



NTHMP Annual Meeting Feb 8, 2012

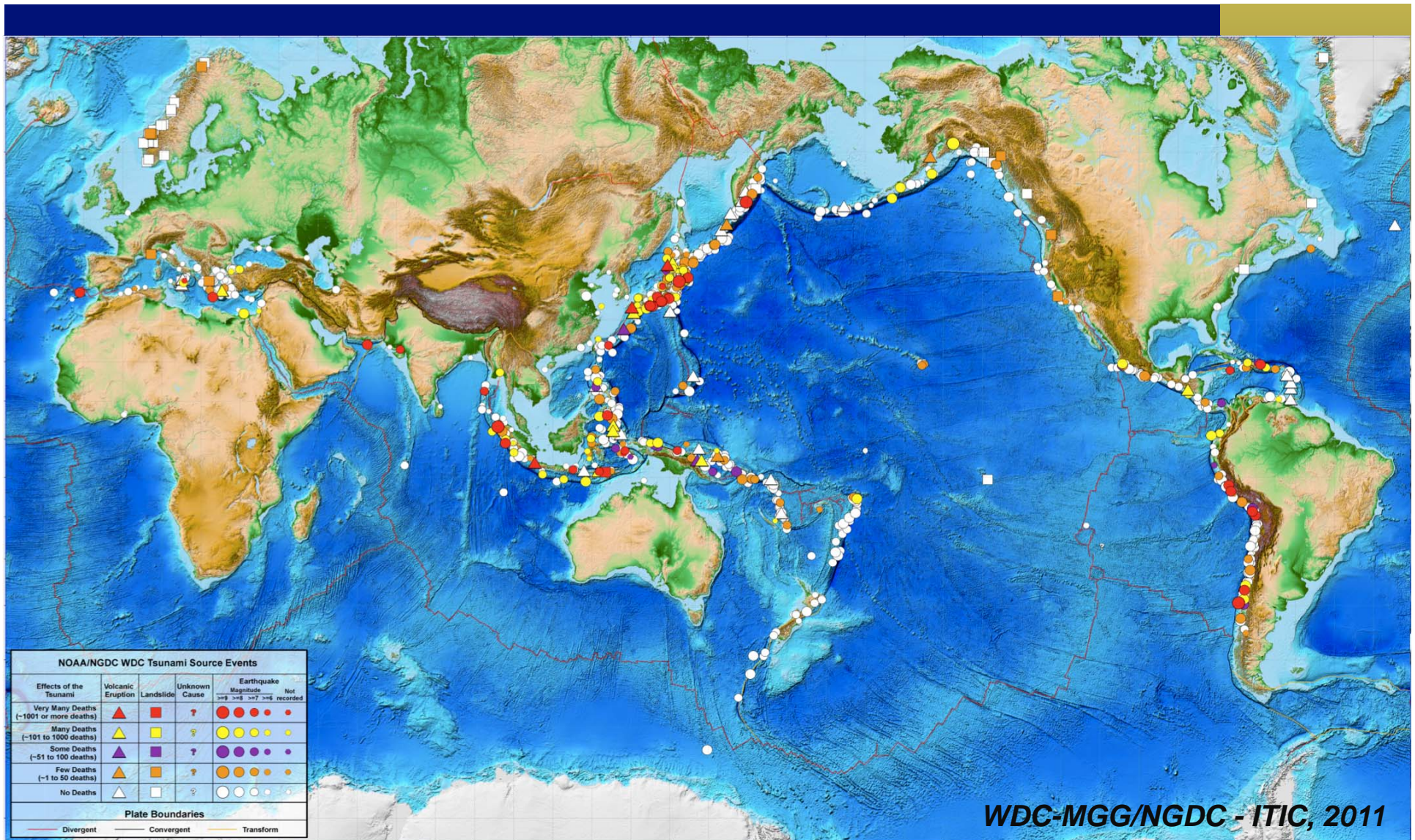
ITIC Partner Briefing



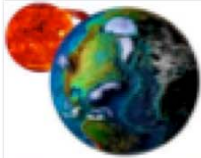
Outline



- What and Who is ITIC?
- Products – tsunami warning, historical database, awareness education
- ITIC and NTHMP

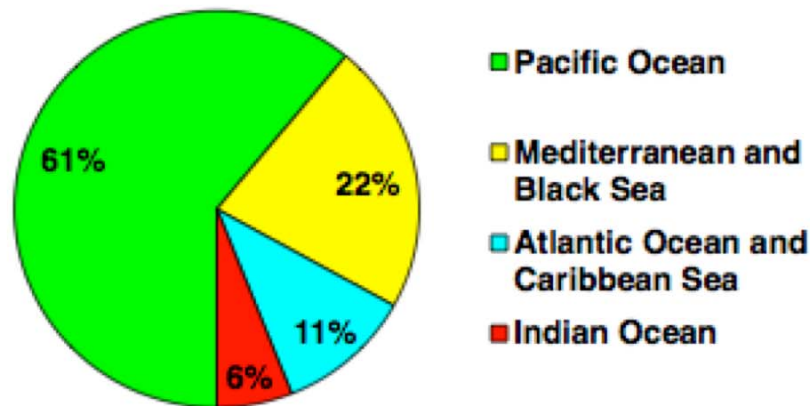


**Tsunami Sources in the world
(>2000 events from 1410 BC to 2011)**

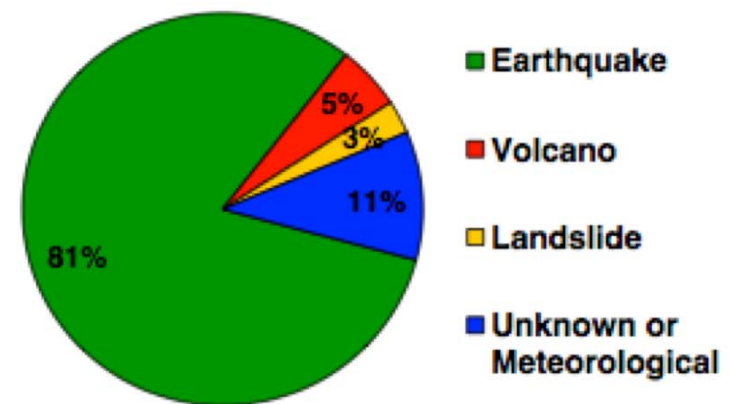


Distribution of Global Tsunamis

- **2,108 Tsunami Source Events**

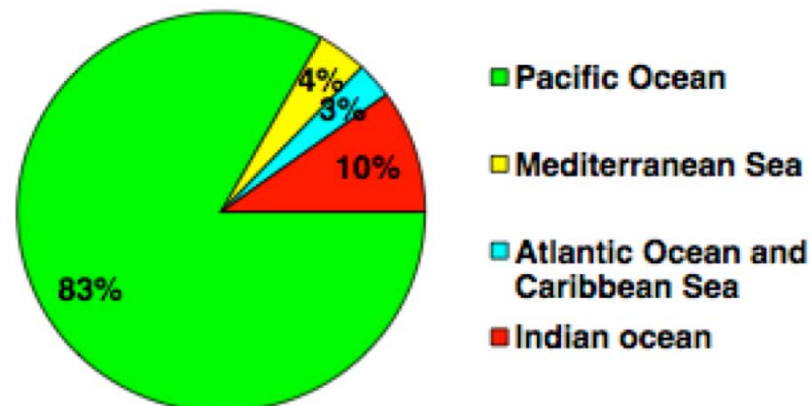


- **Cause of Tsunami**

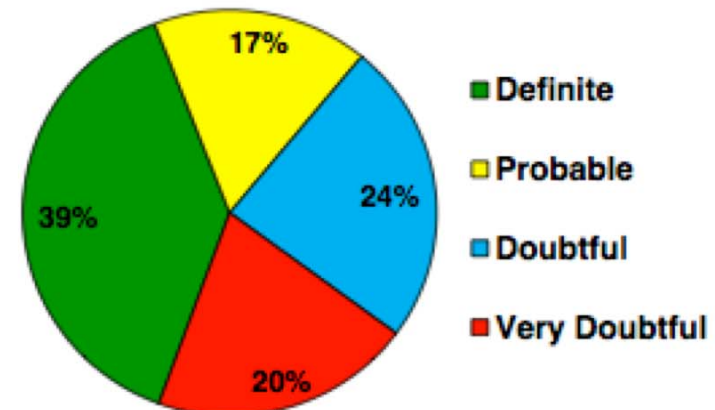


- **15,712 Tsunami Runups**

– 6% from 2004 Indian Ocean event



- **Validity of Tsunami**





US Contribution NOAA Tsunami Program

MISSION: Provide reliable tsunami forecasts and warnings, and to promote community resilience

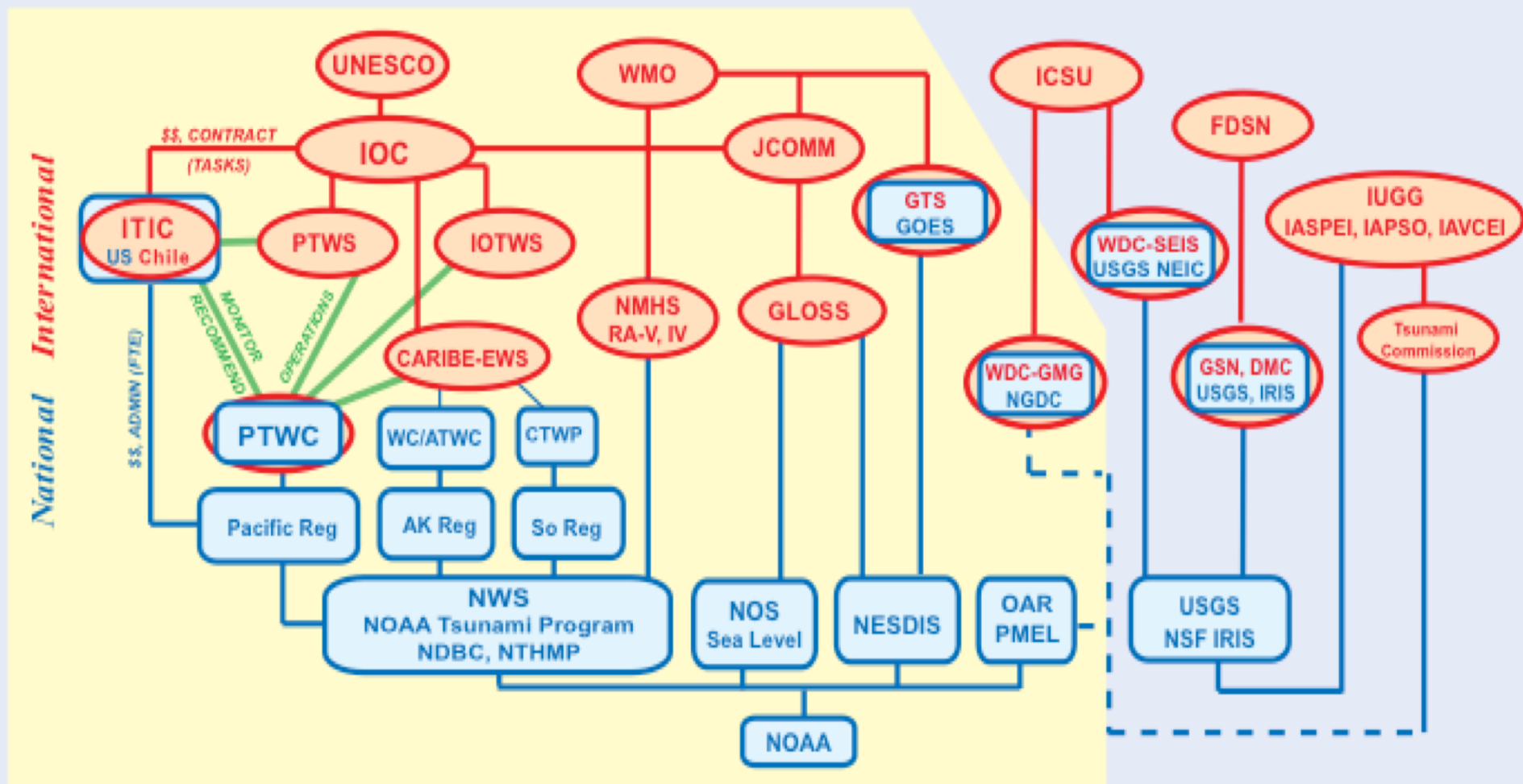
AREAS OF FOCUS:

- Hazard Assessment
- Warning Guidance
- Mitigation and Preparedness
- Research
- **International**

*Significant involvement and coordination with
NOAA offices: NWS (PTWC, ITIC, NDBC DART), NOS (sea level),
NESDIS (satellite, NGDC), and OAR (research, modelling)
USGS: NEIC, Albuquerque Seismic Lab, Menlo Park, etc*

GLOBAL TSUNAMI SYSTEM Organizational Chart

Intergovernmental / International and US agencies working on tsunamis

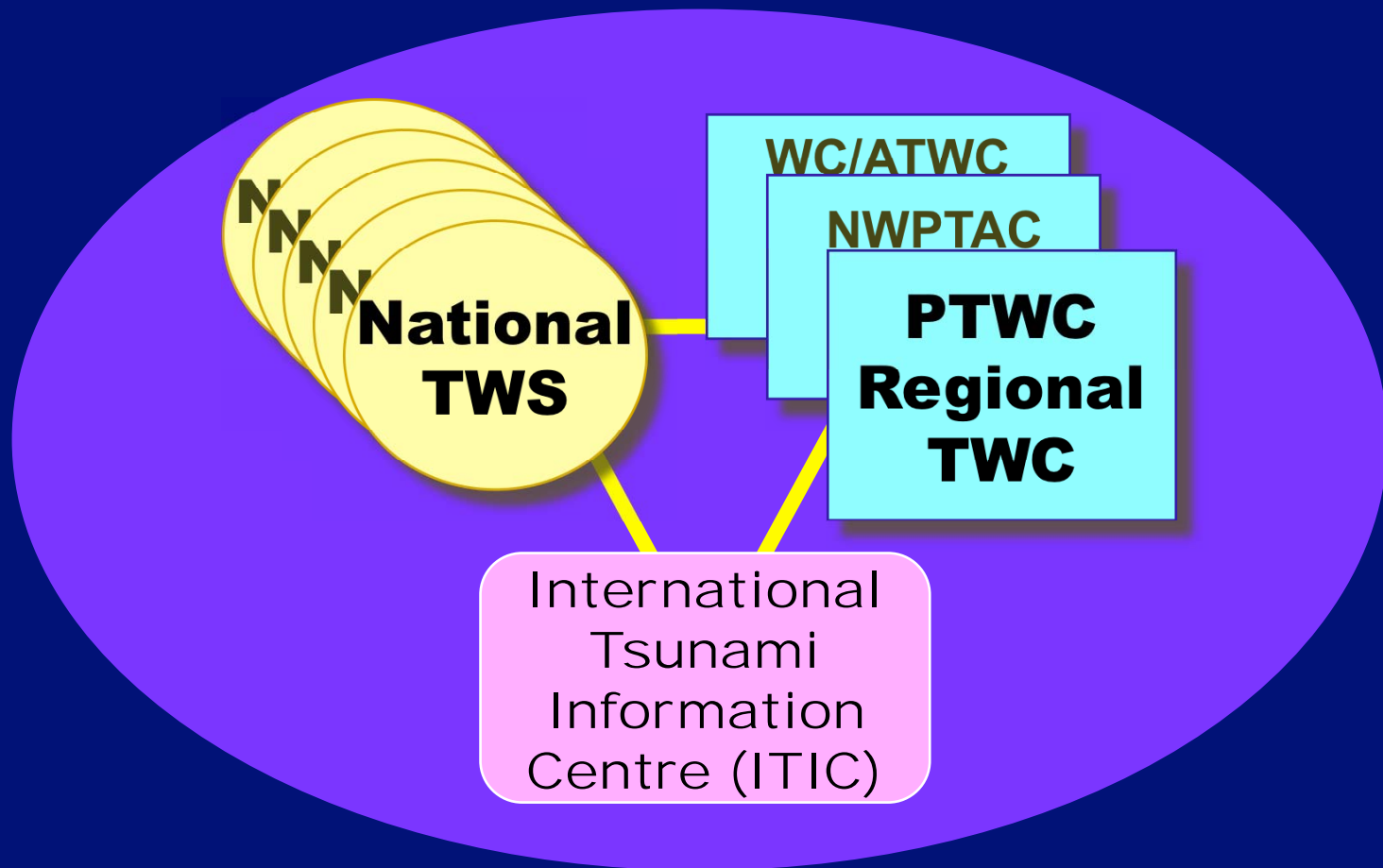




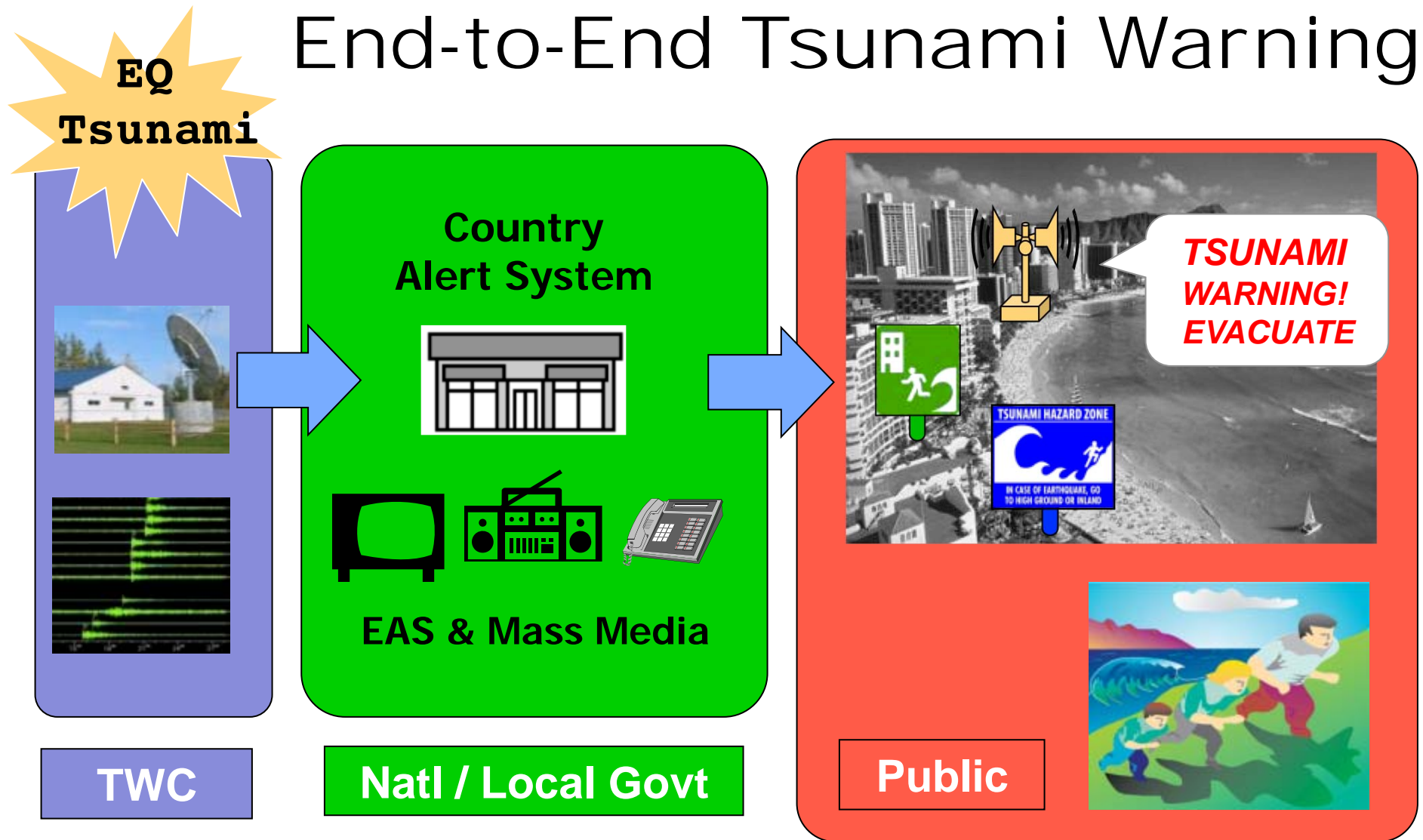
UNESCO/IOC ITIC Mandate – Functions (1977)

- ***Monitor / Recommend improvements to PTWS and other tsunami warning systems - communications, data networks, evaluations, info dissemination***
- ***Assist in establishing regional and national tsunami systems - comprehensive risk reduction***
- ***Serve as technology transfer resource; Encourage research to improve evaluations, conduct trainings to build capacity***
- ***Serve as information resource for preparedness / education; Develop, publish, and distribute materials***
- ***Serve as an information resource on historical tsunamis – database, surveys***

REGIONAL ELEMENTS (Pacific): Regional Tsunami Warning and Mitigation System



End-to-End Tsunami Warning

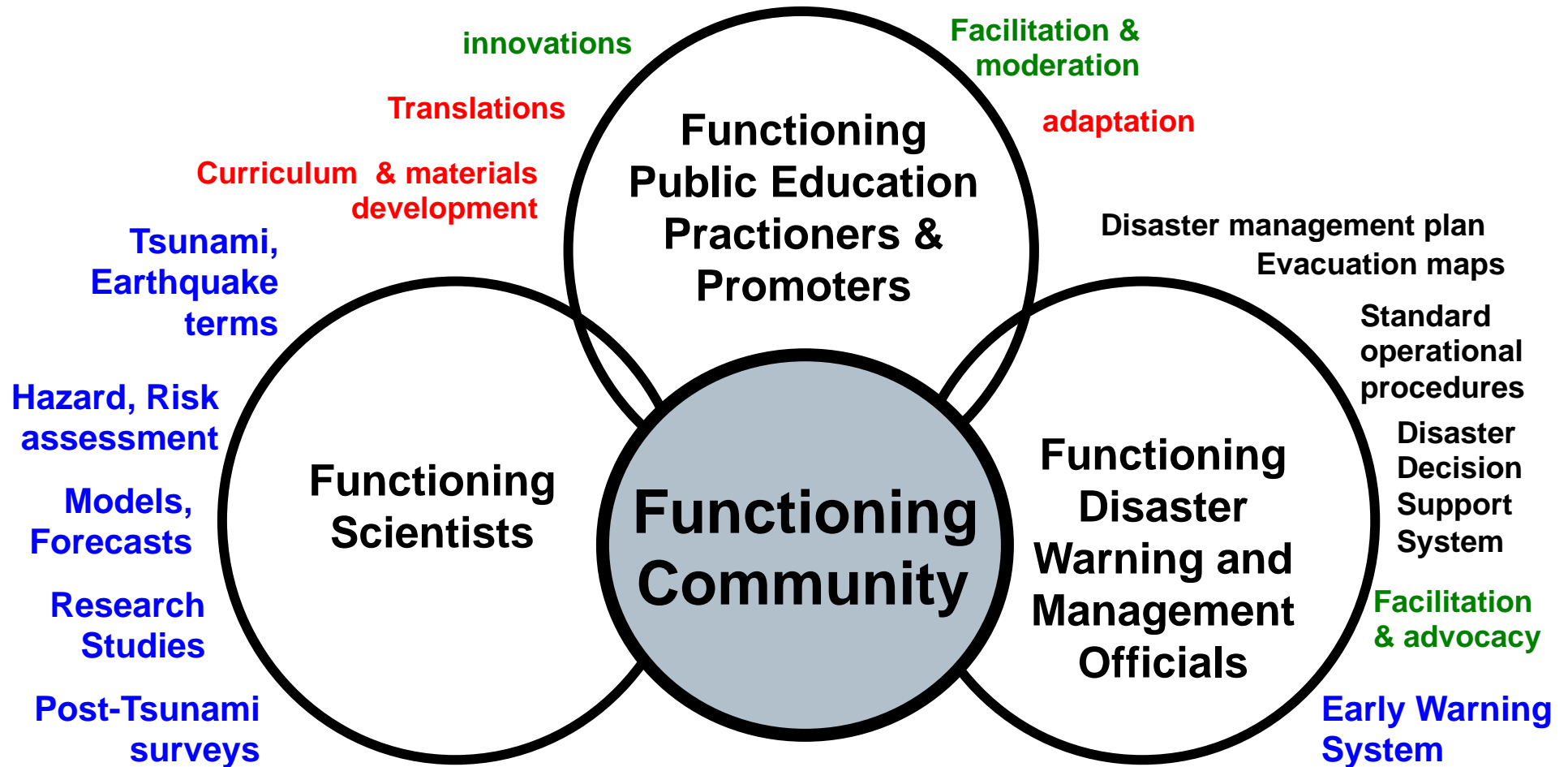


ITIC, SeismicReady Consulting, 2009



UNESCO/IOC-NOAA
International Tsunami Information Center

Community Preparedness – Who, What



Disaster resilient integrating DMO, schools and coastal communities
Sustainable economic livelihood
Environment Management Practices



Indonesian
Institute of
Science
Irina-lipi©

ITIC 2009-11 Activities – Summary

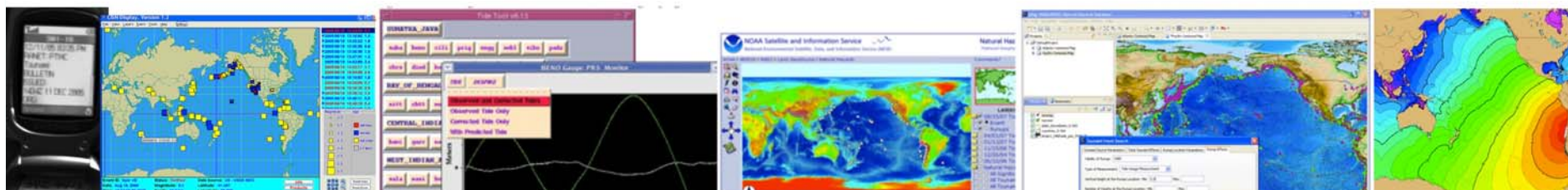


- **Participate as technical expert** on tsunami warning and mitigation to ICG meetings, workshops, trainings, technical assessment country visits: 24 total globally
- **Conduct International Trainings**, esp Tsunami Standard Operating Proc for TW and Emergency Response:
ITP-Hawaii (2 – 17 countries, incl Palau and previously FSM)
ITP-International, in-country training (13 globally + 7 USA)
- **Conduct Domestic Trainings** (develop and train AWR-217)
- **Develop / distribute tsunami warning decision support tools**;
train on request: 6 basic tools, updated continuously
- **Develop / Revise / Distribute tsunami awareness materials.**
Web site: itic.ioc-unesco.org or www.tsunamiwave.info
- **Post-Tsunami Survey Coordination** – 2011 IOC Field Survey Manual update, ITST-Samoa, Chile, Mentawai, Japan since 2009
US Post-Tsunami Survey Protocol (2010-2011)

ITIC Tsunami Warning Decision Support Tools

Available to tsunami-responsible govt agencies (free of charge)

- Heads-up SMS TW Alert (NOAA/USAID RANET, PTWC) – since 2005
- Tsunami Bull Board (NWS) – since 1995, curr 430 science/tsu/govt
- Real time Earthquake Display / California Integrated Seismic Display (USGS, NTHMP) – since 2005
- Sea Level monitoring
 - Tide Tool – TWC ops sea level monitor tool (PTWC) - since 2005
 - Sea Level Station status/metadata (PTWC, EWC) - since 2006
 - IOC Sea Level Monitoring Facility – since 2008
- Tsunami Travel Time Software (NGDC) – since 2007
- Tsunami Historical Database
 - (online (WDC/NGDC); offline (WDC/NGDC-ITIC TsuDig)



Global Historical Databases

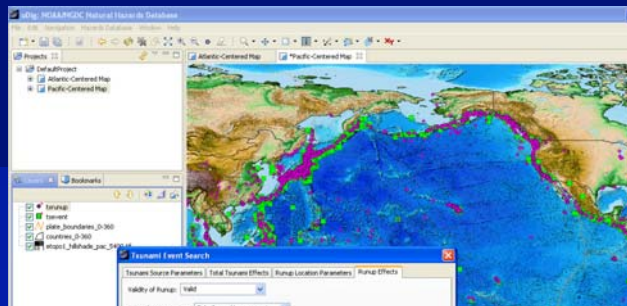
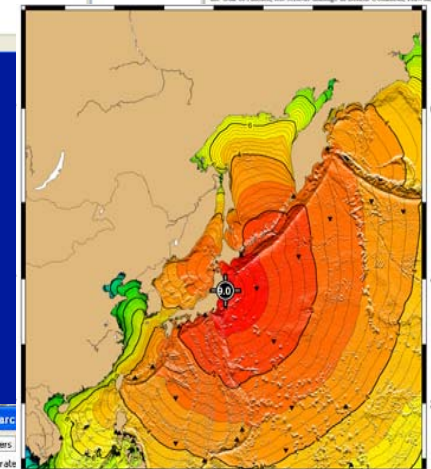
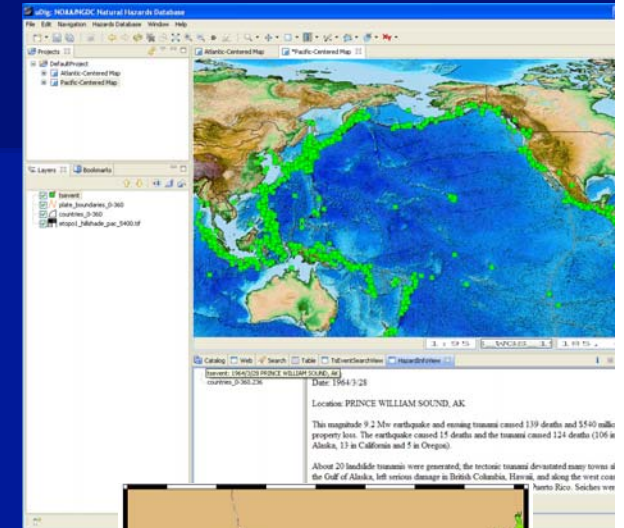
WDC/NGDC

Web online

TsuDig offline (2010, ITIC-NGDC)

Features:

- GIS display
- EQ, Tsunamis, Run-ups
- Seismic, Sea Level networks
- Event sorting
- Travel Times



Tsunami Event Search

Tsunami Source Parameters	Total Tsunami Effects	Runup Location Parameters	Runup Effects
Year: Beginning <input type="text"/> End <input type="text"/>			
Source Region: <input type="text"/>			
Source Country / Territory: <input type="text"/>			
Validity: Min <input type="text"/> Max <input type="text"/>			
Cause: Min <input type="text"/> Max <input type="text"/>			
Earthquake Magnitude: Min <input type="text"/> Max <input type="text"/>			
Bounding Box: North <input type="text"/> West <input type="text"/> East <input type="text"/>			

Tsunami Event Search

Tsunami Source Parameters	Total Tsunami Effects	Runup Location Parameters	Runup Effects
Number of Runups Generated: <input type="text"/>			
Maximum Water Height: Min <input type="text"/> Max <input type="text"/>			
Number of Deaths: Min <input type="text"/> Max <input type="text"/>			
Deaths Description: Min <input type="text"/> Max <input type="text"/>			
Number of Injuries: Min <input type="text"/> Max <input type="text"/>			
Injuries Description: Min <input type="text"/> Max <input type="text"/>			
Damage in Millions of Dollars: Min <input type="text"/> Max <input type="text"/>			
Damage Description: Min <input type="text"/> Max <input type="text"/>			
Houses Destroyed: Min <input type="text"/> Max <input type="text"/>			
Houses Destroyed Description: Min <input type="text"/> Max <input type="text"/>			

ITIC 2009-11 Activities - Share information



PRINTED

- Tsunami, Great Waves [75,000 copies]
- Tsunami Glossary 2008 [25,000 copies]
- Surviving a Tsunami - Lessons from Chile, Hawaii, and Japan
 - USGS Circular 1187 (English) - Revised 2009 [40,000 copies]
 - USGS Circular 1218 (Spanish) - Revised 2009 [5000 copies, SHOA]
- Global Earthquakes / Tsunami / Volcanic Eruptions posters
 - 2010 version: [2000 copies of each]; 2008: [1000 tsunami, SHOA];
 - 2011 Tsunami version [3000 to be printed]
- Tsunami icosohedron globe maps [50,000 copies]
- Where First Wave Arrives in Minutes (2004, 2006 Indo)[50,000 copies]
- Tsunami Warning! children booklet [20,000 copies]

FINALIZING

Tonga Tsunami Survivor Stories – Tongan, English, JICA, Tongan Broadcasting Cooperation, ITIC, UNESCO Apia

50,000+ awareness distributed globally [50% to US] → FREE

Tsunami Awareness Materials Mass Printing

Tsunamis on the move...



Tsunamis slow down but grow in size as they come ashore.

Tsunamis...

- Are a series of long-wavelength, long-period ocean waves. They are not surfing waves.
- Come ashore for hours. The first wave may not be the largest.
- Are caused primarily by earthquakes occurring below or near the seafloor.
- Are less frequently caused by underwater volcanic eruptions, landslides, slumps, and meteorites.

Knowledge is Safety: Tsunami Warning Signs...

- An earthquake is one of nature's tsunami warning signs. If you're at the beach and the ground shakes so hard you can't stand up, a tsunami may have been generated.
- Tsunami may be preceded by a rapid fall in sea level as the ocean retreats exposing fish and rocks on the sea bottom.
- A roar like an oncoming train may be heard as a tsunami rushes toward the shore.

What you should do...

- After an earthquake, move quickly inland and to higher ground.
- Tsunami from a local earthquake can strike in minutes, and before an official tsunami warning is issued.

Up to 24 hours to cross an announced advising coastal...

Official tsunami warnings...

For more information, visit www.tsunami.gov

GLOSARIO DE TSUNAMIS 2008

Intergovernmental Oceanographic Commission

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WHAT TO DO? SENSING A TSUNAMI



Tsunamis can be detected using our human senses. Recognize a tsunami's natural warning signs.

FEEL

- Strong local earthquakes may cause tsunamis.
- FEEL the ground shaking severely?

SEE

- As a tsunami approaches shorelines, water may recede from the coast, exposing the ocean floor, reefs, and fishes.
- SEE an unusual disappearance of water?

HEAR

- Abnormal ocean activity, a wall of water, and approaching tsunami create a loud "roaring" sound similar to that of a train or jet aircraft.
- HEAR the roar?

RUN

- Don't wait for official evacuation orders.
- Immediately leave low-lying coastal areas.
- Move inland to higher ground.
- RUN if you see a tsunami coming!

The International Tsunami Information Center

¿QUE HACER? REGLAS DE SEGURIDAD



- Todas las alarmas no causan tsunamis, pero muchos SI. Cuando sea un alarm, manténgase en la espera de un mensaje de emergencia.
- Un signo en su localidad es una señal natural de alerta de tsunami: áreas costeras bajas (hundidas) después de haber sentido un sismo.
- Los tsunamis algunas veces son precedidos por una notable disminución en el nivel del agua después de haber sentido un sismo. Si esto ocurre, busque un lugar similar al de un terremoto.

Where the First Wave Arrives in Minutes

Indonesian Lessons on Surviving Tsunamis near Their Sources




Circular 1187
U.S. Department of the Interior
U.S. Geological Survey



Surviving a Tsunami—Lessons from Chile, Hawaii, and Japan



National Tsunami Hazard Mitigation Program
Prepared in cooperation with Universidad Austral de Chile, the University of Tokyo, the University of Washington, the Geological Survey of Japan, the Pacific Tsunami Museum, the National Oceanic and Atmospheric Administration, and the International Tsunami Information Center.



EARTHQ AND TSUNAM
PRE-ELEMENTARY S

SERVICIO HIDROGRAFICO Y OCEANO
INTERGOVERNAMENTAL OCEANOGRAPHIC
INTERNATIONAL TSUNAMI INFORMATION

I INVITE YOU TO KNOW THE EARTH I

TEXT FOR ELEMENTARY SCHOOL
2nd. to 4th. GRADE

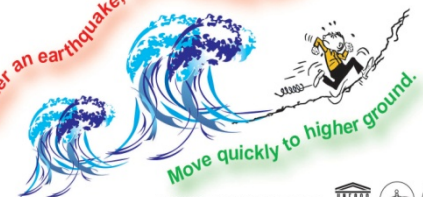
I INVITE YOU TO KNOW THE EARTH II

5th to 8th GRADE
OF PREPARATORY SCHOOL
TEXTBOOK

EARTHQUAKES AND TSUNAMIS

HIGH SCHOOL
TEXTBOOK

After an earthquake, a tsunami may follow.



Move quickly to higher ground.

International Tsunami Information Centre
E-mail: itc@tsunami.org <http://www.tsunami.org>

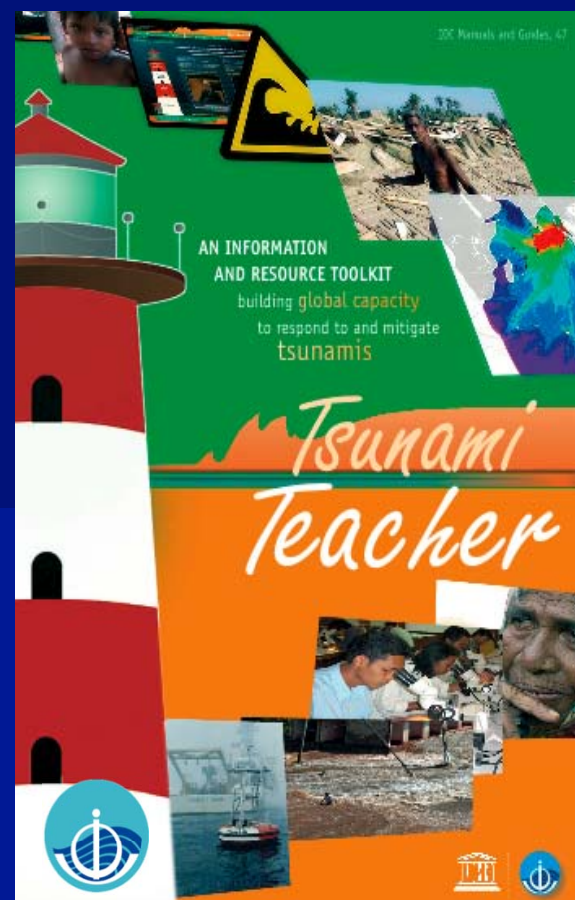
TsunamiTeacher (international)



WHAT: Consolidated Resource/Training Toolkit

- *New, existing materials*
- *Reliable, verified*
- *Training modules*
- *Web, offline tool*

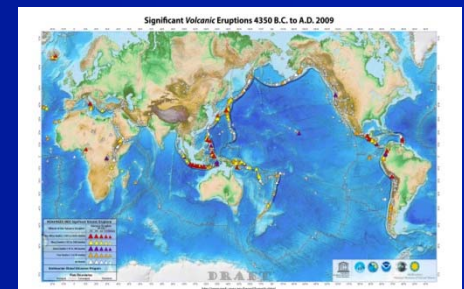
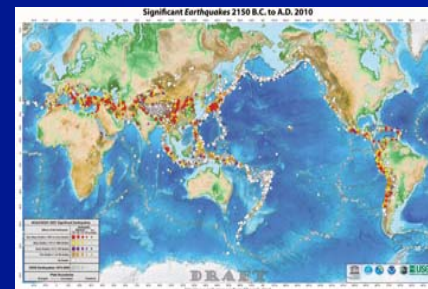
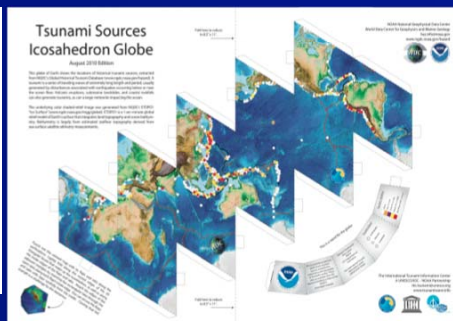
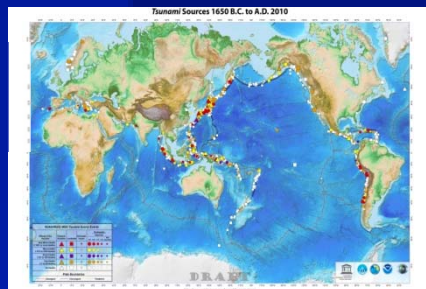
WHAT: Update, US Version (pending)



Posters: World Data Center / NGDC ITIC, USGS, Smithsonian



- **Global Tsunami Sources: 1650 BC – AD 2011**
Casualties, Cause, EQ magnitude
- **Significant Earthquakes: 2150 BC – AD 2010**
Casualties, magnitude, USGS 1972-2009 (M6+)
- **Significant Volcanic Eruptions: 4350 BC – AD 2009**
Casualties, VEI, Smithsonian volcanoes
- **Complements *TsuDig***
Comments: paula.dunbar@noaa.gov, laura.kong@noaa.gov





Intergovernmental
Oceanographic
Commission



ITIC (5 US, 1 Chile):

- Laura Kong, Director (USA)
- Miguel Vasquez, Associate Director (Chile SHOA)
- Brian Yanagi, Office Manager, Disaster Mgmt (USA)
- Tammy Fukuji, IT/Web/Graphics, etc (USA)
- Vacant, Technical Information Specialist (USA)
- Art Sonen, Administrative Assistant (USA)



ITIC - NTHMP



- **Develop / distribute awareness educ materials to NTHMP and intl agencies. www.tsunamiwave.info**
- **International /US expertise in end-to-end TEWS, EM, and Mitigation. ITIC Staff (former PTWC, Hawaii SCD). Can collaborate on all tsunami issues.**
- **Providing support to remote US Pacific Island territories.**
- **Deliver AWR-217 Tsu Awareness training - NDPTC certified instructors.**
- **Provide training on TEW operations to weather/geophysical/ocean center staff in US and international**
- **Liaise and Share US and International best practices**
- **Coordinate / Develop Intl & US post-tsunami surveys**