知识，唤起公众对海洋事业更多的兴趣和关注。

A highlight of this year's program was the leg III joined entirely by faculty and students from Indonesian universities and research institutions. The vessel also completed two equator crossings on August 4 and August 28, marking a memorable and distinct milestone for RV TKK and all participants.

In addition, students on the leg II also supported the RV TKK Open House in Indonesia, serving as volunteers and engaging the public through hands-on demonstrations that promoted the Tan Kah Kee spirit, marine culture, and ocean science awareness.



厦门大学海洋与地球学院  
2022级海洋生物专业

**刘智恩**

参加“海丝学堂”是一段难忘的经历。两个月的时间里，首次乘坐“嘉庚”号进行远洋科考，跨越赤道、赴印尼交流，每段体验都鲜活深刻。这段旅程不仅拓宽了我的视野，也让我的科研实践能力得到了切实锻炼。

厦门大学海洋与地球学院  
2022级海洋化学专业

**江洲**

在“海丝学堂”航次，从实验室里严谨的数据测量，到甲板上捕捉队员工作的瞬间、记录和参与开放日的盛况，我即作为船上的实验员，也是这段蔚蓝故事的讲述者。这段经历让我对海洋科研工作的全貌有了更生动和立体的理解，很高兴能获得这样的机会。

厦门大学海洋与地球学院  
2023级海洋物理专业

**洪旗阳**

这次的科考任务意义非凡，而身为一个土生土长的厦门孩子，也是我首次远洋科考，踏出国门，跨越赤道，领略异国风情。读万卷书，行万里路，这次“嘉庚”号远洋经历将是我永生难忘的回历，也认识了许许多多有趣的人，充分享受者，完成了很多有意义的事情！

## China-Indonesia Joint Geological and Geophysical Expedition

### 2025年中国-印尼地质和地球物理联合科考航次

- 航次编号: KK2507
- 航次时间: 8月10日-8月26日
- 首席科学家: 自然资源部第二海洋研究所牛雄伟研究员
- 航程: 2123海里
- 参航人员: 来自厦门大学、自然资源部第二海洋研究所(以下简称“海洋二所”)、中国科学院南海海洋研究所、广州海洋地质调查局、中国地质大学(北京)、印尼国家研究创新署(以下简称“BRIN”)、印尼加查马达大学和印度尼西亚大学等单位的30名科考队员
- **Cruise ID:** KK2507
- **Duration:** August 10 to 26
- **Chief Scientist:** Dr. Xiongwei Niu, Second Institute of Oceanography, Ministry of Natural Resources (SIO, MNR)
- **Range:** 2,123 nautical miles
- **Participants:** 30 researchers from XMU, SIO, South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou Marine Geological Survey, China University of Geosciences (Beijing), National Research and Innovation Agency (BRIN), Universitas Gadjah Mada, and Universitas Indonesia



8月10日上午, 2025年中国-印尼地质和地球物理联合科考航次起航仪式在印尼雅加达丹戎不碌港举行, 来自中国驻印尼大使馆、印尼国防部、高等教育部、海洋渔业部、BRIN及海洋二所、厦门大学、印尼加查马达大学等中印科教机构90余名代表到场。在起航仪式上, BRIN主席拉卡萨纳·特里·汉多科博士、海洋二所所长方银霞和中国驻印尼大使馆科技参赞易先亮博士分别致辞, 并由方银霞所长为联合航次授旗。

The China-Indonesia Joint Geological and Geophysical Expedition officially launched on August 10, at Port of Tanjung Priok in Jakarta, Indonesia. Over 90 representatives from the Chinese Embassy in Indonesia, Indonesia's Ministry of Defense the Republic of Indonesia, Ministry of Higher Education, Science and Technology, Ministry of Marine Affairs and Fisheries, BRIN, SIO, XMU, and Universitas Gadjah Mada attended the event. At the ceremony, Dr. Laksana Tri Handoko, Chairman of BRIN, Dr. Yinxia Fang, Director of the SIO, and Dr. Xianliang Yi, Science and Technology Counselor of the Chinese Embassy in Indonesia, delivered speeches.



本航次由海洋二所和BRIN联合组织，依托“嘉庚”号科考船开展海上科学调查工作。该航次于8月11日由印尼雅加达起航，聚焦爪哇俯冲带洋—陆俯冲到弧陆碰撞全过程的深部结构研究，是“嘉庚”号执行的第一个从国外港口起航的国际联合科考航次。

KK2507航次中，中印尼两国科学家在印尼爪哇海域共同开展海底地震、大地电磁勘测、海水及沉积物岩心样品采集等多学科综合调查。“嘉庚”号团队亦在航次规划部署、探测作业保障等方面，通过精细化甲板布局和开展交替协同作业等举措，确保各项作业的高效进行和流畅转换。尤其在设备回收环节中，从发现水面目标至成功回收至甲板的平均耗时仅为22分钟；在短短的70个小时内，高效完成了43套OBS/OBEM回收，回收成功率100%，显著提升了船时利用效率。

本航次的执行，创造了我国3500吨级综合科考船实施主动源地震和可控源电磁探测的成功案例。

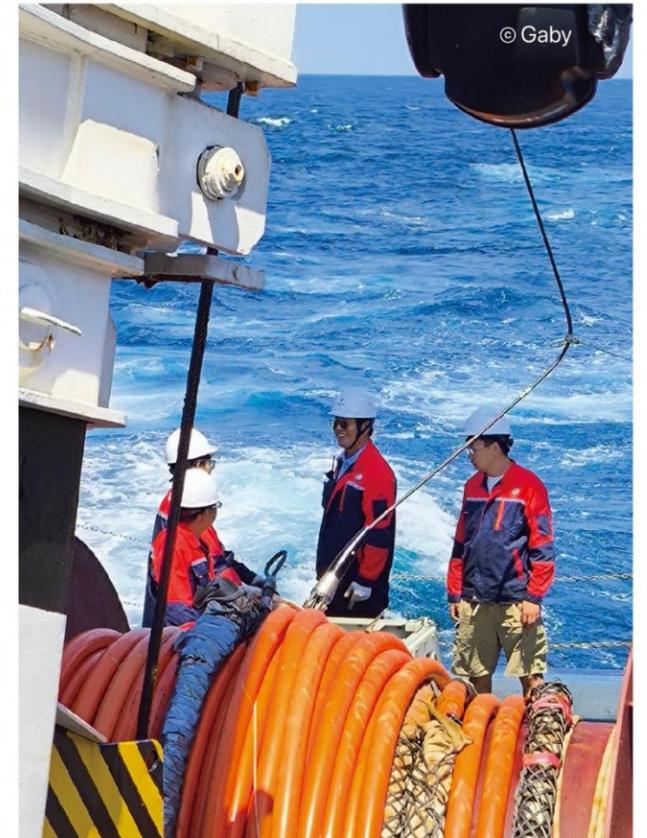


Jointly organized by SIO and BRIN, the expedition was conducted aboard the RV *TKK*. The cruise departed from Jakarta on August 11, marking the vessel's first international joint expedition launched from a foreign port. The scientific mission focused on the deep lithospheric structure and tectonic evolution of the Java subduction zone—from ocean–continent subduction to arc–continent collision.

During the expedition, Chinese and Indonesian scientists jointly carried out a multidisciplinary survey in the Java Sea, including OBS and OBEM deployments, as well as seawater sampling and sediment coring. Through refined deck planning and well-coordinated operational sequencing, the onboard science team ensured a highly efficient task execution. The average interval from target surfacing to recovering it on deck was only 22 minutes. Within 70 hours, all 43 OBS and OBEM instruments were recovered, achieving a 100% recovery rate, and greatly improving ship-time utilization.

This cruise marked a milestone—China's first successful active seismic surveys and controlled-source electromagnetic (CSEM) surveys performed on a 3,500-ton general-purpose research vessel.

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# 当“嘉庚”号 与“同济”号相遇



3月11日

厦门大学船管中心与同济大学海洋与地球科学学院签订“同济”号科考船与“嘉庚”号科考船合作协议，标志着双方在海洋科考船运维与管理领域正式建立合作关系。



4月17日

同济大学采购与招标管理办主任林嫣、海洋与地球科学学院院长拓守廷一行来访，就船舶运行管理、船舶信息化建设等方面开展调研交流。

7月2日

厦门大学与同济大学签署《“海嘉船舶综合信息系统”标准版和“海嘉船舶综合显示系统”两项技术实施许可合同》，我中心自主研发的两套船舶管理系统继“嘉庚”号后在“同济”号上得以全面部署与成功应用，这标志着我中心自主研发能力进一步得到了业内认可。

9月26日

“同济”号停泊厦门期间，厦门大学船管中心组织各部门人员登船学习，并由资料中心任暄工程师面向“同济”号团队开展“海嘉船舶综合信息系统”系统培训。



10月28日

厦门大学船管中心王海黎主任再度率队前往同济大学船舶管理中心开展调研交流，就科考船运行管理、科考作业保障等方面进行深入探讨，并对未来两船合作方向和内容进行讨论。

7月-10月

海上探测部陈希荣、高友炎和邱家祺3位工程师为“同济”号提供共23天的海上技术服务与保障。

# Outreach and Exchange 开放交流

1月13日

近300名参与第七届厦门海洋环境开放科学大会(XMAS 2025)的海内外学者登船，深度参观“嘉庚”号。

4月29日

“嘉庚”号及厦门大学船管中心信息化成果亮相2025年第八届数字中国建设峰会。

4月30日

厦门市特殊教育学校师生代表20人登船参观学习，深入了解海洋科考，传承弘扬嘉庚精神。

5月18日

由厦门国贸集团股份有限公司和厦门市特殊教育学校主办，厦门大学船管中心作为支持单位的“爱与梦飞翔”20周年公益画展在中华儿女美术馆举行。



7月17日

第五届“嘉庚号海洋大讲堂”在KK2505航次中开讲，来自厦门一中与新疆吉木萨尔县第一中学、第二中学的260余名学生齐聚云端，在随船出海的厦门一中生物教师叶昀莹带领下，共探海洋的神奇奥秘。本次活动通过微信视频号、腾讯会议等多平台开展同步直播，累计播放和点赞量超37万。

11月15日

在厦门大学海洋科学开放日中，千余名公众走进“嘉庚”号展区，通过科普视频、棋盘游戏等方式，深入了解“嘉庚”号的海洋科考故事。

11月25日

厦门大学海洋与地球学院近300名本科生登上“嘉庚”号，开展海洋科考观摩实践。



### 交流篇

1月

1月13日

台湾海洋大学一行10人登船参观学习，就船舶运行管理、海洋人才培养、海洋学科合作等事宜开展深入交流。

2月

2月17日

国家海洋环境监测中心杨凯副主任率队来访，就船舶运行管理、船舶信息化与智能化建设等方面开展深度交流。

9月

9月22日-25日

厦门大学船管中心王海黎主任出席第36届国际科考船运行管理组织（International Research Ship Operator, IRSO）年会。会上，王海黎主任做题为《Development and Application of an Integrated Planned Maintenance System (iPMS) for Research Vessel Operations》的报告，并向全球同行推介海嘉船舶综合信息系统。

11月

11月22日

斯克利普斯海洋研究所（SIO）主任Margaret Leinen，法国国家科学研究中心（CNRS）研究员、法国科学院院士、中国科学院外籍院士Jean-Pierre Gattuso，英国国家海洋学中心（NOC）主任John Siddorn和全球海洋观测系统（GOOS）主任Joanna Post共同登船，就科考船运行管理、国际海洋科考合作等事宜开展深入交流。

12月

12月23日-24日

由船管中心主办的科考船运行管理及探测技术交流会在厦门顺利举办。与会的船舶管理人员与工程技术人员专题报告、案例分享、现场研讨等多元形式，共话科考船行业高质量发展新路径。

4月



4月21日

厦门大学船管中心聘任厦门大学潘维廉（William Neil Brown）教授为“嘉庚”号国际合作顾问。

4月22日

东亚海洋环境管理伙伴关系（PEMSEA）执行主任率队登船调研，了解“嘉庚”号管理运行情况。

10月



10月22日和25日

吴学文高级工程师分别在国际海洋科学技术装备设备展览会和深远海油气资源与地球科学杭州论坛做专题报告。



本年度，厦门大学附属翔安医院就船岸医疗协同、随船医疗救援保障等事宜多次登船调研。2月20日，院长助理张彤带队登调研，就医疗协作机制开展交流；11月26日，急诊医学科主任曾红带队登船调研，共同推进“嘉庚”号医疗保障体系建设。



## 成果产出

自2017年4月运行以来，“嘉庚”号共完成71个科考调查航次，为上千名海洋科研工作者提供了船时服务和技术保障，支持了我国深远海的科学研究，促进了相关领域的科研成果产出。不仅如此，围绕“嘉庚”号的日常运行管理和服务保障，船管中心团队亦在海上探测作业、船舶信息化建设等领域取得了一系列丰硕的成果。

下表所列成果为船管中心团队在科考装备保障、探测作业优化改进及船舶信息化建设等方面取得的专利、软件著作权等阶段性成果。（截至2025年12月，共计53项，成果仍在不断积累中。）



序号	软件名称	登记号
1	AWS数据展示系统V1.0	2021SR1601140
2	SBE21数据展示系统V1.0	2021SR1601141
3	卫星基站环境监测系统V1.0	2022SR0015977
4	船舶物资采购系统	2022SR0657484
5	船舶管理系统	2022SR0653989
6	PMS维修保养管理系统	2022SR0657483
7	嘉庚号数据传输系统	2022SR0800372
8	“嘉庚”号可视化前处理温盐深剖面仪器数据软件	2023SR1023006
9	嘉庚号综合显示系统	2023SR1701215
10	嘉庚号数据采集与分发系统	2024SR0158861
11	“嘉庚”号船时估算辅助工具软件	2024SR1051057
12	科考船远洋调查航前认知虚拟仿真实验软件（PC版）	2025SR0555187
13	海嘉船舶综合显示系统	2025SR1079802

序号	专利	专利号
1	一种水下滑翔机回收方法	ZL 201811266542.8
2	一种海洋探测装置的探测仪的回收方法	ZL 201811171685.0
3	一种连续采水器及采水方法	ZL 202310065136.X
4	一种海洋探测装置及其水密接头保护套	ZL 201821631698.7
5	一种海洋磁测缆绳收放导向装置	ZL 201821631553.7
6	一种船载海洋生物实验样品培养箱	ZL 202122445967.9
7	一种船载实验室样品混匀装置	ZL 202122446972.1
8	一种海洋科学综合考察甲板轨道辅助布放装置	ZL 2021224411448.0
9	锚系缆绳收放工具	ZL 2021228379828
10	无抛载防倒式无缆重力取样器及海底沉积物取样装置	ZL 202221734833.7
11	一种海洋设备充电燃料电池及其对接结构	ZL 202320148370.4
12	一种自返式采集装置	ZL 202223481492.X
13	一种集装箱顶备品收纳装置	ZL 202321320475.X
14	一种舷外的走航大体积采水系统	ZL 202321320489.1
15	一种便携式通用洁净绞车	ZL 202320675824.3
16	一种便携式通用洁净绞车（一种痕量元素通用洁净绞车）	ZL 202320675796.5
17	一种用于为海洋小型设备充电的燃料电池	ZL 202320366023.9
18	一种便携式船舷入水梯	ZL 202321951910.9
19	一种便携式船舷走航观测采样系统	ZL 202321957955.7
20	一种便携式抓斗采泥器	ZL 202322035713.9
21	一种用于模拟海水压力的实验装置	ZL 202322152582.2
22	一种痕量金属采样装置	ZL 202322982038.0
23	一种隔膜泵	ZL 202323065412.7
24	一种深海泵	ZL 202323036257.6
25	一种船舶线路用U型固定块	ZL 202323072505.2
26	一种船用驱鸟装置	ZL 202323425482.9
27	一种海洋科考释放装置	ZL 202323401991.8
28	一种船载用工具集装箱	ZL 202323385310.3
29	一种深海固体浮力材加工集装箱	ZL 202323339716.8
30	一种船载危化品专用集装箱	ZL 202323352503.9
31	一种侧扫声纳	ZL 202323448512.8
32	一种表层水文要素采集装置	ZL 202323336448.4
33	一种可灵活移动的深海电视抓斗	ZL 202323338963.6
34	一种深海固体浮力材料制作捏合机	ZL 202323472270.6
35	一种深海流量计	ZL 202323489186.5
36	一种海底表层箱式采泥器	ZL 202323517748.2
37	一种Argo浮标投放装置	ZL 202322570348.1
38	一种无人艇回收投放装置	ZL 202422849158.8
39	一种无人艇自动回收装置	ZL 202422863782.3
40	一种语义分析模型训练方法、视频数据传输方法、电子设备及计算机可读存储介质	ZL 202510714521.1

下表所列的39篇科研成果检索自国内外各文献数据库，统计时间为2025年1月1日至12月15日，并将按年度持续更新。由于是人工检索和统计，难免会有疏漏和错误。如若发现，请及时联系我们更正。您的理解和支持对我们不断完善工作至关重要！

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# Organizational Structure

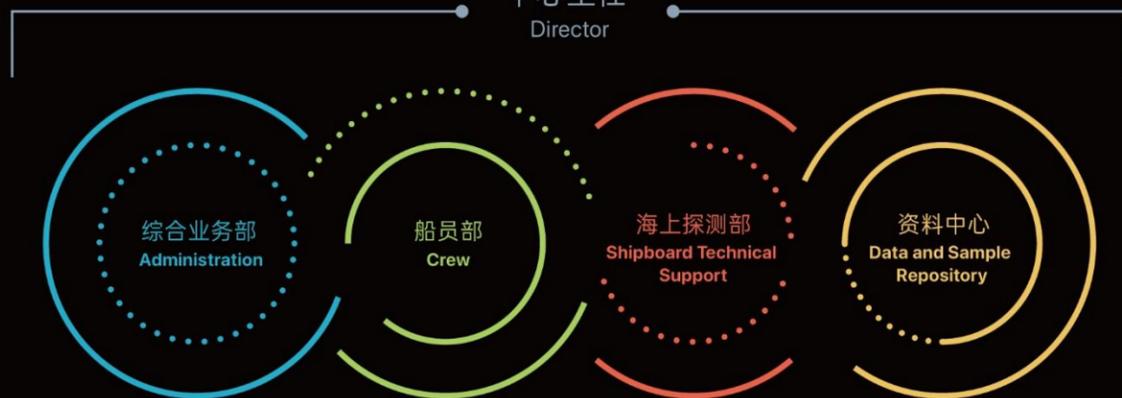
## 管理架构

厦门大学科考船运行管理中心隶属于厦门大学地球科学与技术学部，负责“嘉庚”号科考船的运行和管理，下设综合业务部、船员部、海上探测部及资料中心。

Marine Operations, Xiamen University (MarOps) is responsible for the operation of RV Tan Kah Kee. It has four departments, including Administration, Crew, Shipboard Technical Support (STS), Data and Sample Repository.

### 厦门大学科考船运行管理中心 Marine Operations (XMU)

中心主任  
Director



### 科考船运行管理委员会

主任：戴民汉

委员：史大林 刘艳杰 刘志宇 王晟 吕永龙 冉广 王海黎

李骁麟 曹知勉 黄邦钦 商少平 张瑶 吕柯伟

秘书：董晶 黄玲玲

### 中心主任 Director

- 王海黎  
Dr. Haili Wang

### 综合业务部 Administration

负责统筹、协调、督办科考船日常运作所有相关业务工作。  
The admin office is responsible for coordinating and supervising all administration affairs that are relevant to RV TKK's routine operations.

- 董晶 陈堃 杨琇玲 秦巧昀 黄家骏 刘秋玲

### 船员部 Crew

负责操控科考船海上的合法安全行驶，维护保障船载机具的正常使用，配合海上探测部执行探测作业。

The crew onboard RV TKK are responsible for the legal and safe navigation at sea, maintaining and ensuring the daily usage of all shipborne equipment, and cooperating with STS for at-sea scientific operations.

- 汤少华 温逢春 赵振明 卢发根 陈晓晖 曾云鹤 陈真 杜成展 郭海峰 洪坚强 李增阳 洪福祥 洪飞龙 李福安 洪中山 刘永友 熊学研 洪建兴

### 海上探测部 Shipboard Technical Support

负责全船所有船载科考装备及各类探测仪器设备的操作与维护，承担船上实验室的管理，并配合科研人员执行海上探测作业，确保船载科考设备的安全使用、操作和高质量数据的获取。

Shipboard Technical Support (STS) is a vital department in MarOps. Its responsibility is to operate and maintain all the scientific equipment, to manage shipborne laboratories, to coordinate and assist science parties to carry out various over-the-side operations onboard RV TKK, such that to ensure the acquisition of high-quality scientific data and samples at sea in a safe and efficient way.

- 吴学文 陈希荣 戴君伟 陈若婷 蔡建南 叶成淼 高友炎 许明珠 张宴泽 伍鑫 李岱沅 邱家祺

### 资料中心 Data and Sample Repository

负责汇总各航次的探测数据及航次报告，对每一航次的探测数据与标本进行品管、归档、储存。另对不同航次的探测参数分别做标准化分析处理及质量控制，绘制成图表提交数据报告以供参考。

Data and Sample Repository is responsible for archiving, processing and quality control of all cruise data, as well as the archiving and storage of important samples collected from RV TKK.

- 任暉 林智南 郭智雄

# 水調歌頭·庚艦頌

艤艫幾時有？數代海洋瑤。  
奮爲風物放眼，籌策啓輝煌。  
五載奔波騰擲，三千巍峨鋼軀，重譜新時章。  
鄭重舒心願，法西了衷腸。

嘉庚名，南強夢，萬裏疆。  
薪火相繼，血脉傳承樂共襄。  
行時披星戴月，駐時徹夜繁忙，傾意哺群芳。  
得東風無限，天涯亦巡航。

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