



Local-Source Tsunami Response Best Practice

ICG/PTWS-XXVIII, April 2019

Dr. Laura Kong
International Tsunami Information Center (ITIC)

1.0 Local-Source Tsunami Priorities

- **Self Evacuation** – Key to Surviving Local Tsunamis with very short lead times
- **Official Warnings **Supplementary** to Natural Warnings** – Official warnings reinforce self-evacuations & assist **all-clear** decisions
- **Official warning systems** – Must have fast and simple warning chains, conservative, pre-scripted products, don't delay

2.0 Warning Types

- **Natural** – Strong ground shaking and/or rapidly receding sea-level, NZ
“long, strong, get gone”
- **Official** – Issued by TSPs and/or NTWCs
 - Designed to reinforce natural warnings
 - Released within 10 minutes
 - Be Conservative
 - Regular warning updates, cancellation
 - All Clear – what it is, how it is communicated
 - Multi-media, redundant
 - Consistent (same alert, same mechanism)
- **Unofficial** – Word-of-mouth, Social Media

3.0 Public Awareness and Education

- **Effective, comprehensive and Continuous Public Education Programs** – what to expect from official warning, how to recognize and respond to natural warnings
- **Exercises** – Local, Regional, National
- **Debriefings and post-event public response analysis** – learn and improve locally and internationally, SOPs
- **Communication Tests**

4.0 Detection and Characterization

- **Ground Shaking** – Strength and Intensity/Duration. Proxy but depends on source location and person feeling
- **Magnitude Threshold Tables** – Agree before. Follow during actual event. Conservative
- **Refine With more Information** – Procedures should be in place as to how updates are managed and communicated
- **Regular SOP Training and Exercising**


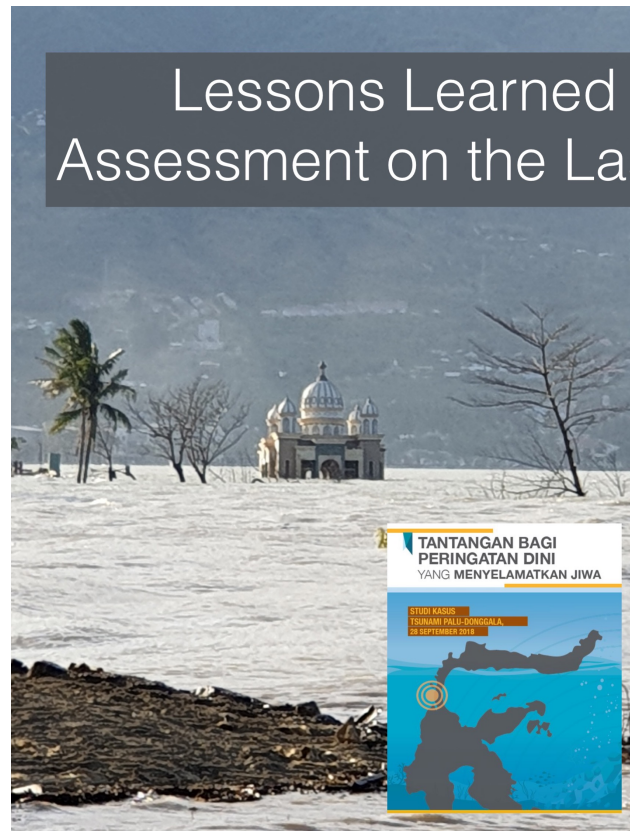
5.0 For Future Consideration

- **Inclusion of False Alarms in 3.0** – need to maintain confidence and ensure proactive action
- **Dealing with non-tectonic events** (landslides, volcanoes) **or slow earthquakes** (long shaking, not abrupt, but large tsunami)
- **Refinement of definition of Natural Warnings**
- **Recommendations on communications channels.**

Local Response

28 Sept 2018 Palu Earthquake and Tsunami

Lessons Learned from Palu Tsunami
Assessment on the Last Mile's Response





Ahmad Arif
(Kompas/UNISDR)


Ardito Kodijat
(IOC/UNESCO - Indian Ocean Tsunami
Information Centre - UNESCO Office
Jakarta)


Irina Rafliana
(ICIAR/Pusat Penelitian Oseanografi LIPI)


Syarifah Dalimunthe
(Pusat Penelitian Kependudukan
LIPI/Nagoya University)

 **UNISDR**
United Nations Office for Disaster Risk Reduction

 **UNESCO**
United Nations Educational, Scientific and
Cultural Organization

 **IOC**
Intergovernmental
Oceanographic
Commission

 **UNEP**
United Nations
Environment Programme

 **LIPI**
Lembaga Ilmu Pengetahuan Indonesia

Background

The New York Times

What Went Wrong With Indonesia's Tsunami Early Warning System

By ANJALI SINGHVI, BEDEL SAGET and JASMINE C. LEE OCT. 2, 2018



Indonesia's geophysics agency under fire for lifting tsunami warning

Warning lifted after 34 minutes, with agency saying it had no data
at the town of Palu, where hundreds died



18:06 Local Tsunami Arrives at Wani (3:30 min after EQ) (CCTV of Mr. Andi



Chronology Upstream and Downstream 28 September 2018


Earthquake of 5.9 Mw 15:00 WITA  15:00 WITA Earthquake felt by people in Donggala and Palu

Many received SMS blast of the BMKG EQ Information (Ministry of Communication and Information)
Communities in Labean villages evacuated to the hills

Earthquake of 7.7 Mw 18:02 WITA  18:02 WITA Strong shaking, difficult to stand still

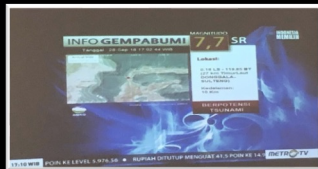
BMKG Bulletin 1 18:04 Electricity and Communication cut off in Donggala and Palu
Advisory in Palu and Warning in Donggala 18:07 WITA 18:06 Tsunami Arrives Wani (CCTV Mr. Andi) → 3:30 min after EQ

TEWS Breaking News in Metro TV 18:10 WITA  **Tsunami hits Palu coast**
Estimated 18:10 – 18:13

6 cm Tsunami observed in Mamuju tide gauge (+300km South) 18:27 WITA 

BMKG Bulletin 4 18:36 WITA 
End of Warning for the 7.7 EQ in Donggala

Tsunami hits Palu
videos go viral on Social Media





Thank You

Dr. Laura Kong
International Tsunami Information Center (ITIC)