



# GeoSpace-Sea

Singapore's National Marine Spatial Data Infrastructure

Maritime and Port Authority of Singapore (MPA)

IHO MSDI WG 13

9 May 2022

# GeoSpace-Sea Strategic Direction

1. Government Agencies *(in operation)*

2. Research & Education & Industry Entities

3. General Public

Contribute to national, regional and global agendas by:

- Being an authoritative source for marine coastal digital data;
- Enabling solutions to achieve SDGs and;
- Contributing to regional and global data ecosystems.



**Marine Geospatial Knowledge Hub**

# GeoSpace-Sea Community and Governance Structure



## GeoSpace-Sea Steering Committee

*Chair: MPA*

### GeoSpace-Sea Application & Research Working Group

*Chair: MPA*

### Geospatial Data Management Working Group

*Chair: MPA and SLA*

- National SDI and MSDI: A Geospatial-Powered Singapore

- Institutes of higher learnings, research institutions collaborators
- Industry collaborators
- GeoSpace-Sea end-users: government, *research, education, industry, general public*



- Singapore Geospatial Masterplan: *GeoSmart government, GeoIndustry, GeoEmpowered people*
- Operationalised an integrated MSDI and NSDI

# Maturing GeoSpace-Sea

**INCREASING PARTNERHIPS & DATA SOURCES**



Basemaps



Administrative



Physical



Ecological



Human

**GROWING NATIONAL CENTRAL MARINE & COASTAL REPOSITORY**

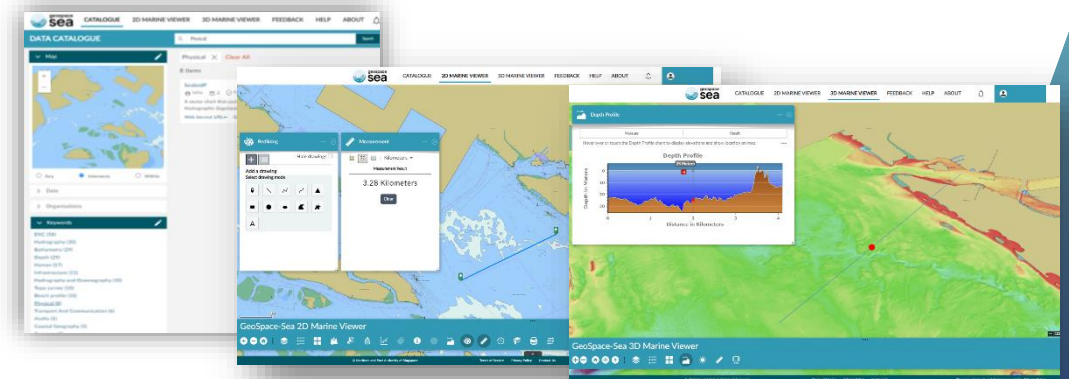
Data consolidation, standardisation, harmonisation and integration



**EXPANDING USERS & ENHANCING GEOSPACE-SEA PORTAL**

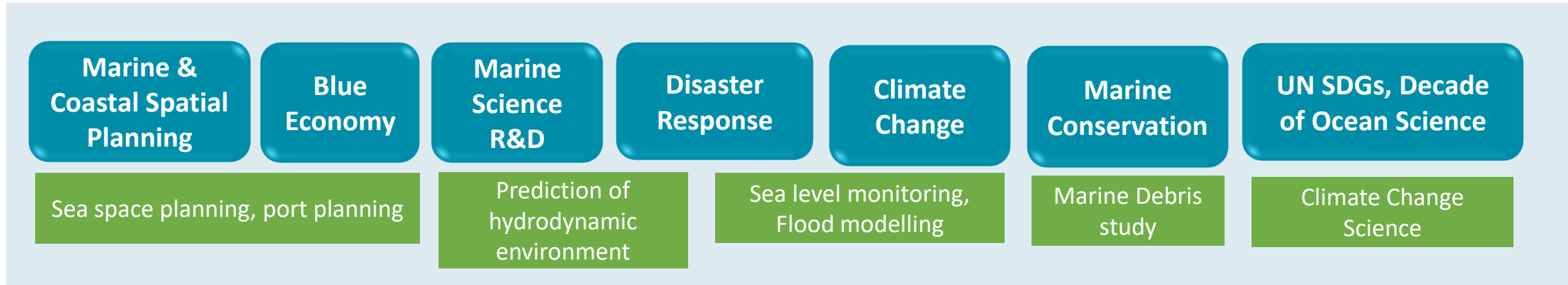


Data discoverability, access, visualisation and analysis



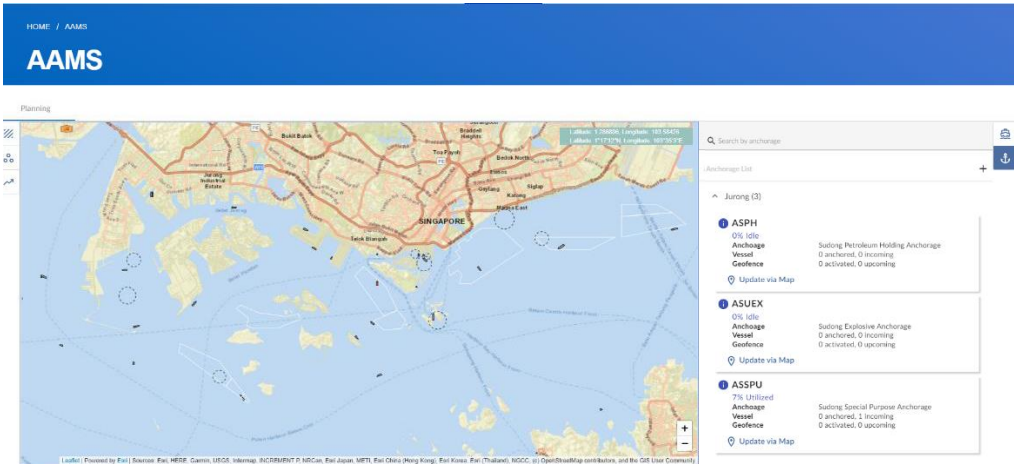
4 featured applications:  
Data Catalogue, 2D & 3D Marine Viewer,  
Data dashboard

# GeoSpace-Sea Application and Research



# GeoSpace-Sea Use-cases

## Active Anchorage Management System (AAMS) in digitalPort@SG 2.0



Lead: MPA

Optimise anchorage spaces:

- Optimization and safer utilization of anchorage spaces to support future growth of Singapore Port
- Minimizing delays and waiting time at anchorage through proactive planning, enhanced information visibility and communication among port community stakeholders
- Improving safety of vessels in anchorage via system's advanced detection capabilities

Vessel and sea data are used to plan the assignment of vessels to anchorage spaces

- E.g. Anchorage areas, bathymetry

## Coastal-Inland Flood Model

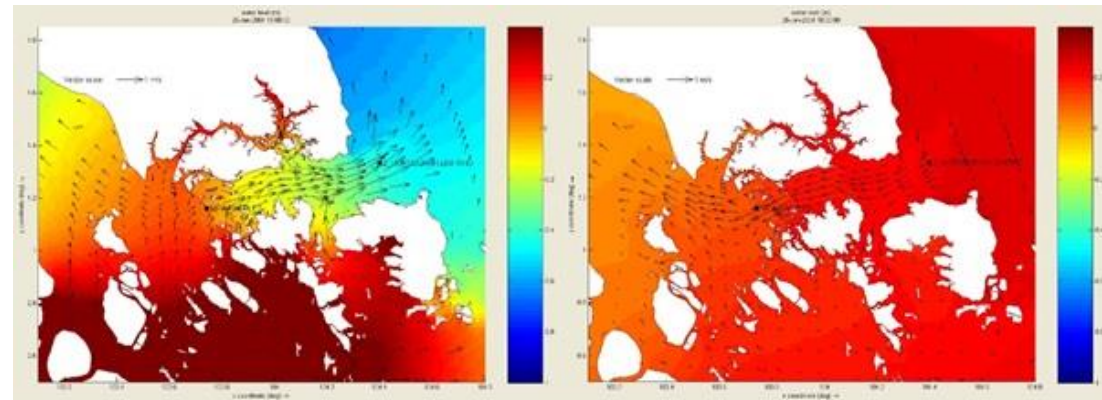
Lead: PUB

Holistic flood risk assessment

- Simulate combined effects of extreme sea levels and inland flooding caused by intense rainfall under different climate change scenarios

Hydrographic data

E.g. Tidal stream, tidal current, bathymetry



Source: PUB (Credit: National University of Singapore)

# Looking Ahead



- **Partnerships and collaborations:** GeoSpace-Sea Community, Government-Academic-Industry, Public-users and contributors



- **Operational Sustainability:** Communicating the benefits and value, pricing value-added data and services
  - ✓ Unlock the value of data with application and research
  - ✓ Literature review of costs and benefits of MSDIs and case studies
  - ✓ UN-GGIM Integrated Geospatial Information Framework Strategic Pathway 3 – Financial



- **Enhancing GeoSpace-Sea (data, metadata, standards, services, technology):** S-100 and MSDI
- **FAIR and UN Shared Guiding Principles**

Thank you



MPA  
SINGAPORE



MARITIME  
SINGAPORE