

Challenges of Existing Community Oceanic Model and Future Direction, Perspectives from the Global South

- Computational Deficits, The "Data Void", Financial Vulnerability, and Brain Drain
- Locally Optimized Models: The local model necessitates integration with the Community Regional Ocean Modeling System (ROMS).
- AI Solutions: The investigation and application of machine learning architectures have experienced substantial growth in contemporary research and development endeavors.
- South-South Cooperation: Frameworks like China's First Institute of Oceanography deploying the OCEANUS early warning platform. Create modeling hubs in major Global South economies—including India, Brazil, and South Africa—to develop cooperative, locally tailored climate solutions beyond solely Western methods.
- Early Warning Systems: Tracking tropical cyclones, sea-level rise, and storm surges.
- Integration Indigenous Ecological Knowledge
- Integrated Social-Ecological Systems: Combine ecological measures with socioeconomic indicators.
- Accessible, Responsible Data Governance: Make data products accessible to regional administrators and policymakers without scientific expertise, promoting transparency and reducing local information gaps.
- Knowledge-System Integration: Combine quantitative environmental models with qualitative coastal research, participatory science, and Indigenous ecological management.