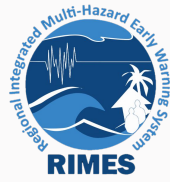


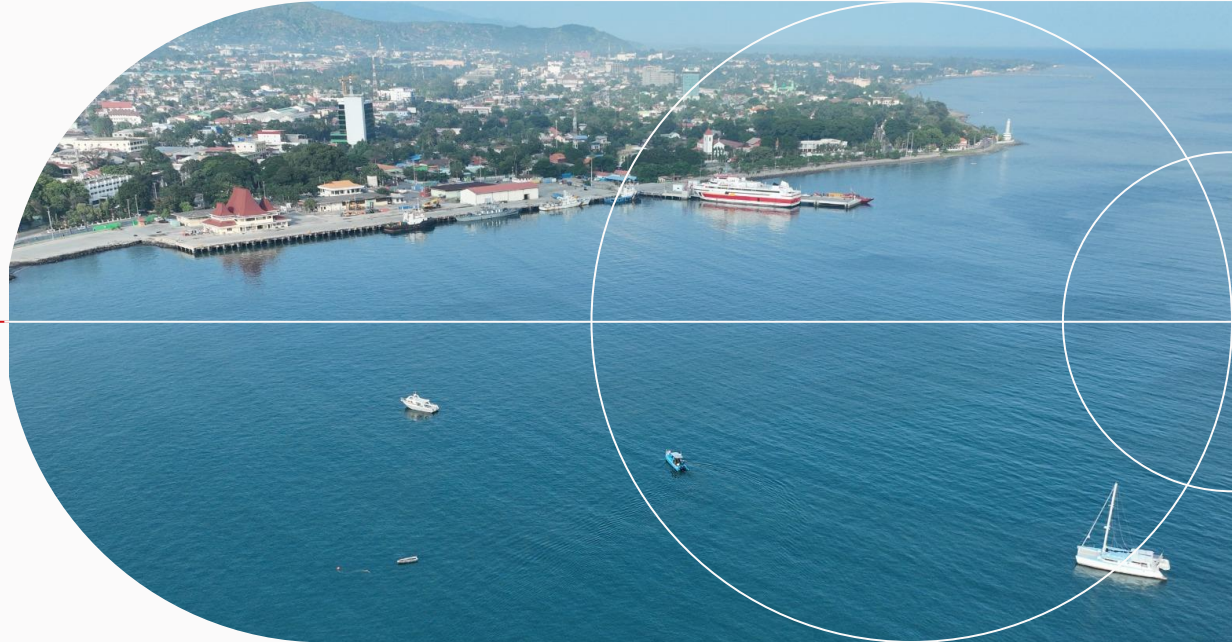
Short term hazards in the western indian ocean region, status, and how sea level stations can contribute by RIMES



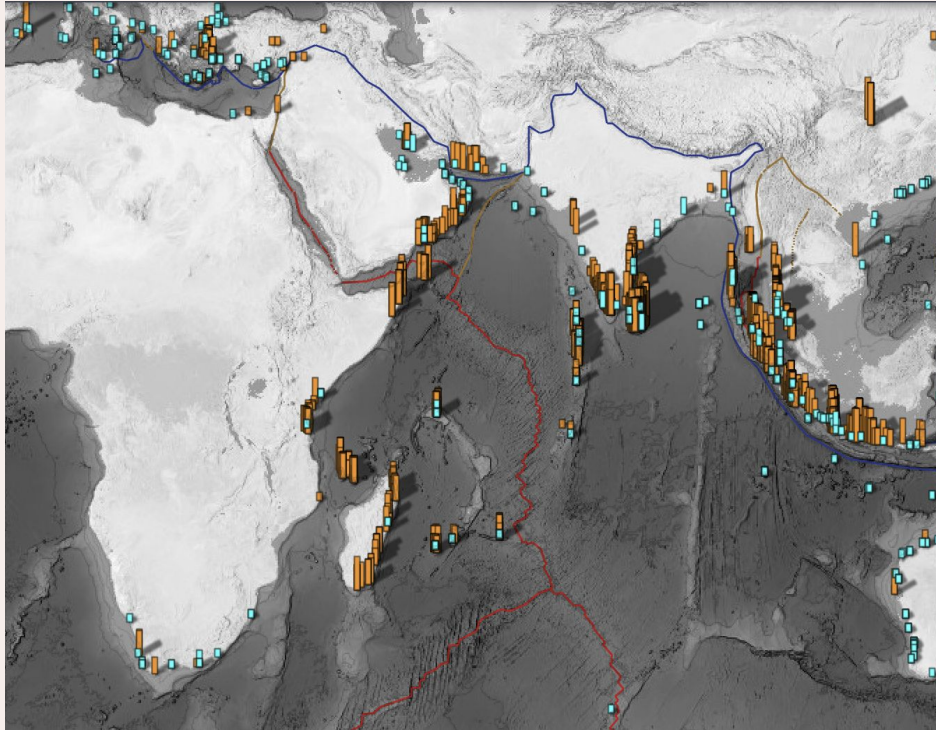
Bojara Asvakittimakul, RIMES

bojara@rimes.int

September, 2025



Introduction to Hazards in the Western Indian Ocean



Tsunami impact observation from 2004-2025
Source: <https://www.ncei.noaa.gov/maps/hazards/>

The NW Sumatra Tsunami

in 2004, The economic damage was estimated at approximately US\$10 billion in the worst-hit countries

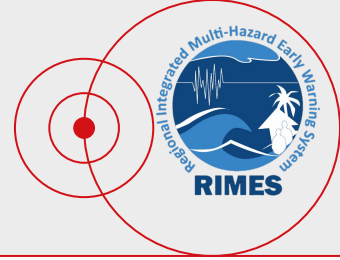
Cyclone and Flood Damage

in 2013, over \$250 million in damage to Indian Ocean island states

Tropical Cyclone Freddy

in 2023, over \$481 million in damage to Indian Ocean island states

RIMES Service: Information Value Chain Approach



Enhancing Data Availability

- Observing and monitoring systems
- Data integration system
- Data sharing mechanism



Modeling and Forecasting

- Global & Regional Cooperation
- Localised Numerical Forecasts
- Earthquake and Tsunami Services.



Transforming Data into
Actionable Information

- Institutional mechanisms
- Decision Support Systems
- Tailor-made Services.



Community Outreach &
Feedback

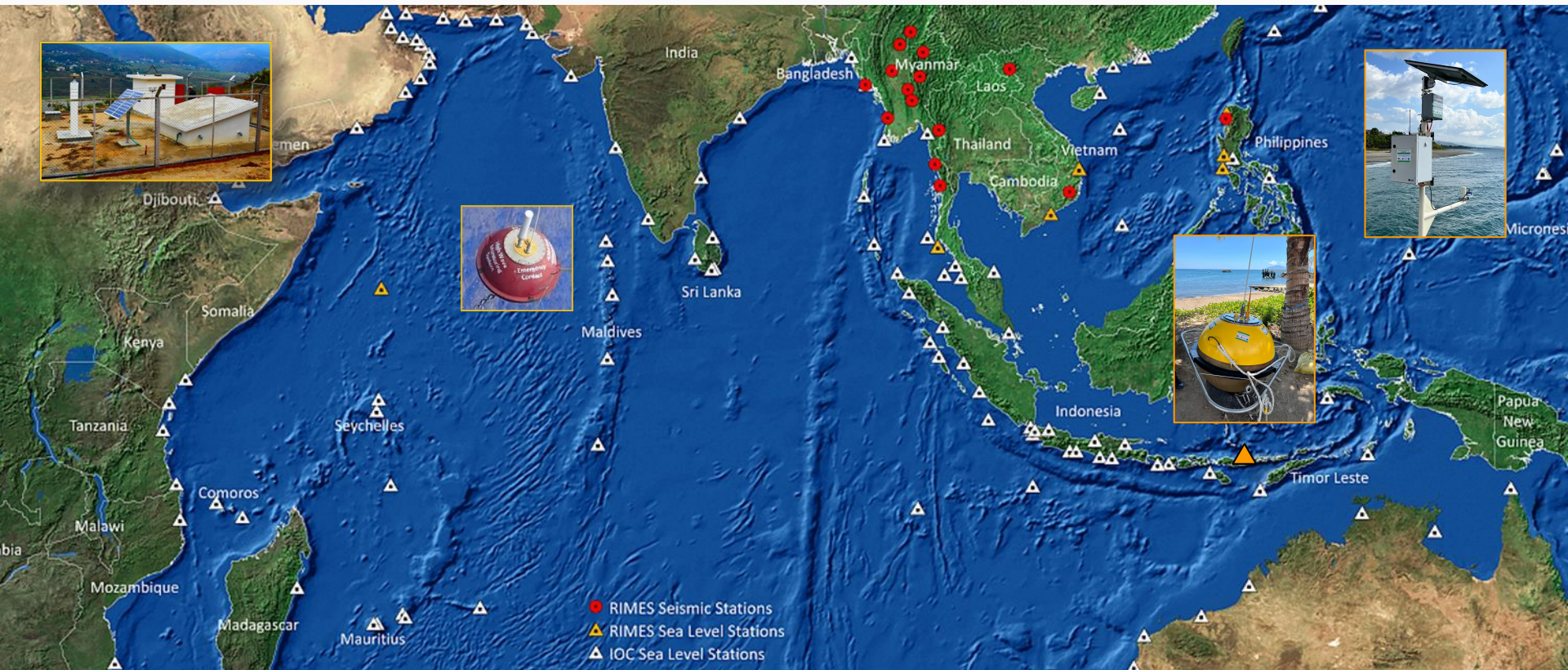
- Community Outreach
- Pilot Demonstrations on E2E EWS



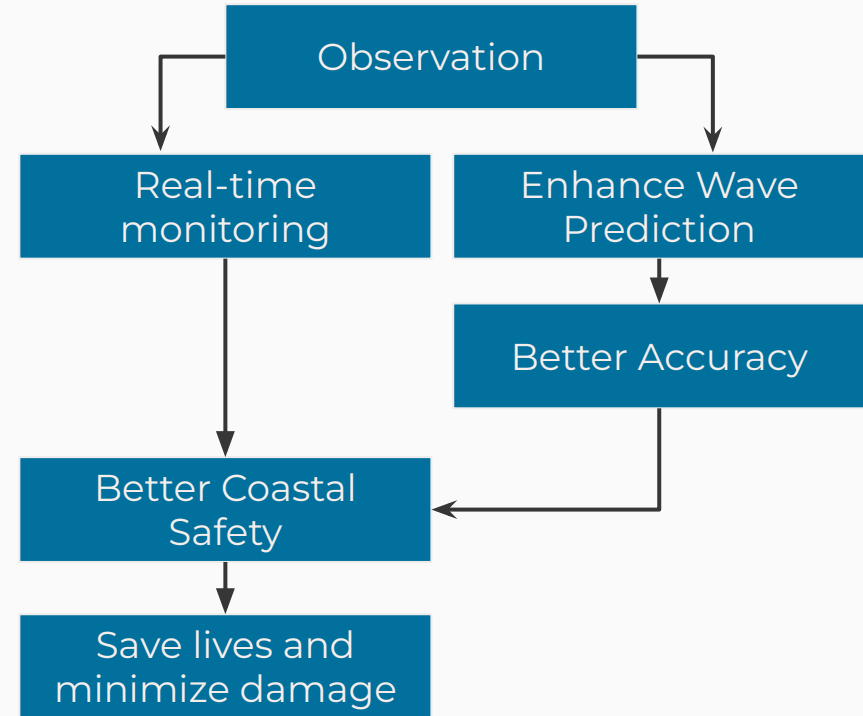
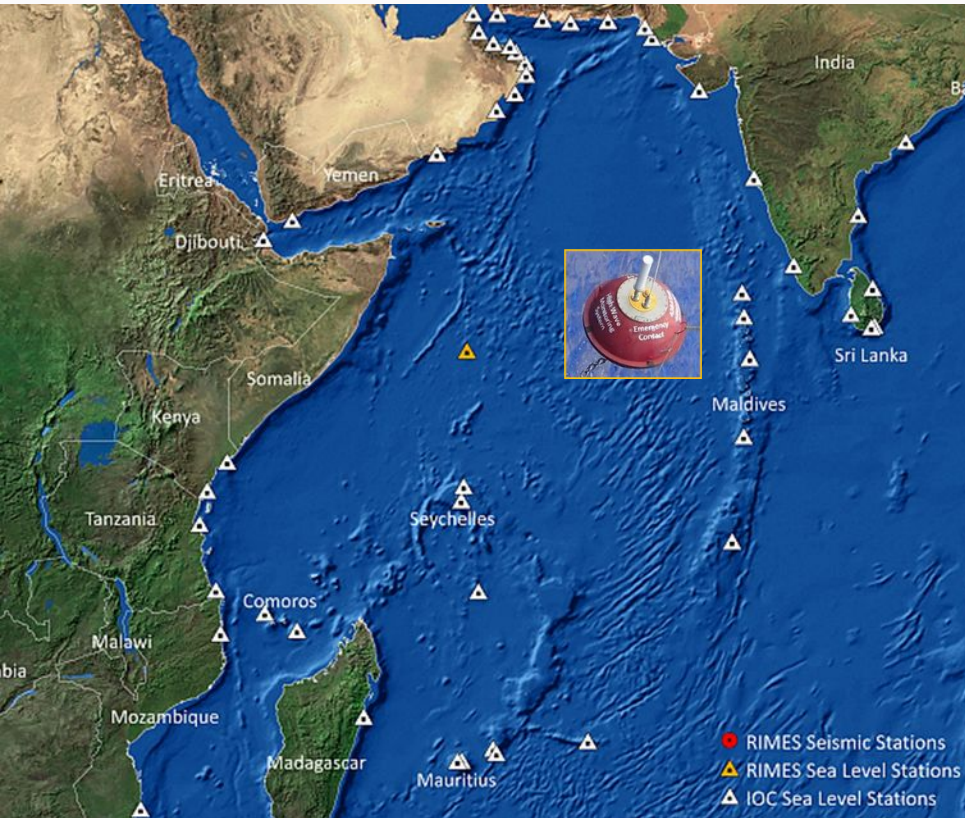
Capacity Building,
Research & Development

- Capacity building
- Applied Research
- Demand based Services

Hazard Mitigation: Improved Early Warning Systems



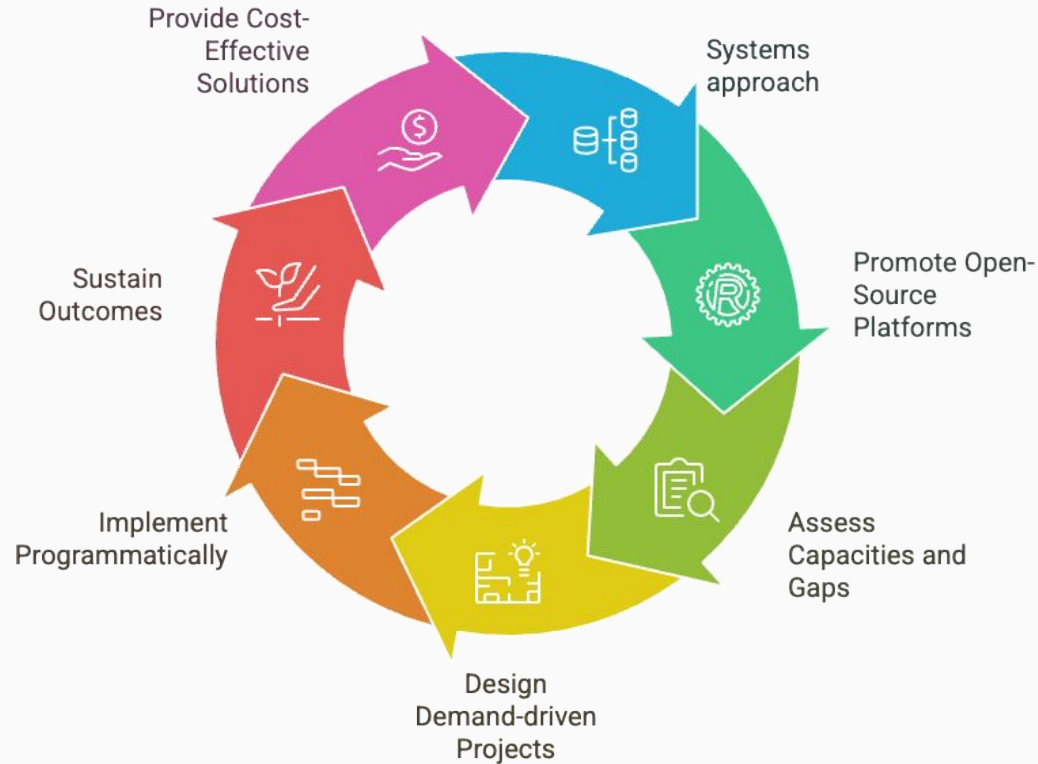
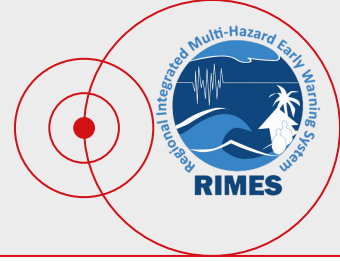
Hazard Mitigation: Improved Early Warning Systems



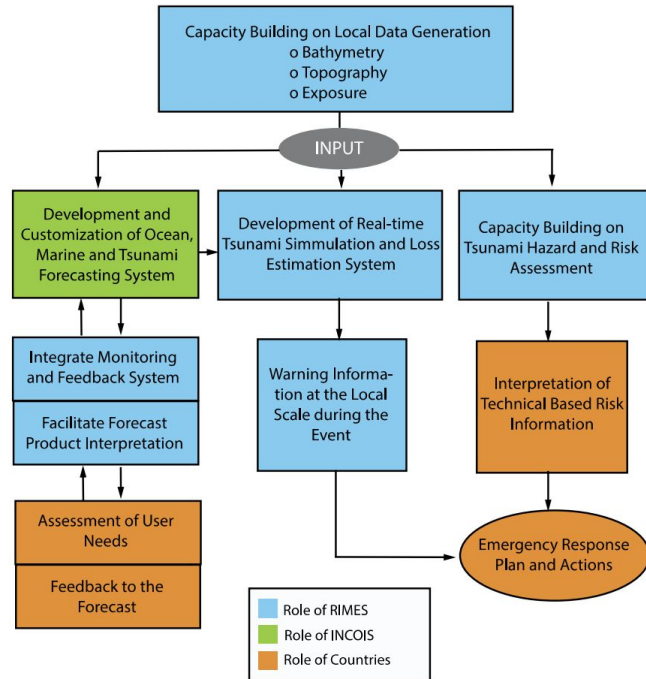
National (SMA)

Regional (INCOIS)

Sustainable implementation chain

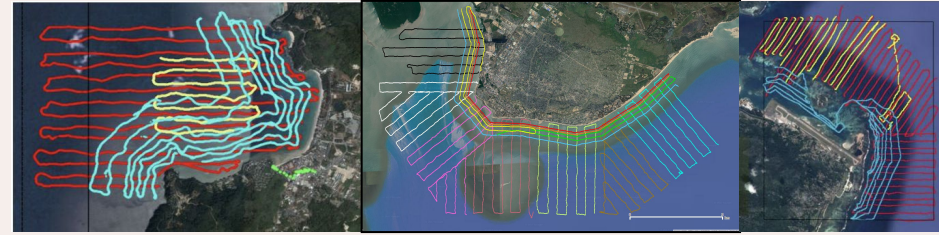


Cost-effective implementation for Ocean data enhancement for Comoros, Mozambique and Seychelles (2015)

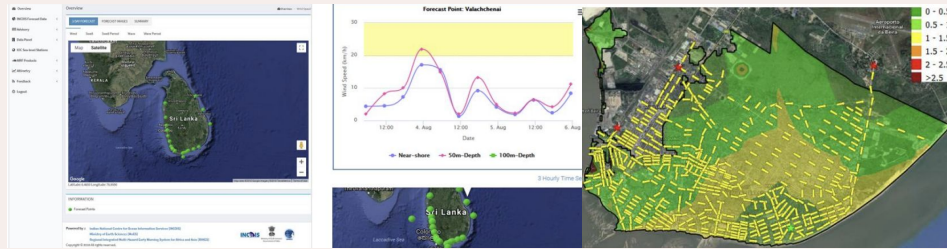


Regional Collaboration Framework

ToT and ToN on near-shore surveys and data processing



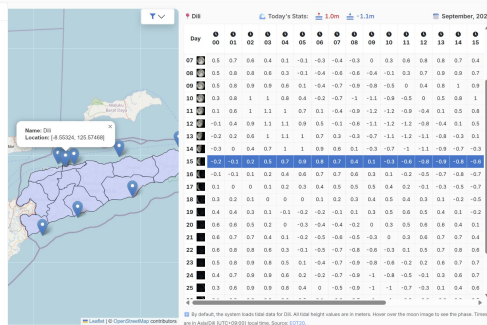
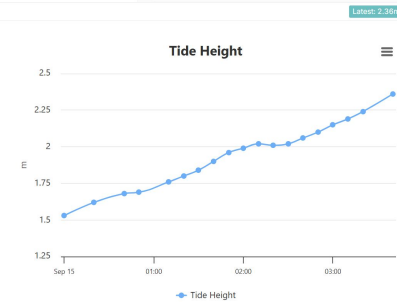
Customized ocean forecast information



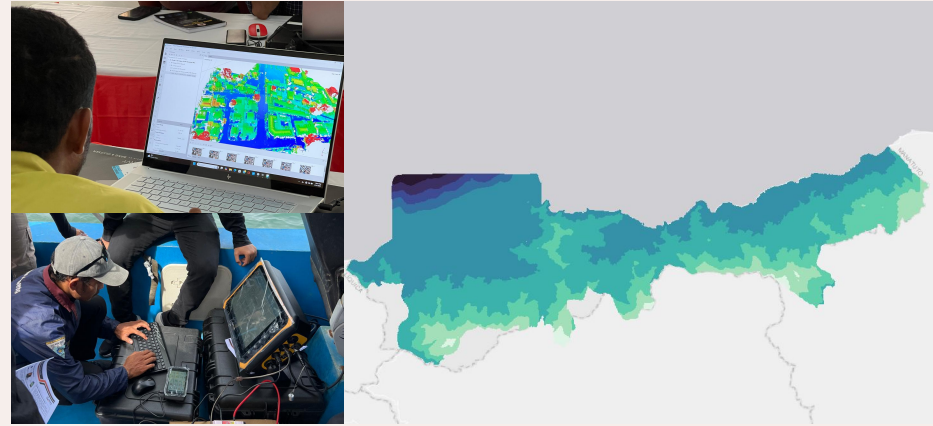
Real-time Tsunami Inundation Simulation and Loss Estimation System



Cost-effective implementation for Ocean data enhancement for Timor-Leste (2025)



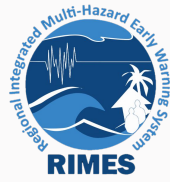
Training on near-shore surveys and DEM generation

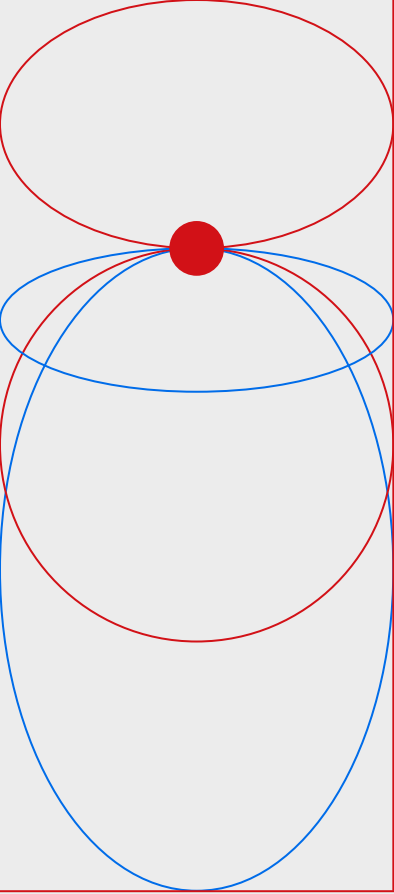


Customized ocean forecast information and capacity building for climate forecasting



RIMES's role and collaboration framework





*Thank
you*

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