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Provisional Timetable and Annotated Agenda

TOWS-WG Task Team on Tsunami Watch Operations

21-22 February 2022

Current Task Team Members

| Name | Country | Organization | IOC System |
|-------------------------|-----------|--|------------|
| Charles McCreery, Chair | USA | Pacific Tsunami Warning Center | PTWS |
| Yuji Nishimae | Japan | Japan Meteorological Agency | PTWS |
| Francois Schindel  | France | Centre d'alerte aux Tsunamis | NEAMTWS |
| Fernando Carrilho | Portugal | Portuguese Sea and Atmosphere Institute | NEAMTWS |
| Elizabeth Vanacore | USA | Puerto Rico Seismic Network | CARIBE-EWS |
| Wilfried Strauch | Nicaragua | Central American Tsunami Advisory Centre | CARIBE-EWS |
| Mohammad Mokhtari | Iran | International Inst. of Seismology and Earthquake Engineering | IOTWMS |
| Pattabhi Rama Rao Eluri | India | Indian National Centre for Ocean Information Services | IOTWMS |

Future Task Team Members (post Feb22 meeting)

| Name | Country | Organization | IOC System |
|-----------------------------|---------|--|------------|
| Yuji Nishimae, Future Chair | Japan | Japan Meteorological Agency | PTWS |
| Dakui Wang | China | National Marine Environmental Forecasting Centre (NMEFC) | PTWS |
| Helene Hebert | France | Centre d'alerte aux Tsunamis | NEAMTWS |
| Alessio Piatanesi | Italy | National Institute of Geophysics and Volcanology | NEAMTWS |
| Elizabeth Vanacore | USA | Puerto Rico Seismic Network | CARIBE-EWS |
| Charles McCreery, Chair | USA | Pacific Tsunami Warning Center | CARIBE-EWS |
| Mohammad Mokhtari | Iran | International Inst. of Seismology and Earthquake Engineering | IOTWMS |
| Pattabhi Rama Rao Eluri | India | Indian National Centre for Ocean Information Services | IOTWMS |

Day 1: Monday, February 21, 2021, 0700 - 1330 UTC

France/Italy 0800-1430, Iran 1030-1700, India 1230-1800, China 1500-2130, Japan 1600-2230, Australia 1800-0030(+1),

Hawaii (-1)2100-0330, Puerto Rico 0300-0930

| Item | UTC | Topic | Reference | Lead |
|--|-------------|---|--|--|
| TT TWO and TT DMP Joint Opening Session (Chair Chip McCreery) | | | | |
| J1 | 0700 - 0715 | Welcome & Introductions | | Head TSU (a.i.), TT Chairs |
| J2 | 0715- 0730 | Atypical tsunamis | | Francois Schindele |
| J3 | 0730 - 0830 | Wave exercises and significant tsunami events in each ICG (share outcomes, lessons learned) | | Joint presentations by TT reps each ICG |
| | 0830 - 0845 | <i>Break</i> | | |
| TT TWO Separate Session | | | | |
| 1 | 0845 - 0900 | Session organization Logistics, participants, agenda | | Chip McCreery, Secretariat |
| 2 | 0900 - 0930 | Review ToRs and Action Items | TOWS-WG XIV Report, Annex IV, p15 | Secretariat |
| 3 | 0930 - 1030 | Tsunami Watch Operations status and plans in all ICGs, including impacts of COVID on operations (15 mins each max) | | TSP rep each ICG |
| | 1030 - 1045 | <i>Break</i> | | |
| 4 | 1100 - 1115 | Products for Maritime Community | TOWS-WG, 13th Meeting Report, Annex IV, p10 | Pattabhi Rao Eluri |
| 5 | 1115 - 1130 | Updates to Area of Coverage and ESZ Maps of the ICGs | TOWS-WG, 13th Meeting Report, Annex IV, p9 | Chip McCreery, Secretariat, |
| 6 | 1130 - 1200 | Seismic and sea level monitoring: - Requirements - Survey - Status - New technologies | | Chip McCreery, Secretariat, Boris Kelly-Gerreyn (TBC) |
| 7 | 1200 - 1230 | ITU/WMO/UNESCO-IOC Joint Task Force (JTF) on SMART subsea cable systems | IOC-XXVII/Dec.5.1.1. & IOC-XXVIII/ Dec.8.2. | Bruce Howe Chair JTF |
| 8 | 1230 - 1245 | Detecting tsunami waves from acoustic gravity waves | | Usama Kadri |
| 9 | 1245 - 1300 | Timely and free exchange of seismic & sea level data | | Secretariat |
| 10 | 1300 - 1330 | Planning for the Ocean Decade: Meeting objective of more timely and accurate tsunami warnings | TOWS-WG, 13 th Meeting Report, Annex III, p4 Annex IV, p8 TOWS-WG, 14 th Meeting Report, Annex II p1 | Chip McCreery |
| | 1330 | <i>End of Day 1</i> | | |

Day 2: Tuesday, February 22, 2021, 0700 - 1300 UTC

France/Italy 0800-1400, Iran 1030-1630, India 1230-1730, China 1500-2100, Japan 1600-2200, Australia 1800-0000,

Hawaii (-1)2100-0300, 2100 Puerto Rico 0300-0900

| Item | UTC | Topic | Reference | Lead |
|--|-------------|--|--|--|
| Joint Session TT TWO and TT DMP (Chair David Coetzee) | | | | |
| J4 | 0700 – 0730 | Global KPIs | | SJ McCurrach (video) |
| J5 | 0730 - 0800 | Local source SOPs - Best practice for warning & response - Training | | ICG reps |
| J6 | 0800 - 0815 | Training competencies | | Laura Kong |
| J7 | 0815 - 0830 | Tsunami Glossary update | | Laura Kong |
| | 0830 - 0845 | <i>Break</i> | | |
| J8 | 0845 – 0900 | IUGG update | | Laura Kong |
| J9 | 0900 - 0945 | Planning for Ocean Decade - Science Committee progress and plans - TT support & work plans - MHEWS | TOWS-WG, 13th Meeting Report, Annex III, p4 Annex IV, p8 TOWS-WG, 14 th Meeting Report, Annex II, p1 | Srinivas Kumar, David Coetzee, Christa von Hillebrandt-Andrade, Denis Chang, TT Chairs |
| J10 | 0945 - 1000 | Planning for WTAD 2022: Theme - Access to Multi-Hazard Warning Systems and Disaster Risk Information and Assessments | | David Coetzee, Rosalind Cook (TBC), Christa von Hillebrandt-Andrade, |
| J11 | 1000 - 1015 | Planning for next Symposium | | Francois Schindele |
| | 1015 - 1030 | <i>Break</i> | | |
| TT TWO Separate Session (cont) | | | | |
| 11 | 1030 - 1130 | Discuss outcomes of the joint meeting with TT DMP | | All |
| 12 | 1130 - 1145 | Implementing CAP for tsunami advice and warnings | | Secretariat |
| 13 | 1145 - 1200 | Other Business | | Chip McCreery, Secretariat |
| 14 | 1200 - 1230 | Update to the Global Services Definition Document | TOWS-WG, 13th Meeting Report, Annex IV, p11 | Francois Schindel  |
| 15 | 1230 - 1300 | Develop TT TWO Work Plan | | Chip McCreery, Secretariat, All, including new members post Feb2022 |
| | 1300 | <i>End of Day 2</i> | | |



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ANNOTATED PROVISIONAL AGENDA

Meeting of TOWS-WG Task Team on Tsunami Watch Operations (TT TWO)

21 – 22 February 2022 (online)

OPENING and 1ST JOINT SESSION

**TOWS-WG TASK TEAM on TSUNAMI WATCH OPERATIONS (TT-TWO) and
TASK TEAM on DISASTER MANAGEMENT & PREPAREDNESS (TT-DMP)
(Chaired by Dr Chip McCreery)**

J1 WELCOME & INTRODUCTION

Mr Bernardo Aliaga, Head of Tsunami Unit (a.i) and Task Team Chairs, Mr David Coetzee (Task Team Disaster Management and Preparedness TT-DMP) and Mr Charles McCreery Task Team Tsunami Watch Operations TT-TWO) will welcome all participants to the joint opening session of TOWS-WG 15 Task Team meetings.

TT Chairs will then each provide the overall objectives of the two TT meetings.

J2 ATYPICAL TSUNAMIS

Mr Francois Schindele (TT-TWO) will introduce this agenda item and report on the work of the ad hoc team established under the TT-TWO reviewing the best practices for hazard assessment, monitoring and responding to atypical tsunamis

J3 WAVE EXERCISES AND SIGNIFICANT TSUNAMI EVENTS IN EACH ICG (share outcomes, lessons learned)

Dr Chip McCreery, Chair TT-TWO will invite chairs and/or representatives of Tsunami Wave Exercises from each ICG to provide a short summary (5 mins each) of recent exercises, share outcomes and lessons learnt. He will then summarise discussions concerning inter-ICG coordination of wave exercises and best practices.

Dr Chip McCreery, Chair TT-TWO will invite TSP/NTWC representatives from each ICG to provide a short summary (5-10 mins each) on significant operational events with USGS Mw \geq 6.5 and/or events that caused significant tsunamis in the inter-sessional period.

SEPARATE SESSION of the TT-TWO (Chaired by Dr Chip McCreery)

1. SESSION ORGANIZATION

- Logistics, participants, agenda

Dr Chip McCreery, Chair TT-TWO will start the TT-TWO meeting and again warmly welcome all members, observers and participants.

The Chairperson will introduce the incoming new members of TT-TWO currently participating as observers.

Mr Rick Bailey, Technical Secretary of TT-TWO will provide brief information and virtual meeting logistics.

The Chairperson will introduce the Provisional Agenda. The Group is then invited to examine and adopt the TT-TWO Provisional Agenda

2. REVIEW TORs AND ACTION ITEMS

Mr Rick Bailey will remind the meeting of the ToRs for the TT TWO. He will also discuss handling of the Recommendations and Actions.

3. TSUNAMI WATCH OPERATIONS STATUS AND PLANS IN ALL ICGs, INCLUDING IMPACTS OF COVID ON OPERATIONS (15 mins max each ICG)

The Chairperson will invite the TSP representative from each ICG to update the meeting on the status of operations in their ICG.

4. PRODUCTS FOR MARITIME COMMUNITY

The Chairperson will invite Mr Pattabhi Rama Rao Eluri to update the meeting on the status of implementation of products for the maritime community in the IOTWMS.

The Chairperson will then invite representatives from the other ICGs to update the meeting on implementation in their ICGs

5. UPDATES TO AREA OF COVERAGE AND ESZ MAPS OF THE ICGs

The Chairperson will introduce this item. He will recall the outcomes from the last TT TWO meetings on this subject. He will note since the last meeting tsunami generating earthquakes near the Sandwich Islands in the South Atlantic Ocean are not presently covered by any Area of Coverage. The meeting will discuss how to handle such scenarios in the future.

6. SEISMIC AND SEA LEVEL MONITORING:

- Requirements

The Chairperson will recall previous initiatives to qualify and quantify the tsunami warning requirements for seismic and sea level data. He will note some of the main objectives of the Ocean Decade Tsunami Programme (ODTP) are to expand existing networks coverage to meet these requirements, complemented with the identification and use of new technologies to increase the timeliness and accuracy of tsunami warnings.

- Survey

Mr Rick Bailey, Technical Secretariat for the TT-TWO will summarise feedback from TT-TWO members on the proposed survey by the WMO-IOC Data Buoy Cooperation Panel (DBCP) for TSPs and NTWCs. The survey requests information on data requirements and potential new technologies for tsunami warning in an effort to reduce costs and expand data coverage.

- Status

Mr Rick Bailey, also Head of Secretariat for the ICG/IOTWMS, will discuss plans to implement routine

monitoring of seismic and sea level data coverage for the IOTWMS.

- New technologies

Mr Rick Bailey will inform the group of the some of the new technologies being considered. He will advise the group of the Terms of Reference of the ODTP Science Committee, which will develop a 10-year Science Plan to address many of the data issues required to improve the timeliness and accuracy of tsunami warnings.

7. ITU/WMO/UNESCO-IOC JOINT TASK FORCE (JTF) ON SMART SUBSEA CABLE SYSTEMS

Dr Bruce Howe, Chair of the JTF on SMART subsea cable systems will update the meeting on the status of efforts to implement these systems. The meeting will discuss the value to tsunami warning and what steps are required to support these efforts.

8. DETECTING TSUNAMI WAVES FROM ACOUSTIC GRAVITY WAVES

Dr Usama Kadri will brief the meeting on a project examining how acoustic gravity waves may be used to detect tsunamis. The meeting will provide feedback and discuss the application for tsunami warning.

9. TIMELY AND FREE EXCHANGE OF SEISMIC & SEA LEVEL DATA

Mr Rick Bailey, Head of Secretariat for the ICG/IOTWMS, will introduce this topic and inform the meeting of recent efforts in the North-West Indian Ocean to improve data access.

10. PLANNING for the OCEAN DECADE: MEETING OBJECTIVE of MORE TIMELY and ACCURATE TSUNAMI WARNINGS

The Chairperson will introduce this item for general discussion on how the TT-TWO may contribute to the ODTP

2ND JOINT SESSION of TT TWO and TT DMP (Chaired by Mr David Coetzee)

J4. GLOBAL KPIs

Ms Sarah-Jayne McCurrach (PTWS) will report on the work of the team established in 2019 to develop a KPI framework in relation to the Sendai Framework for Disaster Risk Reduction (SFDRR) indicators.

J5. LOCAL SOURCE SOPS

Mr David Coetzee, Chair TT-DMP will ask representatives from each ICG to report on the status of implementation of local source SOPs across MS in their basins, especially for atypical tsunamis:

- Best practice for warning & response
- Training

J6. TRAINING COMPETENCIES

Dr Laura Kong will provide a report/update on training competencies and related training programmes.

J7. TSUNAMI GLOSSARY UPDATE

Dr Laura Kong will report on the status of the Tsunami Glossary and the proposal for the next update to be rescheduled to 2023.

J8. IUGG UPDATE

Dr Laura Kong will provide an update on the tsunami related activities of the IUGG (*International Union of Geodesy and Geophysics*). **IUGG** is the international organization dedicated to advancing, promoting, and communicating knowledge of the Earth system, its space environment, and the dynamical processes causing change

J9. PLANNING FOR OCEAN DECADE

- Science Committee progress and plans

Dr Srinivas Kumar, Chair Ocean Decade Tsunami Programme (ODTP) Science Committee, will report on progress and plans following their initial meeting on 17th February 2022

- Tsunami Ready Coalition

Mr David Coetzee, Chair of TT-DMP, will outline the key elements of the documentation he prepared (with comments from Bernardo Aliaga, Head of Tsunami Unit (a.i) and Alexander Frolov, Chair of TOWS WG, following the special TT DMP meeting organized in October 2021 on Tsunami Ready Coalition at the request of the Chair of the TOWS-WG. TOWS TT-DMP met in the last quarter of 2021 to consider and advise on views about the mandate, composition, and rules/procedures of a special Coalition for Tsunami Ready, as per the IOC Decision A-31/3.4.1 'Warning Mitigation Systems for Ocean Hazards' (June 2021). The documents highlight the: 1) Coalition mandate, goals and objectives; 2) Composition 3) Challenges in the functioning of the Coalition.

- Tsunamis nexus with other coastal hazards (Multi-Hazard Early Warning Systems)

Mr David Coetzee, Chair TT-DMP will invite Mrs Christa von Hillebrandt-Andrade to share efforts and a proposal from the Caribbean on Multi-Hazard Early Warning Systems (MHEWS). Dr Denis Chang will report on plans for MHEWS being implemented and developed by WMO

- TT support & work plans

Dr Chip McCreery, Chair TT-TWO, and Mr David Coetzee, Chair TT-DMP will lead discussions on the roles of the Task Teams in the ODTP.

J10 PLANNING FOR WTAD 2022 (ACCESS TO MULTI-HAZARD WARNING SYSTEMS AND DISASTER RISK INFORMATION AND ASSESSMENTS)

Mr. David Coetzee, Chair of TT-DMP will provide a summary of the discussions on Day 1 by TT-DMP on WTAD.

Mrs Rosalind Cook, UNDRR, will provide an update (based on the discussion of day 1) on WTAD 2021 and the way forward to commemorate WTAD 2022.

Mrs Christa von Hillebrandt-Andrade will provide a presentation on access to MHWES and Disaster Risk Information and Assessments.

J11. PLANNING FOR NEXT SYMPOSIUM

Mr François Schindele will present and lead the discussions on the planning for the next proposed Tsunami Symposium. The first IOC UNESCO Tsunami Symposium was held in February 2018. One of its recommendations was to repeat this kind of symposium. The goal would be to examine lessons learnt from past events and recent efforts in further developing tsunami warning and mitigation systems to enable enhanced community responses. Future needs and suggested developments will contribute to the following areas: (i) Detection and Warning; (ii) Emergency Management; (iii) Community Awareness and Preparedness; (iv) National Initiatives; and (v) International Initiatives.

The meeting will also be asked to discuss ways to incorporate more diversity in the organizing committee by inclusion of all regions, consideration of a venue that can accommodate a hybrid meeting that would enable the most people to successfully participate and engage, and exploration of funding opportunities to support diverse participation.

SEPARATE SESSION of the TT-TWO (cont) (Chaired by Dr Chip Mccreery)

11 Discuss outcomes of the joint meeting with TT DMP

The Chairperson will invite the meeting to review and reflect on the joint discussions with the TT-DMP and the outcomes.

12. Implementing CAP for tsunami advice and warnings

The Chairperson will invite each ICG to provide an update on implementation of CAP across their ICG.

Mr Rick Bailey, Technical Secretariat for the TT-TWO will inform the group of an opportunity for TSPs and NTRCs in each ICG to attend a workshop coordinated by WMO on how to implement CAP.

13. Other Business

The Chairperson will introduce any additional items for discussion as raised by the TT members during the meeting.

14. Update to the Global Services Definition Document

Dr Francois Schindele will review and discuss proposals for updating the agreed global services.

15. Develop TT TWO Work Plan

The Chairperson will invite the Secretariat to table for discussion and refinement the new actions and recommendations arising from this meeting to go to the TOWS-WG for endorsement and approval. This will help inform and develop the Task Team's work plan until the next meeting.