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**
  - Pacific Ocean: 61%
  - Mediterranean and Black Sea: 22%
  - Atlantic Ocean and Caribbean Sea: 11%
  - Indian Ocean: 6%

- **Cause of Tsunami**
  - Earthquake: 81%
  - Volcano: 5%
  - Landslide: 3%
  - Unknown or Meteorological: 11%

- **15,712 Tsunami Runups**
  - 6% from 2004 Indian Ocean event

- **Validity of Tsunami**
  - Definite: 17%
  - Probable: 24%
  - Doubtful: 39%
  - Very Doubtful: 20%

July 2011
IUGG XXV Melbourne, Australia
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

- National TWC
- WC/ATWC
- NWPTAC
- PTWC
- Regional TWC
- International Tsunami Information Centre (ITIC)
- National TWS
End-to-End Tsunami Warning

EQ Tsunami

Country Alert System

EAS & Mass Media

Natl / Local Govt

Public

TSUNAMI WARNING! EVACUATE

ITIC, SeismicReady Consulting, 2009
Community Preparedness – Who, What

Functioning Public Education Practitioners & Promoters
- Innovations
- Translations
- Curriculum & materials development
- Tsunami, Earthquake terms
- Hazard, Risk assessment
- Models, Forecasts
- Research Studies
- Post-Tsunami surveys

Functioning Scientists
- Functioning Community

Functioning Disaster Warning and Management Officials
- Disaster management plan
- Evacuation maps
- Standard operational procedures
- Disaster Decision Support System
- Facilitation & advocacy
- Early Warning System

Disaster resilient integrating DMO, schools and coastal communities
Sustainable economic livelihood
Environment Management Practices
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](http://www.tsunamiwave.info)

- **Post-Tsunami Survey Coordination** – 2011 IOC Field Survey Manual update, ITST-Samoa, Chile, Mentawai, Japan since 2Q09
  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
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...

Tsunami Awareness

Knowledge is Safety:
Tsunami Warning Signs...

- An earthquake strike deep in the ocean near you.

- Volcanoes increasing in size.

- Tsunami warning systems.

What you should do...

-

Intergovernmental Oceanographic Commission

GLOSARIO DE TSUNAMIS

2008

Where the First Wave Arrives in Minutes

Indonesian Lessons on Surviving Tsunamis near Their Sources

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

National Tsunami Hazard Mitigation Program

Prepared in cooperation with the University of Tokyo, the University of Washington, the University of South Florida, the National Oceanic and Atmospheric Administration, and the International Tsunami Information Center

Earthquakes and Tsunamis

I Invite You to Know the Earth I

I Invite You to Know the Earth II

Earthquakes and Tsunamis

High School Textbook

What to Do!
Sensing a Tsunami

FEEL

- Strong local earthquake may cause tsunami.

- P13: The ground shaking severity?

SEE

- As a tsunami approaches shores, water may

- A tsunami moves slowly toward the land. Cemetery, water, rivers, and fields.

HEAR

- Abnormal ocean activity, a wall of water, and

- Hring sound similar to that of a train or jet aircraft.

RUN

- Don't wait for official evacuation orders.

- Immediately leave low-lying coastal areas.

- Move toward higher ground.

- RUN if you see a tsunami coming.
Tsunami Teacher (international)

WHAT: Consolidated Resource/Training Toolkit
- *New, existing materials*
- *Reliable, verified*
- *Training modules*
- *Web, offline tool*

WHAT: Update, US Version (pending)
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
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](http://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