ICG/IOTWMS Scientific Tsunami Hazard Assessment of the Makran Subduction Zone

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Terms-of-Reference

1. Draft an agreement document for real-time exchange between Member States of seismic/sea-level/GNSS data in the Makran Subduction Zone (MSZ)

2. Specify optimal number and configuration of seismic/sea-level/GNSS and other observing networks needed for real-time tsunami warning in the MSZ

3. Investigate and report on the credible maximum earthquake magnitude in the Makran Subduction Zone and define a strategy to develop a unified hazard map

4. Investigate and report on the seismicity of the Makran subduction zone as well as the potential impact of tsunamis in the Red Sea and Persian Gulf with a view to including those zones in the IOTWMS Area of Service if there is a threat

5. Review and report on the status of research into modelling of secondary non-seismic effects tsunamis in Makran for potential use in the IOTWMS

Members of the Task Team will include representatives of the 3 TSPs (Australia, India, Indonesia), WG-NWIO Member States (India, Iran, Oman, Pakistan, United Arab Emirates, Yemen) and Observers from international institutions involved in research of MSZ (GFZ, GTM, UNESCAP, etc.)

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Members

- Acting Chair: Dr. Abdolmajid Naderi Beni (Iran) (former chair Dr. Juma Said Al-Maskari (Oman) no longer available)
- Mr. Ch Patanjali Kumar (India)
- Dr. Issa Elhussain (Oman)
- Ms. Noura Al-Kaabi (Oman)
- Mr. Ameer Hyder (Pakistan)
- Mr. Tariq Ibrahim (Pakistan)
- Mr. Khalifa Alebri (UAE)
- TSP-Australia Representative / Expert Modeller - tba
- TSP-Indonesia Representative / Expert Modeller - tba
- Representative of Yemen - tba

Invited Experts

- Dr. Stefano Lorito (GMT)
- Dr. Andrey Babeyko (GFZ)

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Makran Source Zone Science Strengthening Tsunami Warning & Preparedness
Hybrid Workshop, Abu Dhabi, UAE, 14-16 November 2022

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Summary of Achievements:

1. Greater understanding of the tsunami hazard in the region, including Arabian Sea, Persian Gulf, and Red Sea

2. Scientists at GFZ, INGV, and INCOIS with the help of the UNESCAP funded project "Strengthening Tsunami Warning in the North-West Indian Ocean Through Regional Cooperation" has helped to deliver a Probabilistic Tsunami Hazard Assessment (PTHA) V1.0 for the region.

3. Results from PTHA V1.0 to be made available through INCOIS, India

4. Modelling undertaken for the PTHA V1.0 indicates tsunami hazard possible in Persian Gulf and Red Sea with wave amplitudes >0.5m threshold for TSPs providing threat advice

5. Some bilateral exchange of data arrangements have been made (eg between Pakistan and Oman) helping to improve access to key data (seismic and sea level) required for early tsunami warning and hazard assessment

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Summary of Challenges and Gaps:

1. PTHA V2.0 required as next step, to include where possible secondary effects such as splay faulting, submarine landslides, etc

2. More paleo-tsunami work required to verify if western MSZ is locked and less of a potential tsunami threat to the region.

3. More bilateral data exchange agreements are required to ensure required access to information across the region required for enhancing and underpinning tsunami early warning and hazard awareness for at-risk coastal communities across the region

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Recommendations to ICG to address gaps and challenges and overall future work programme:

1. Task Team to continue its important work in next inter-sessional period to help better understand the tsunami hazard in the region to help further enhance tsunami early warnings and hazard assessments

2. Terms-of-Reference need to be slightly reduced to reflect achievements made so far

3. New chair and vice-chair need to be appointed due to other commitments of existing

4. Membership to be expanded wherever possible.

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