

UNESCO IOC ITIC SERVICES IN SUPPORT OF THE IMPLEMENTATION OF NATIONAL TSUNAMI WARNING SYSTEMS

The UNESCO IOC International Tsunami Information Centre facilitates the establishment of National Tsunami Warning Systems by providing the following services:

- Expert Consultant Teams in the areas of risk assessment, warning guidance, and mitigation, and specifically in:
 - Risk assessment, including tsunami inundation modeling and evacuation map development;
 - Warning Guidance, including seismic and sea level monitoring, data evaluation and interpretation, and warning dissemination;
 - Mitigation and Preparedness, including education and awareness programmes, structural and non-structural mitigations, and government policy and emergency management procedures.

These teams are comprised of international experts with extensive operational experience, who can provide technical advice or recommendations on the initiation or enhancement of existing programmes, and/or assist in the implementation of such programmes. These teams can also be mobilized to support the development of National Coordination Committees critical for the implementation of National Tsunami Warning Systems.

- Organization and conduct of training through its ITSU Training Programme (ITP) on Tsunamis and Tsunami Warning Systems. The ITP-Hawaii consists of a 2-3 week training held in Hawaii which provides, through example, the end-to-end system in the Pacific involving PTWC warning operations, Hawaii emergency agency responses and operations during tsunami warning, risk assessment and inundation/evacuation map development, and awareness and education activities. The ITP-Hawaii is coordinated through the East-West Center (EWC) which hosts and provides logistics support, and who can additionally provide management and leadership training to participants. The ITP-International provides in-country training on request from Member States, and typically follows an abbreviated ITP-Hawaii course outline and includes capacity assessments of the country or region. In both programmes, course content is taught by international tsunami warning system experts. Additionally, the ITIC and EWC will collaborate on the holding of special topic seminars or workshops on timely topics of interest to Member States.
- Development of and clearinghouse for the distribution of tsunami education, safety, awareness, and preparedness materials; existing materials are available for translation into local languages and/or adaptation to the local community or indigenous population. Information on existing mitigation or outreach programmes or projects can serve as models for nations which want to build new or augment existing programmes. The ITIC will actively work with Member States to realize their needs.
- Resource library of tsunami-related materials ranging from event reports, research, government documents, warning center information, and education and awareness materials in a number of languages; the ITIC librarian will assist in the research of tsunami information, or arrange further access to requested materials.

UNESCO IOC ITIC SERVICES: EXPERT TEAMS FOR CAPACITY ASSESSMENT, EXPERT CONSULTATION, AND TECHNOLOGY TRANSFER

The ITIC maintains experts that can assist Member States.

For the field of tsunami inundation modeling and evacuation map development,

- The ITIC can provide expert in-country consultations to assess a country's needs, and provide recommendations on how to best conduct the country's risk assessment.
- The ITIC on request provides coordinated training under the Tsunami Inundation and Modelling Effort (TIME) programme. Experts are available from TIME Centers in Japan, USA, Mexico, New Zealand, and Chile to support Member States. The ITIC can organize resident training programmes to any of the above expert countries to learn the method, understand its input requirements and outputs, and to permit the trainee to conduct an inundation study for their home country while in residence.

For the field of seismic and sea level monitoring, data evaluation and interpretation, and warning dissemination,

- The ITIC can provide expert in-country consultations to assess a country's needs, and provide recommendations on how to best build or enhance its monitoring and dissemination systems.
- In the field of seismology, the experts consist of representatives from the ITIC, existing warning centers such as the PTWC, WC/ATWC, JMA, France or Chile, the US Geological Survey, the IRIS Global Seismic System and Data Management Centers, and seismologists knowledgeable on the Member States' regional seismic hazard. Topics would include seismic networks and instrumentation, data collection, transmission, and archiving, seismic source characterization, and real-time operational methods and current limitations in technology and analysis. Teams would be comprised of 2-4 individuals, all of which would be knowledgeable on the above topics.
- In the field of sea level monitoring, the experts consist of representatives from the ITIC, existing warning centers (PTWC, WC/ATWC, JMA, or Chile), the IOC GLOSS and GOOS international sea level programmes, the US NOAA, and oceanographers or other researchers knowledgeable on methods for tsunamigenic potential analysis using sea level data. Topics would include sea level networks and instrumentation, data collection, transmission, and archiving, deep-ocean tsunami detection buoy engineering, and tsunami propagation and inundation modeling for operational use in warning centers. Teams would be comprised of 2-4 individuals, all of which would be knowledgeable on the above topics.
- In the field of warning dissemination, the experts consist of representatives from the ITIC, existing warning centers (PTWC, WC/ATWC, JMA, France, or Chile), the World Meteorological Organization, the NOAA, including warning communication experts from the US National Weather Service and the NESDIS Satellite Services Division, the JMA, and recognized experts or organizations from the information and communications technology which may have interests in the region. Teams would be comprised of 2-4 individuals, all of which would be knowledgeable on the above topics.

For the field of education, preparedness and awareness programmes, structural and non-structural mitigations, and government policy and emergency management procedures,

- The ITIC can provide expert in-country consultations to assess a country's needs, and provide recommendations on how to best build or enhance its programmes.
- The ITIC can provide examples and other information or literatures for nations to use as models in building or enhancing its programs.
- The ITIC has staff resources which can assist in the development of materials and/or assist Member States in developing or initiating national programmes.