



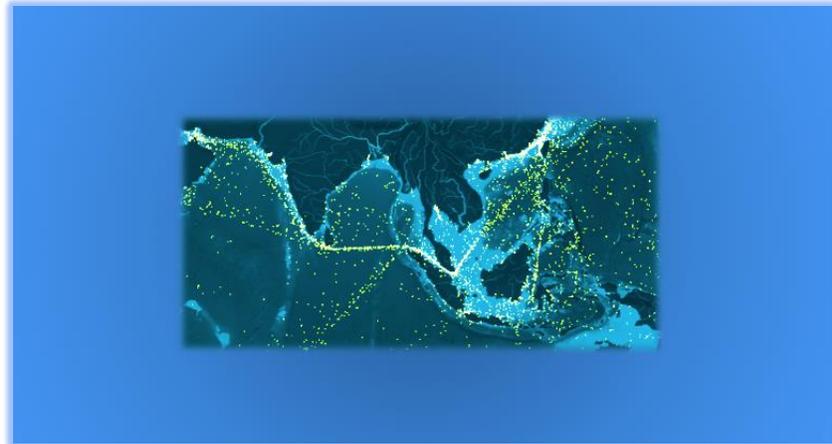
2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development



ESCAP Sustainable Business Network

Report on Parameters for Mapping under the Maritime Sector Strategies for Augmenting Tsunami Monitoring Programme¹

29 March 2021 (10:00 – 12:00)



The EGM opened with Mr. Paul Seaton of Fugro giving a presentation that highlights that only 20 per cent of the ocean is mapped. Both the moon and the surface of Mars is more extensively mapped than our own planet's sea floor. He also noted that improved mapping of coastal areas provides the information needed to model tsunami and flood inundation, more resilient infrastructure and other uses such as locating safe escape routes to higher ground. The World Bank funded mapping of Samoa was one example where greatly improved mapping was undertaken to bring into clear view coastal vulnerabilities to tsunami as well as ongoing sea-level rise. Another example, the UNDP funded mapping of Tuvalu provided additional benefits such as clear details to direct civil engineering work such as directing sewage treatment runoff, sea wall development and monitoring coastal erosion and sand loss. Improved mapping also is cost effective for coastal engineering projects. The GEBCO Seabed 2030 project that is aligned with the UN Decade of Ocean Science was noted as programme for more attention and support.

1. Actions to undertake:

- As the project calls upon maritime shipping to augment tsunami monitoring, ships can also be called upon at no additional cost to undertake bathymetric mapping of the ocean floor. This will be done through "crowd sourced bathymetry". Here, the Indonesian Geospatial Information Agency (BIG) and the Agency for Technology Assessment and Implementation (BPPT) are invited to assimilate and distribute the processed crowd sourced bathymetry data. To bring maritime shipping companies together, the ESNB Focal Point will organize a meeting on the topic.

¹ ***(Augmenting Tsunami Information Distribution Strategies)***

- Set-up a meeting with Ibu Dwikorita & BMKG colleagues, Paul Seaton, and donors to discuss coastal mapping and identify a coastal region to map. This offshore area of this region could also serve as the pilot area for augmenting tsunami monitoring.

Following Paul Seaton's presentation, Ibu Dwikorita gave a presentation on the work of BMKG as well as sharing a video on a new app that share information weather and disaster events. During the presentation, she highlighted the need for accurate and faster early warning of tsunami and more detailed mapping of tectonic regions to better arrange warning. She also noted that technology aside, efforts need to increase in the area of "tsunami ready community", which BMKG has brought in previous steering committee meetings. Though outside the focus of the EGM, UN ESCAP as a regional cooperation mechanism embraced the opportunity to invite Mr. Nathan Wood, USGS Supervisory Research Geographer, Western Geographic Science Center to give a presentation on "pedestrian evacuation modeling". His presentation feeds directly into BMKG's call for a tsunami ready community. The presentation generated great interest with both USGS and BMKG agreeing to share best practices, and USGS to providing training on pedestrian evacuation modeling.

2. Actions to undertake

- Share contacts and support collaboration as requested.

While maps in each warning center(s) can be found showing earthquake happening in real-time, when possible to build on such efforts with overlays not only of tsunami generation hotspots and support the prevailing efforts in mapping out coastal areas most at risk of tsunami to particular hotspots. Overlaying all this would be current shipping routes and current locations of ships that are part of the project. Mapping overlays will also cover stationary maritime platforms, and where undersea cables are laid and where sensors are attached.

The next session touched upon determining factors for mapping under the augmenting tsunami monitoring project. It was highlighted that tsunami generation hotspots such as tectonic zones and areas known for subsea earthquakes serve as the base with heat maps of shipping routes provided by the public and private sector. Mr. Simon Bennett, The China Navigation Co. Pte. Ltd / Swire Pacific Offshore Operations (Pte) Ltd noted that he could share heat maps of Swire shipping routes in the region. Paul Seaton noted that there is information available on stationary platform locations and other infrastructure such as wind farms. Bruce Howe stated that undersea cables are mapped and in the future the location of SMART sensors could also become available. The mapping area would include both the Pacific and Indian oceans.

3. Actions to undertake

- Identify firms, academic institutions or entities best suited to approach about developing a map;
- Find out the development cost;
- Are there existing services to “piggyback” on?
- Follow-up with Global Fishing watch that maps the location of fishing vessels in near real-time – link: <https://globalfishingwatch.org>. Under Global Fishing Watch, their map shares data about a vessel’s identity, type, location, speed, direction and more that is broadcast using the Automatic Identification System (AIS). Their Representative was unable to attend the meeting but will join future sessions.

The final session featured Mr. Vasily Titov, Senior NOAA Tsunami modeler. His work is on developing a NOAA operational tsunami forecast capability in the Pacific that ingests real time data from seismic stations, tsunami measuring buoys, and coastal water level gauges. His work generated significant interest at the meeting. He noted that even with buoys, the region is still data poor as perhaps only one or two buoys will generate data during a tsunami event at best. He noted that the project could fill the gaps.

4. Actions to undertake

- Share contacts between Vasily and Prof James Foster, and set-up discussions on how they can work together on advancing project objectives with ships and stationary platforms.

Participants list:

- **Ms. Dwikorita Karnawati**, Head of Meteorology, Climatology, and Geophysical Agency, Indonesia
- **Ms. Anni Arumsari Fitriany**, Meteorology, Climatology, and Geophysical Agency, Indonesia
- **Dr. Andi Eka Sakya**, Ministry of Research, Technology and Higher Education, Indonesia, Principal Engineer at the Agency for the Assessment and Application of Technology, Indonesia
- **Prof. Dr. Ir. Jan Sopaheluwakan**, M.Sc., Institute for Sustainable Earth and Resources, University of Indonesia (ISER-UI)
- **Other Colleagues from BKM**
- **Mr. Nathan Wood**, USGS Supervisory Research Geographer
Western Geographic Science Center: Pedestrian evacuation modeling
- **Mr. Vasily Titov**, Senior NOAA tsunami modeler, NOAA Center for Tsunami Research, Ocean Environment Research Division, Pacific Marine Environmental Laboratory
- **Mr. Tony Mosley**, Ocean Specialists Inc.

- **Professor James Foster**, University of Stuttgart
- **Professor Robert Beckman** Head, Ocean Law & Policy Programme
Centre for International Law, National University of Singapore
- **Professor Bruce Howe**, Chair of Ocean and Resources Engineering, University of Hawaii at Manoa
- **Mr. Simon Webster**, NEC EMEA for submarine cable networks and ocean observation systems
- **Mr. Paul Seaton**, Regional Director – Strategic Sales & Marketing, Fugro
- **Ms. Nora Gale**, Acting HeadCG/IOTWMS Secretariat
- **Mr. Simon Bennett**, General Manager – Sustainable Development, The China Navigation Co. Pte. Ltd / Swire Pacific Offshore Operations (Pte) Ltd
- **Mr. Minsu Jeon**, Technical Operations Manager of IALA

Observers:

- **Mr. Srinivasa Kumar Tummala**
- **Ardito Kojiat**, UNESCO IOC Philippines
- **Mr. Lawrence Anthony Dimailig**, Assistant Director for Disaster Monitoring & Analysis
ASEAN AHA Centre

UN ESCAP Secretariat:

- **Mr. Marc Proksch**, Chief Business and Development Section, Trade Investment and Innovation Division of UN ESCAP
- **Mr. Eric Roeder**, ESNB Focal Point on Disaster and Climate Risk Reduction, Trade Investment and Innovation Division
- **Mr. Sooyeob Kim**, Economic Affairs Officer, UN ESCAP Transport Division, Sustainable Maritime Transport
- **Ms. Ingrid Dispert**, Programme Officer, ICT and Disaster Risk Reduction Division