First Expert meeting of the UN-GGIM & IHO Joint Working Group on Marine Geospatial Information

with the theme “Advancing Integrated Marine Geospatial Information Management”

Chiang Mai, Thailand
4 – 8 May 2026

CHINA

NATIONAL MARINE DATA AND INFORMATION SERVICE

国家海洋信息中心

NATIONAL MARINE DATA AND INFORMATION SERVICE

Where is your country today in enhancing the management and use of marine geospatial information ?

Institutional Setup- NMDIS

Establishment: Founded in 1958, one of the oldest professional marine info institutions in China.

Institution: National public welfare institution under MNR, key force in marine informatization.

Core Position: Oversees national marine info resources, undertakes cybersecurity work for MNR, supports maritime info mangement strategy.

Core Responsibilities

Data Mgmt: Collects, integrates & shares marine resources.

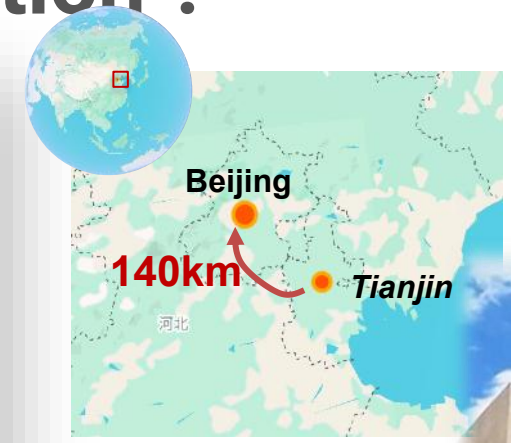
Info Strategy: Formulates strategies, policies & standards.

Marine Economy: Monitors economic operation & accounting.

Spatial Planning: Supports sea area & island management.

Sea Level: Predicts & assesses sea level changes.

Intl Cooperation: Exchanges data & fulfills obligations.



Located in Tianjin, China.

Where is your country today in enhancing the management and use of marine geospatial information ?

Core Datasets & Platforms

- National Science and Technology Infrastructure-National Marine Data Center
- National Marine Comprehensive Database
- National Marine Big Data Service Platform

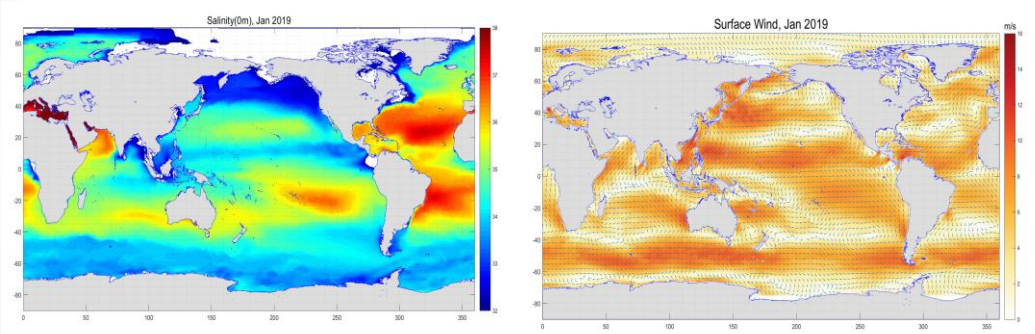
Coordination Mechanism

- Under the overall coordination of the MNR, NMDIS takes the lead in the management of national marine geographic information.
- Coordinated with maritime-related departments, local governments, and research institutions.

Recent Progress & Achievements

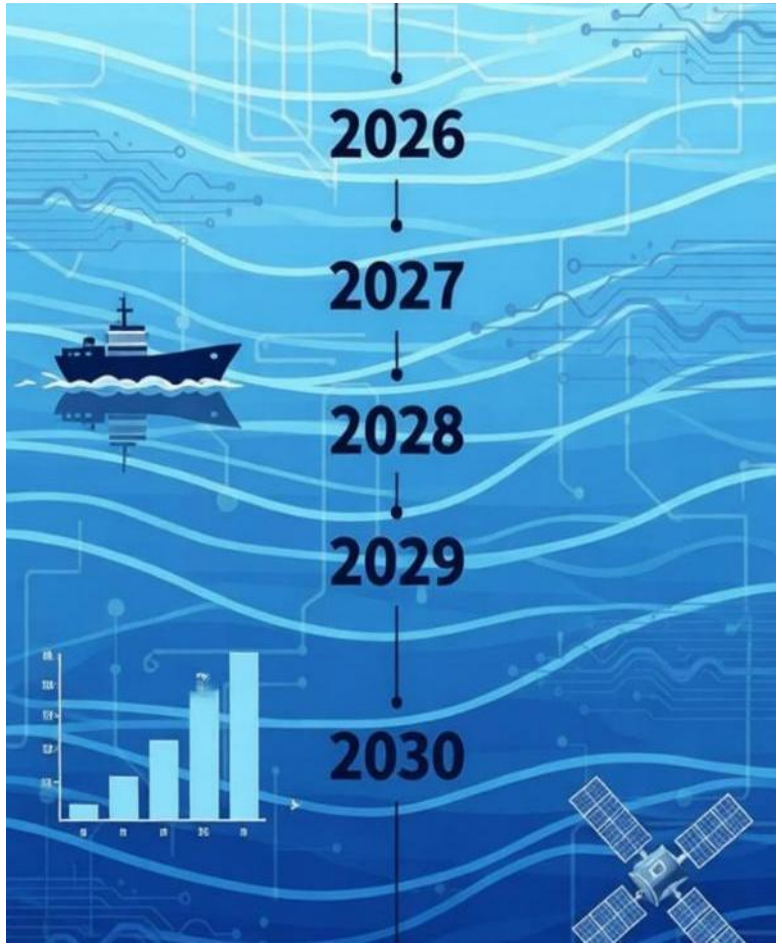
- Public Release of the global high-resolution ice-sea coupled reanalysis operational system.
- Public Release of the global ocean fusion dataset (CGOF1.0).
- Completed the naming of more than 100 international undersea features.

Interface of the National Science and Technology Infrastructure



Public Release of the China Global Ocean Fusion Dataset (CGOF 1.0) at the UN Ocean Conference, June 2025.

Where does your country aim to be in the next five years?



01

Improve Policy and Governance

Refine top-level policies, standards, and governance system for marine geospatial information to strengthen unified management.

02

Achieve Deep Integration

Realize deep integration and efficient collaboration across departments, regions, and between land and sea.

03

Build Digital Foundation

Establish a digital foundation featuring all elements, full coverage, and real-time dynamic capabilities.

04

Enhance Intelligent Services

Upgrade intelligent data processing, fusion analysis and visualization to support integrated management.

05

Improve Long-term Mechanism

Establish a sustainable operation mechanism with investment, security, controllability and sharing.

What do you see as the main challenges in reaching this “ideal” situation within the next five years?

- Governance and Coordination

  Inter-departmental data silos still exist, and the efficiency of land-sea coordination and business synergy needs improvement.
- Data availability or quality

  Insufficient coverage of open/deep sea data, and the consistency and timeliness of multi-source data need improvement.
- Funding and Sustainability

  Pressure exists in securing funding for long-term operation, maintenance, updates, and intelligent upgrades.
- Standards and Technology

  Land-sea datum connection, marine data standardization and processing specifications, and independently controllable technologies still need refinement.

What potential opportunities could help address some or all of these challenges?

National Strategy
The strategies of Digital China, and Smart Ocean provide top-level policy and resource support.

Reform Mechanism
Marketization of data factors and open sharing of public data drive institutional innovation.

Regional & Intl. Cooperation
Blue Partnerships, Regional cooperation, UNESCO/IOC and UN-GGIM/IHO frameworks promote synergy.

Technological Innovation
Cloud computing, AI, and satellite remote sensing enhance data acquisition and processing capabilities.

Pilot Demonstration
Achieve rapid breakthroughs by focusing on scenarios like digital twins, and public data applications.

How familiar are you with the UN-IGIF, and IHO C-17?

Cognition & Recognition

We are familiar with and recognize the guiding value of UN-IGIF (Integrated Geospatial Information Framework) for integrated management. However, we are still not so familiar with IHO C-17 standards which is specifically for the marine geospatial management.

Practice & Alignment

As the national counterpart, NMDIS continuously tracks, researches, and absorbs the content of the frameworks and standards, and actively references and aligns them in domestic marine data standards, sharing platforms, and product specifications.

Goals & Integration

In the future, we will deepen our understanding of IHO C-17, and fully apply and adapt UN-IGIF and IHO C-17 in national-level platform construction, data governance, and product production to promote the alignment of domestic standards with international ones.

What kind of support would you like to receive from UN-GGIM-IHO Joint Working Group?

Methodological Guidance

Provide implementation guidelines for integrated management and guidance on standard alignment.

Capacity Building

Provide training courses and materials for managers and technical personnel.

Experience Sharing

Establish mechanisms for cross-country peer exchanges, best practice sharing, and peer reviews.

Network Establishment

Establish an international cooperation network and build a communication platform among countries, institutions, the private sector, etc.

Technical Solutions

Provide key technical solutions for data fusion, quality control, and land-sea coordination.

Project Support

Support China in leading or participating in regional demonstration projects to promote achievements.

One Practice from China on Land-sea Integration

Chinese Solution for Vertical Datum Construction

Our challenges

1. Geographical Challenges

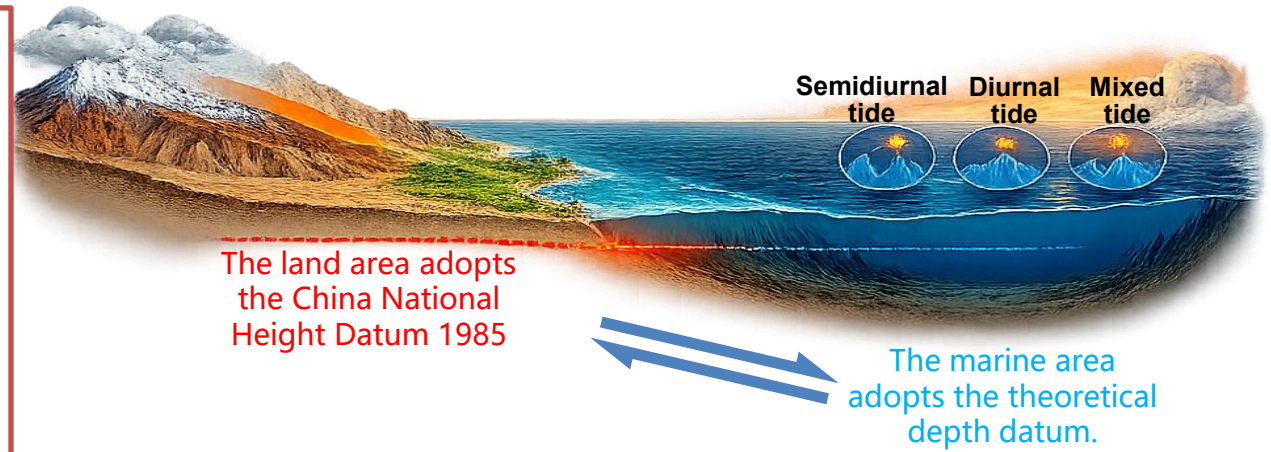
- Vast land area (from the Qinghai-Tibet Plateau to the eastern plains)
- Long coastline (the continental coastline exceeds 18,000 km)
- Numerous islands (over 11,000)
- Complex tidal types (the coexistence of semi-diurnal, diurnal, and mixed tides)

2. Historical Challenges

The vertical datums for China‘s land areas and islands have not been fully unified. The formulas used to calculate the depth datum for China have been inconsistent across different historical periods, and land and marine areas have long adopted different vertical datums. Consequently, a massive amount of historical data requires compatible integration and conversion.

3. Technical Challenges

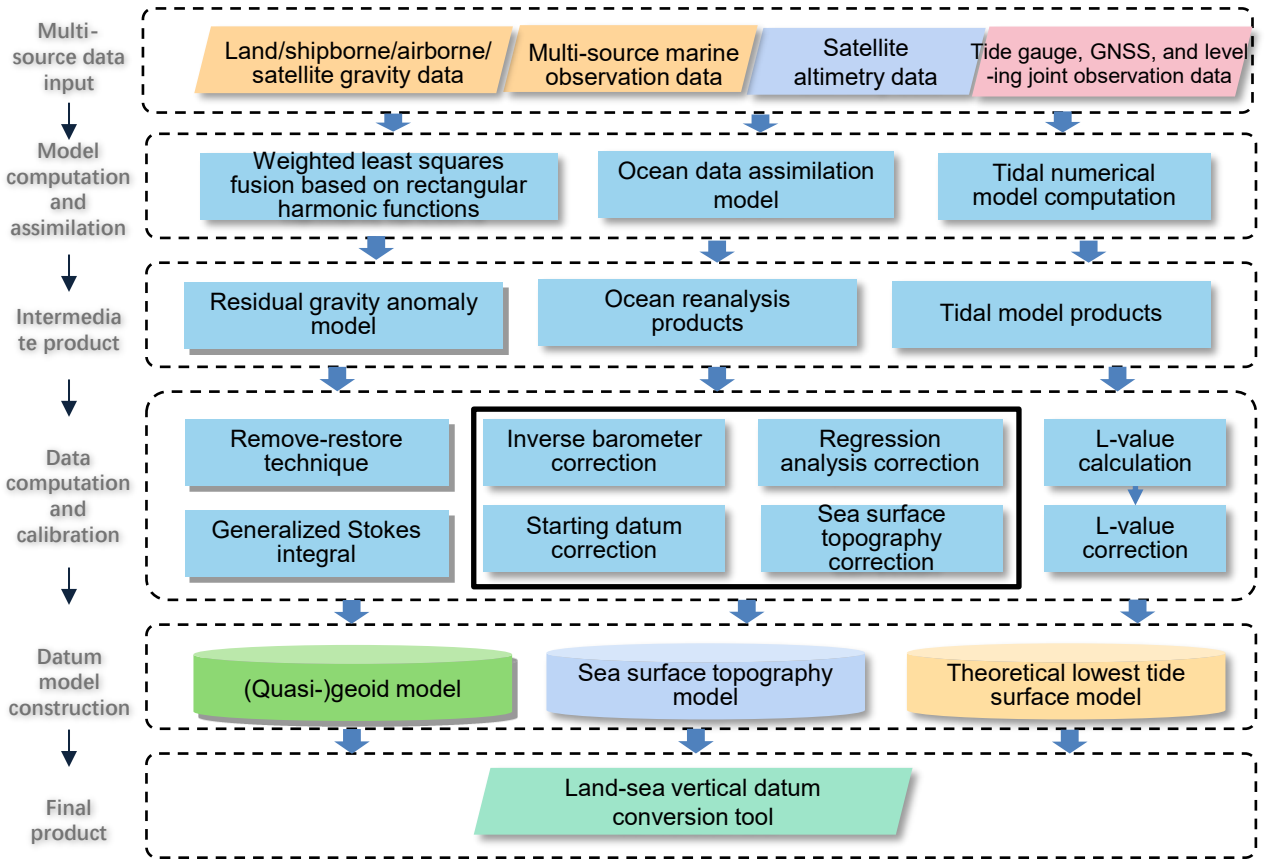
- Reasonable fusion of multi-source heterogeneous gravity data, including land-based, shipborne, airborne, and satellite gravity measurements.
- The sparsity, heterogeneity, and datum inconsistency of observation data (GNSS, leveling, tide gauge, satellite altimetry, etc.) in land-sea transition zones.
- Ongoing challenges to datum maintenance posed by dynamic changes in the Earth’s environment (e.g., sea-level rise, land subsidence).
- Accurate determination of the vertical offset between regional datums and the International Height Reference System (IHRS) datum.

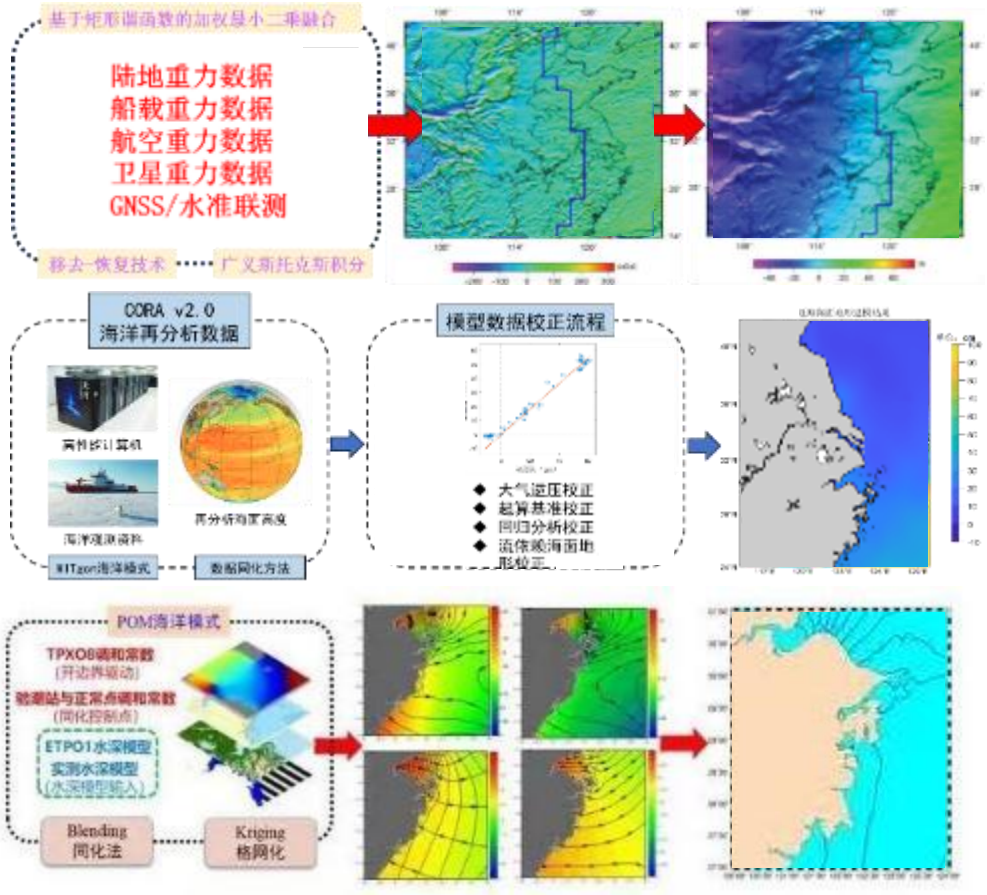


One Practice from China on Land-sea Integration

Chinese Solution for Vertical Datum Construction

Data&Methodology

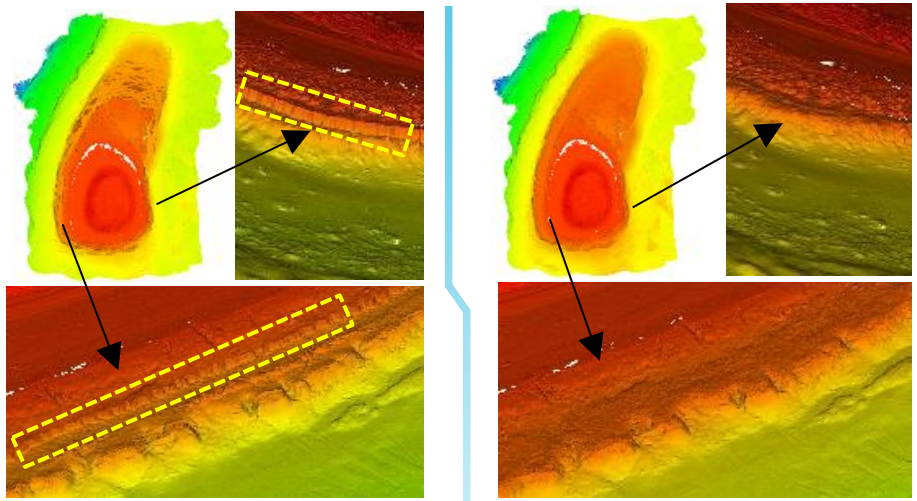




One Practice from China on Land-sea Integration

Chinese Solution for Vertical Datum Construction

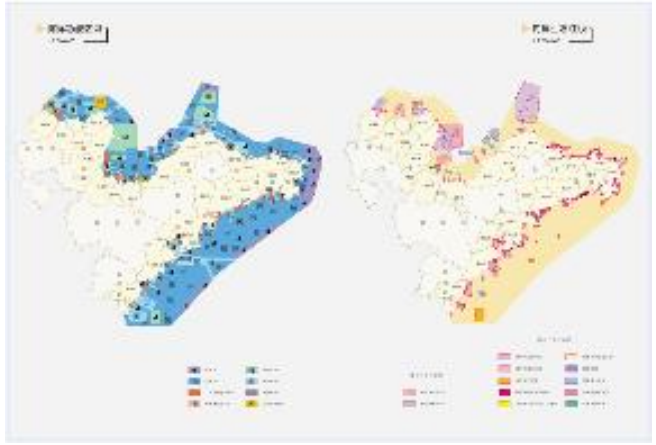
Practical Applications

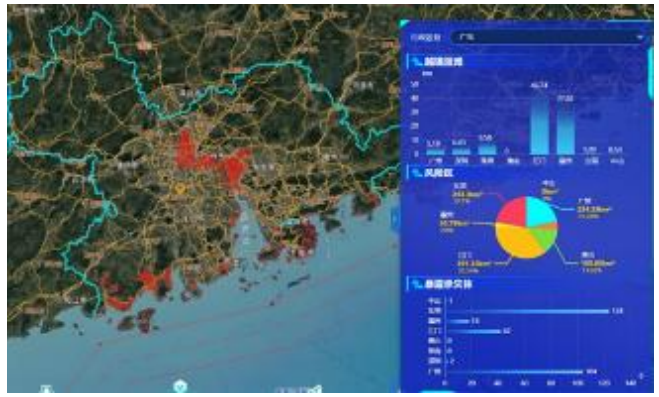


Before Datum Unification

After Datum Unification

Eliminating Land and Sea Elevation Discrepancies to Achieve Seamless Data Fusion





Supporting Integrated Coastal Zone Management and Enhancing the Disaster Resilience of Coastal Cities

For SDGs

Thank you.
谢谢！

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