

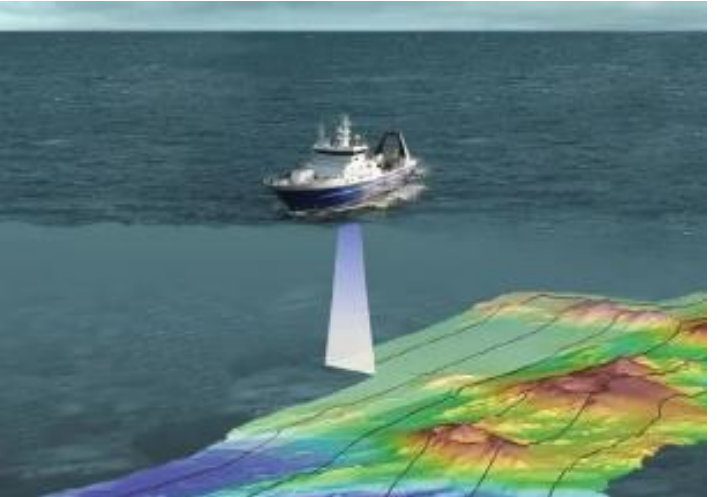
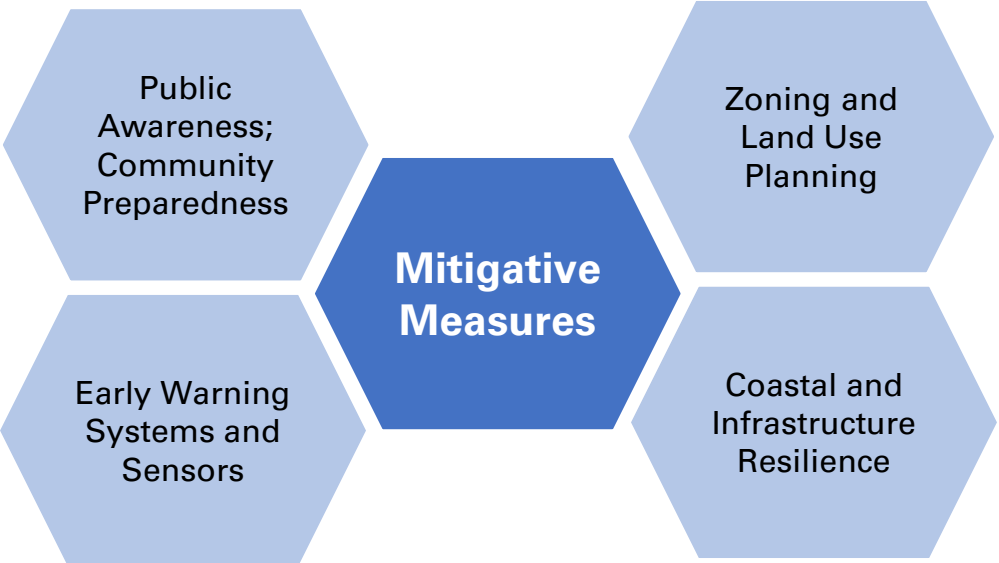
# Taking action to address climate change and natural disasters – Perspectives from the Working Group on Marine Geospatial Information

*Dr Parry Oei (Chair of the Working Group on Marine Geospatial Information)*

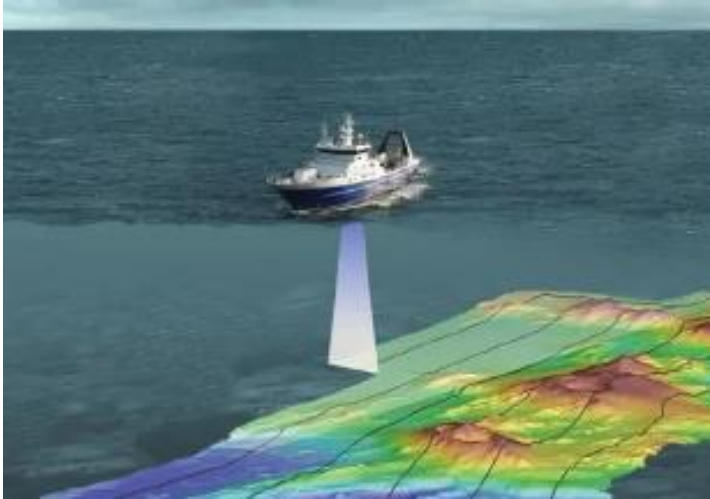
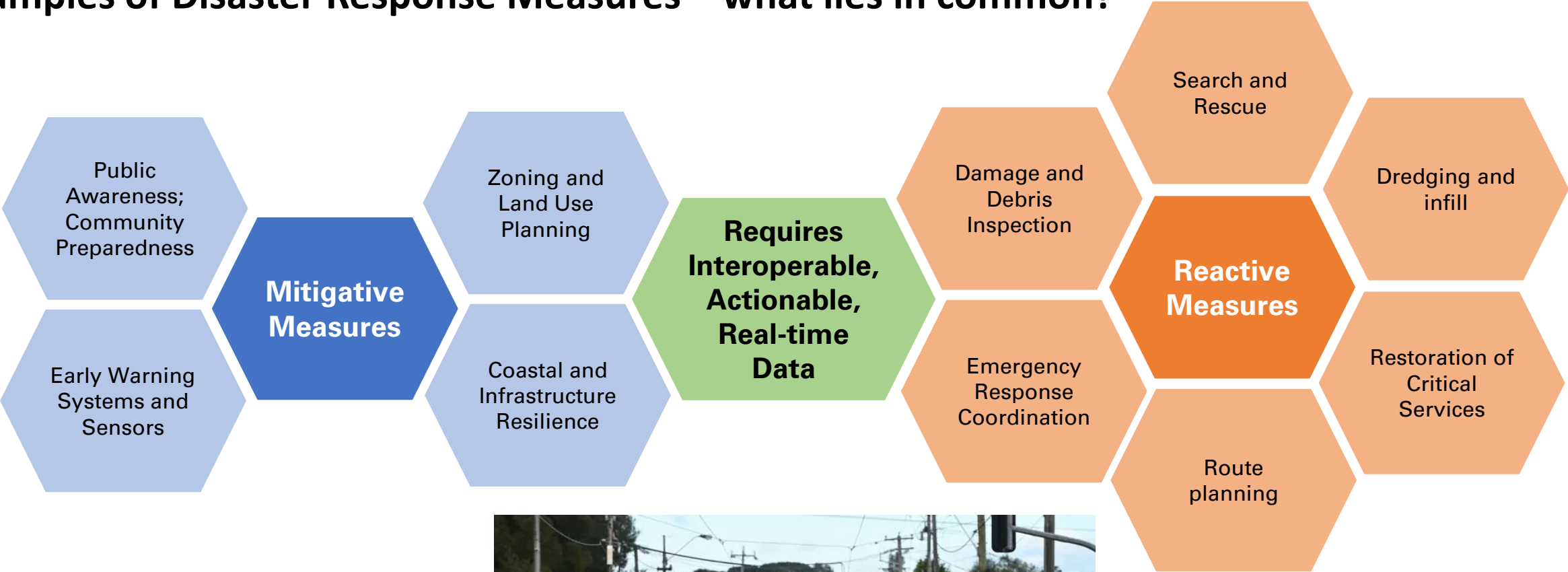
*2 Dec 2024*



# Examples of Disaster Response Measures – what lies in common?



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# International Frameworks Emphasise Data Sharing and Collaboration for Emergency Response



## IHO Resolution 1/2005 (Disaster Response Framework)

Established in response to the 2004 Indian Ocean tsunami.

Encourages coastal States to develop disaster contingency plans to, amongst others:

- Promulgate navigational warnings and necessary information to shipping through existing channels.
- Conduct hydrographic surveys where the depth is likely to have changed.
- Confirm relevant benchmarks and re-define chart datum if necessary.
- Provide nautical information as soon as practicable e.g. chart correction information and new editions of charts.

Encourages coastal States to support the Intergovernmental Oceanographic Commission Tsunami Warning Programme by exchanging near real-time sea-level data.

## UN Sendai Framework for Disaster Risk Reduction (2015-2030)

Outlines 4 priorities:

- 1) Understanding disaster risk.
- 2) Strengthening disaster risk governance to manage disaster risk.
- 3) Investing in disaster risk reduction for resilience.
- 4) Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation, and reconstruction.

Encourages the sharing of geospatial data across global, national and local levels where appropriate:

*“To promote and enhance, through international cooperation, including technology transfer, access to and the sharing and use of non-sensitive data and information, as appropriate, communications and geospatial and space-based technologies and related services; maintain and strengthen in situ and remotely-sensed earth and climate observations;...” (pg 16)*

## IMO Safety of Life at Sea (SOLAS) Convention

Adopted in 1914 in response to the Titanic disaster.

Provisions include:

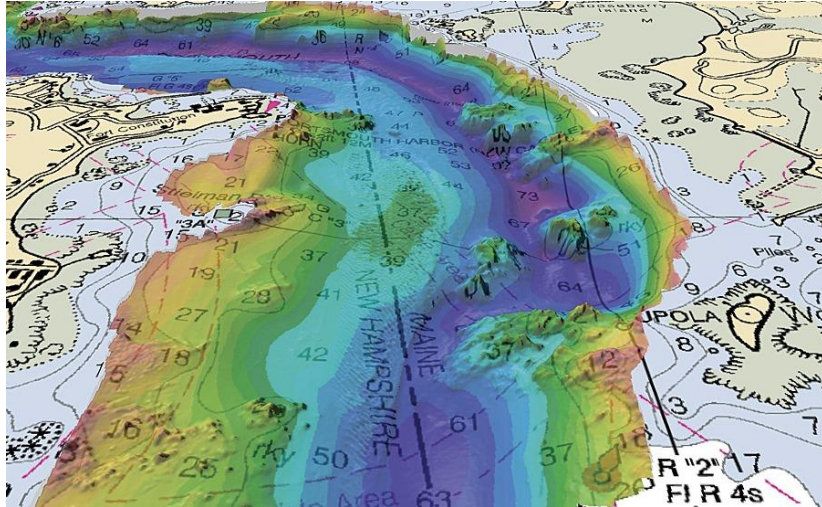
- Requires vessels to maintain safety equipment and have onboard emergency procedures, e.g. lifeboats, life jackets, emergency lighting, etc.
- Ships must be equipped with communication systems to respond to distress signals and to participate in search and rescue efforts.
- Encourages the use of IMO’s Global Maritime Distress and Safety System (GMDSS) which allows ships to quickly signal for help in the event of an emergency.



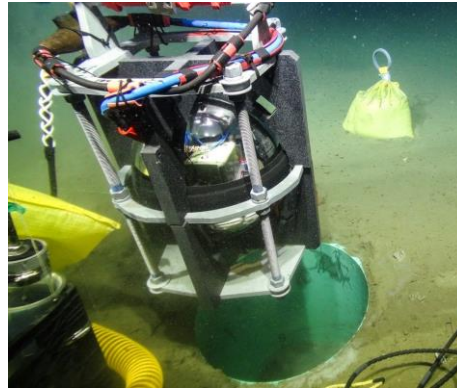
# What tools are available?

Domain integration plays a key role in response efforts to climate change and natural disasters

## 1) Base Layers



## 2) Real-time sensor network

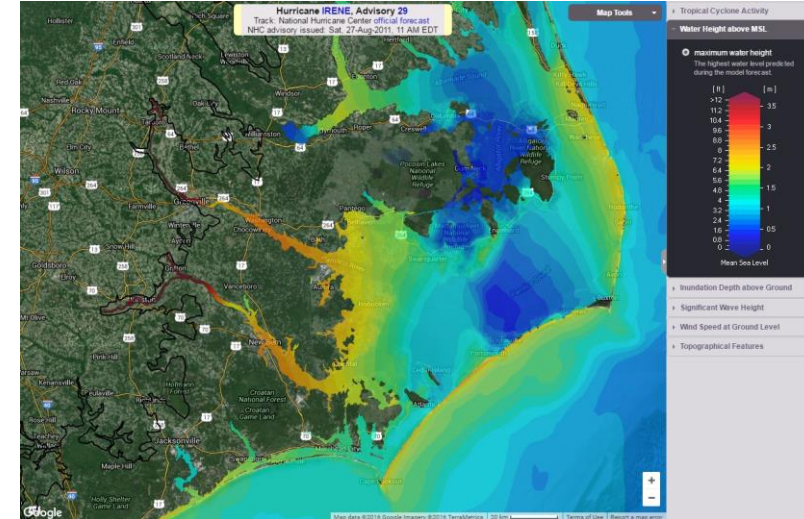


Underwater seismic meter

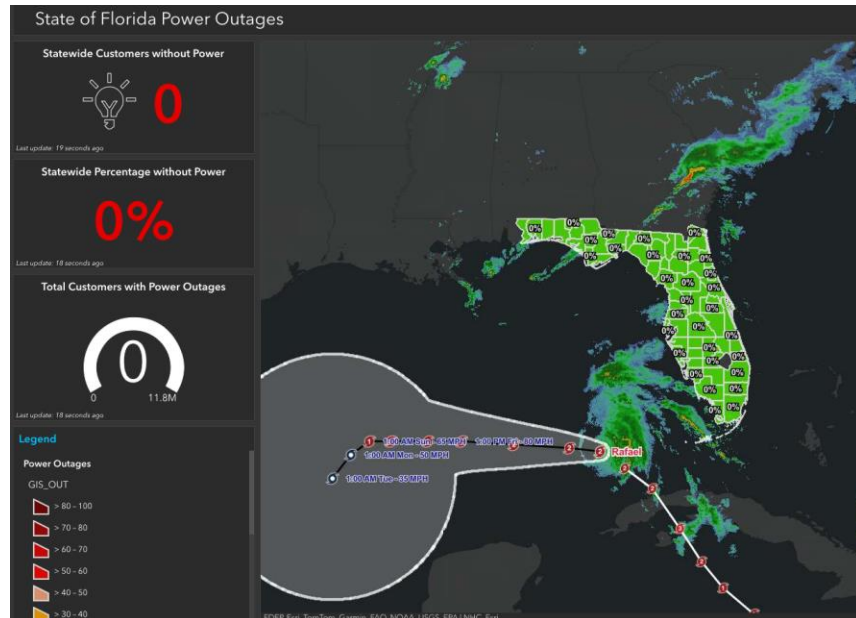


Multi-sensor buoy

## 3) Environmental Modelling



## 4) GIS Platforms for enhanced decision making



## 5) Live data feed for situational awareness



## 6) What's next - 3D Digital Twins on the cloud



# Food for Thought



- In what ways can real-world use cases in climate action and disaster response help us prioritise specific goals in land-sea integration?
- What steps can we take to ensure that land-sea integration efforts — from data collection and modeling to setting standards — are accessible and beneficial to a wide range of stakeholders?
- How can emerging technologies, e.g. AI, machine learning, and autonomous systems, accelerate land-sea integration and enhance its impact for climate and disaster resilience?

