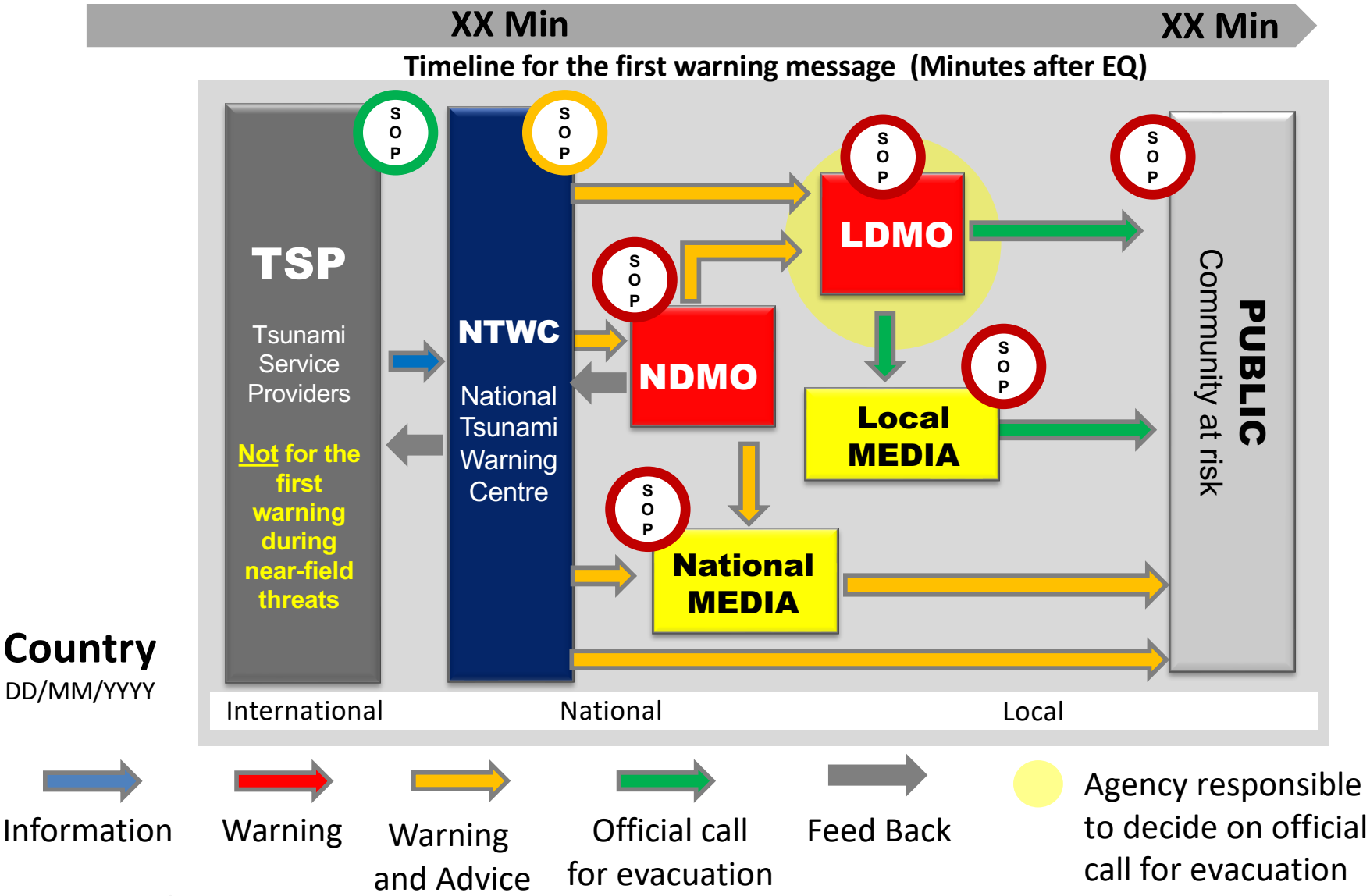
UNESCO-IOC / NOAA ITIC Training Program in Hawaii (ITP-TEWS Hawaii)
TSUNAMI EARLY WARNING SYSTEMS
AND THE PACIFIC TSUNAMI WARNING CENTER (PTWC) ENHANCED PRODUCTS
TSUNAMI EVACUATION PLANNING AND UNESCO IOC TSUNAMI READY PROGRAMME
15-26 September 2025, Honolulu, Hawaii

11.4 Improving Response and Managing Information Flow

Media and Social Media - Good Practices

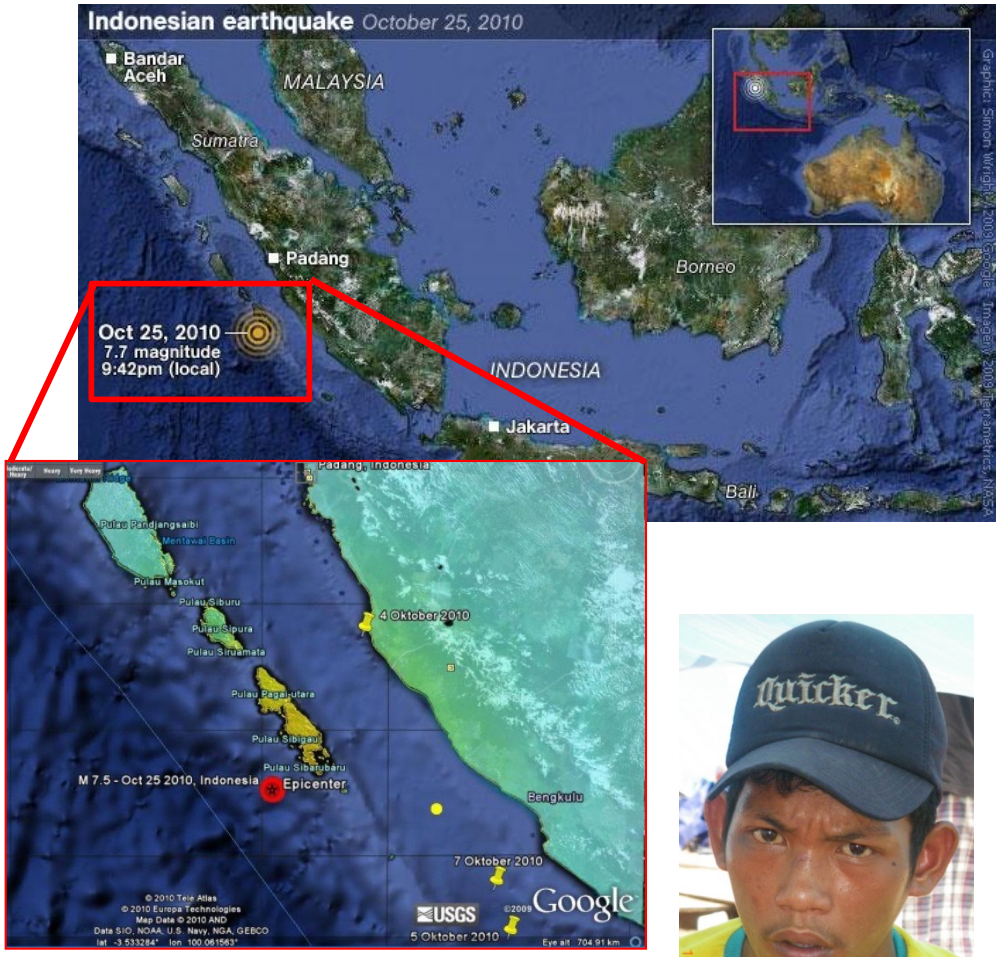
Ardito Kodijat
IOC/UNESCO - Indian Ocean Tsunami Information Centre
UNESCO Office Jakarta
a.kodijat@unesco.org

Background (Tsunami warning chain)



UNESCO/IOC-NOAA SHOA
International Tsunami Information Center

Broadcast Media as Part of the Early Warning Chain



Mentawai Tsunami
25 October 2010
Death ± 500 People

"I was watching the television (MetroTV) when the earth shook. I went out, saw my neighbours, but no body went out from their house. I went back inside, made a cup of coffee and continue to watch the television. I saw the running text of the tsunami warning. I went out again. I was outside when the wave swept me and brought me to the forest. I lost my consciousness until the next morning"

Fredi, 23, Muntei Baru-baru – Mentawai
(interviewed by Eko Yulianto, LIPI 2010)

Broadcasting (radio, television) and Social Media

Convey Official Warnings (National & Local)

But also:

Convey Unofficial Warnings

Therefore:

Can cause or counter public response

International media can cause public confusion

Broadcast Media as Tsunami Early Warning Chain

- Wide Accessibility
- Speed
- 24/7
- Accurate and reliable
- Live Updates
- Skilled Human Resource
- Established Infrastructure
- Established Broadcasting SOP
- Experienced in sudden Breaking News
- Provide Guidance
- Educating means

Broadcast Media as Tsunami Early Warning Chain

Weakness & Challenges

- Electricity cut-off due to the disaster
- Areas where electricity is still scarce
- Disaster happened late at night ➔ People are asleep, and the TV / Radio are Off

Setting Up Media as Tsunami Early Warning Chain

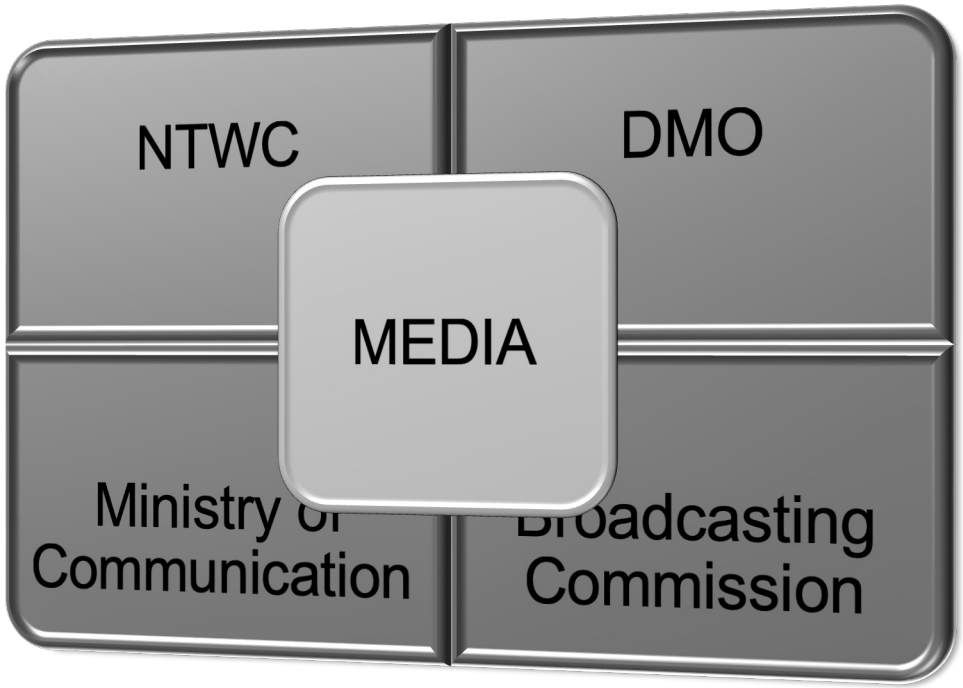
- Establish Regulatory Framework
- Formalized cooperation and collaboration between NTWC and broadcast media
- Establish multi-communication system
- Establish EW broadcasting SOP
- Education and training
- Regular communication test
- Early warning exercises and improvements
- Evaluation after real event and improvements

Regulatory Framework

- Commonalities of warning broadcast by different broadcasting media
- Guides the broadcasting media in broadcasting early warning
- Control and monitoring system as early warning broadcaster

Formal Cooperation

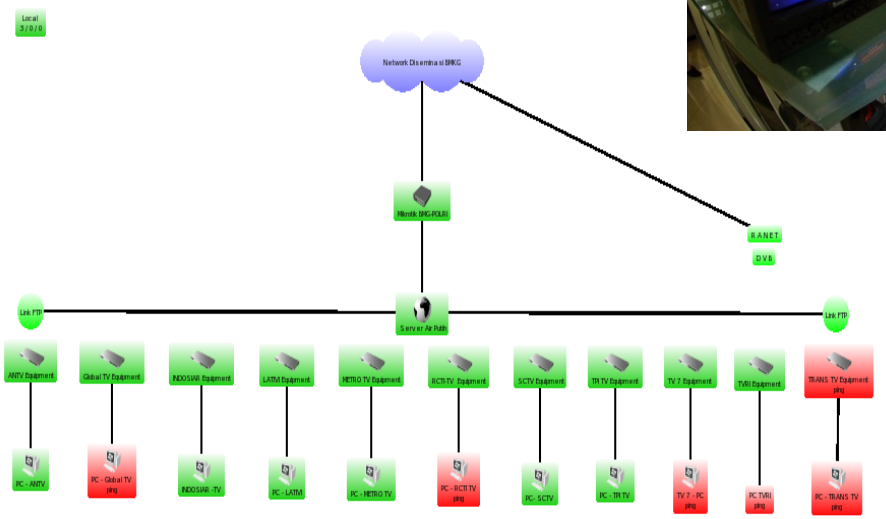
- **Ensures Commitment between warning center and broadcasting media**
- **Strengthen collaboration between warning center and broadcasting media**



Establish multi-communication system

- **Ensures direct and reliable communication system between warning center and broadcasting media**

  - **SMS**
  - **Email**
  - **Phone**
  - **Fax**
  - **Website**
  - **WRS**

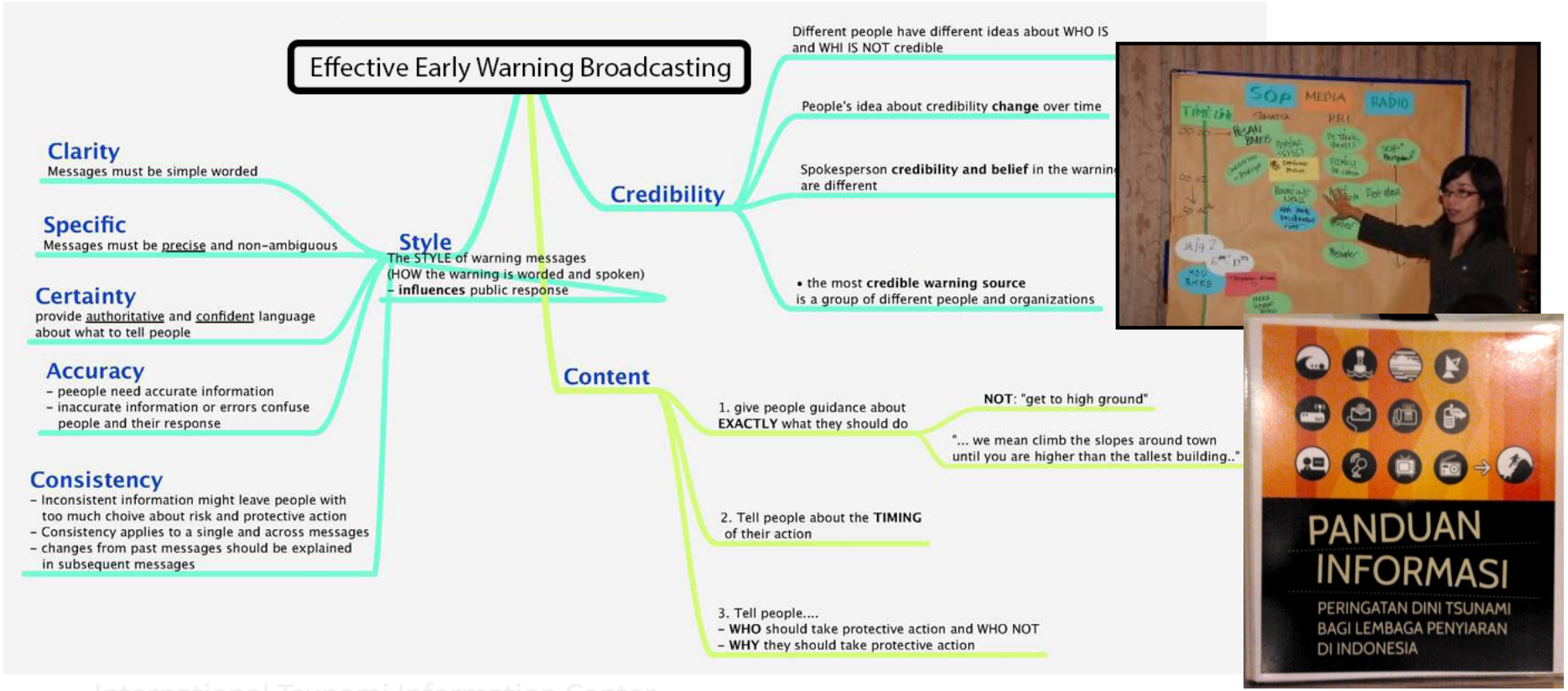


Establish EW broadcasting SOP

- **Ensures the early warning broadcasting is part of the organization system**
- **Ensures standardized and step by step process and procedures in the broadcasting media**
- ***Ensure the SOP meet the urgency and uniqueness of tsunami warning and emergency***

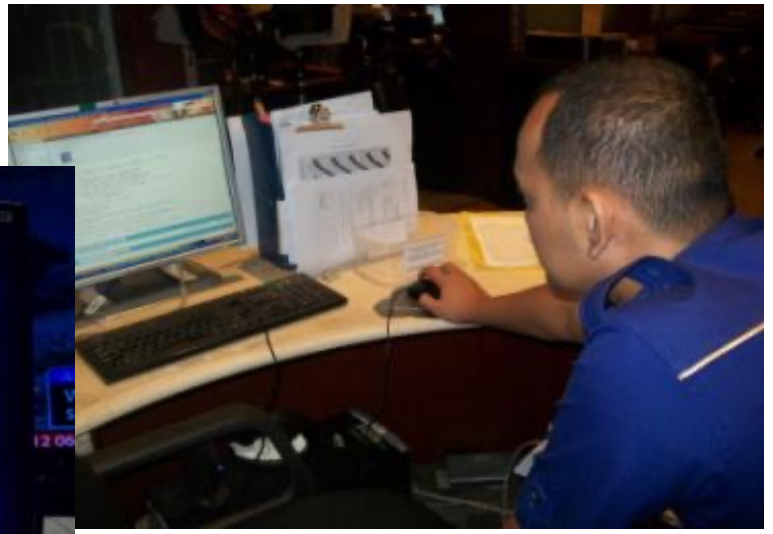
Education and training

- **Ensures clear understanding of tsunami hazard, tsunami risk, warning messages, EW SOP, and their own SOP**



Regular communication test

- **Communication test between NTWC and Media**
- **To ensure the communication works in time of needed**

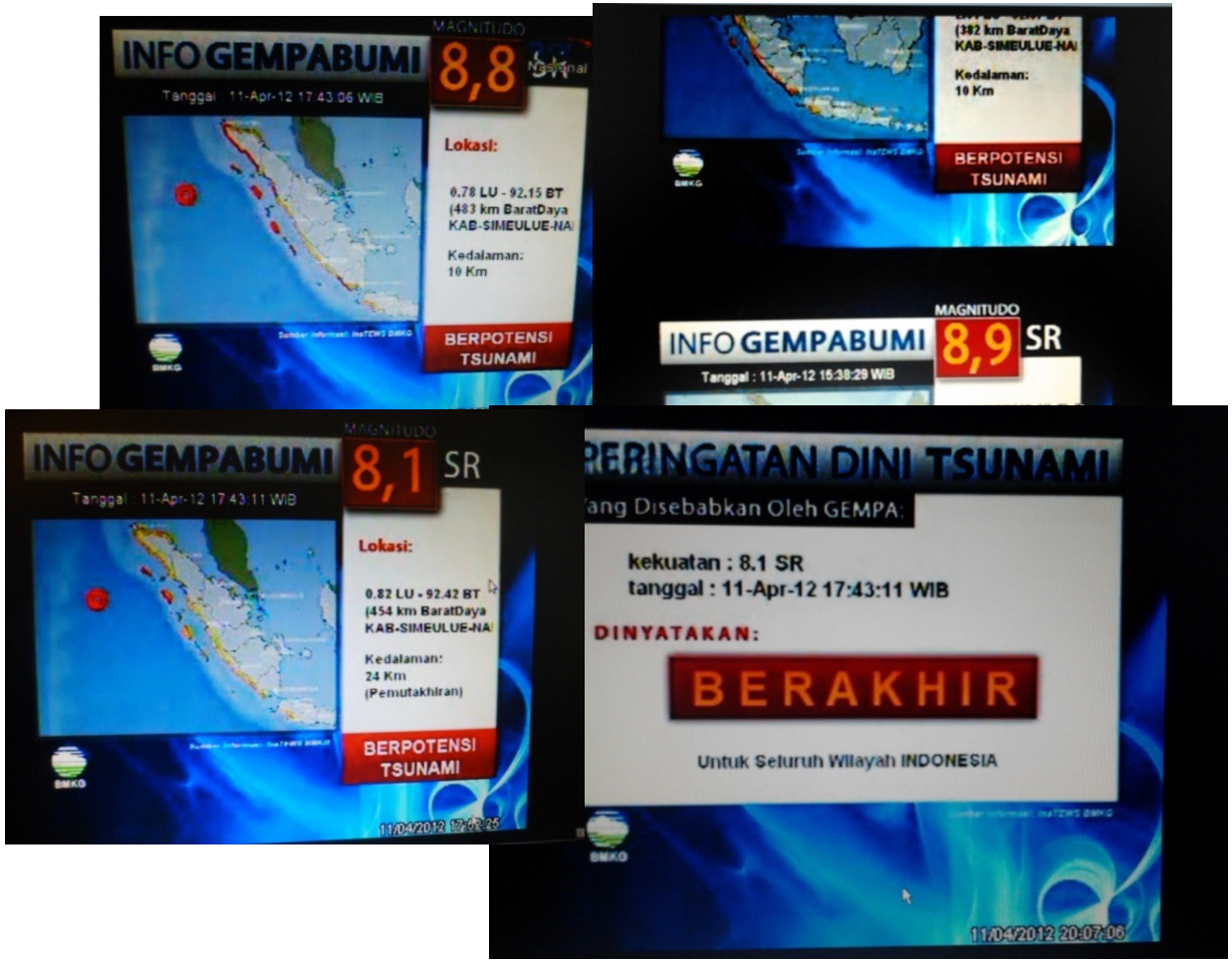


Early warning exercises and improvements

- SOP Training
- IOWave Exercise

Evaluation after real event and improvements

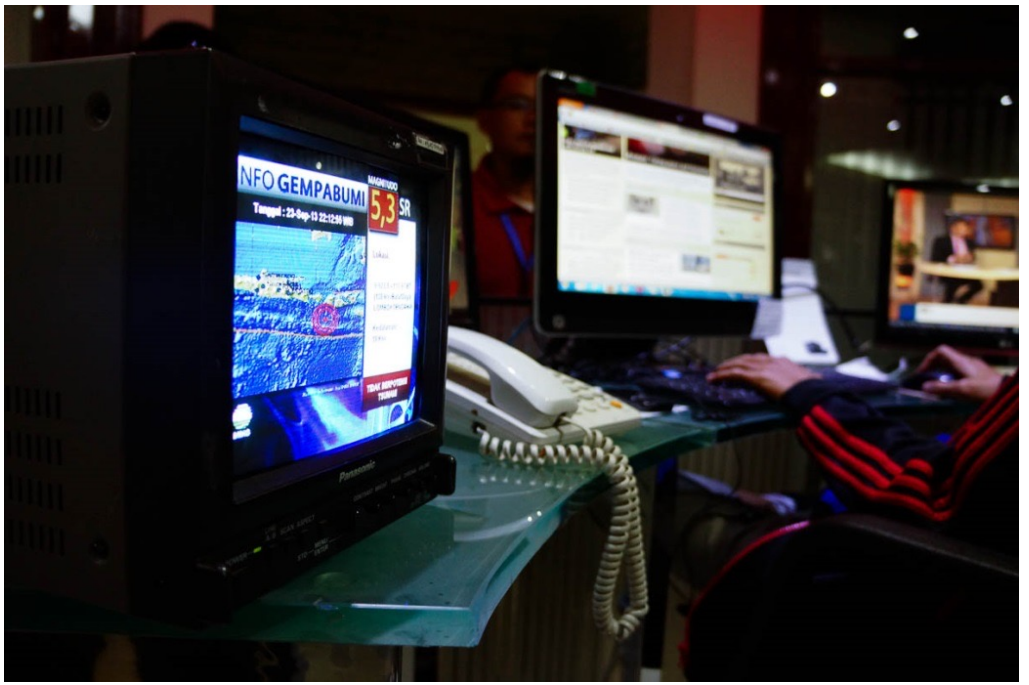
- To learn from actual event and do improvements



- LIPI
- BMKG
- BNPB
- BPPT
- KKP
- RISTEK
- GIZ
- UNESCO JTIC
- UNDP
- Universitas Syiahkuala
- Universitas Andalas
- Universitas Bung Hatta
- KOGAMI

Challenge in Broadcasting Media as TEWS Chain

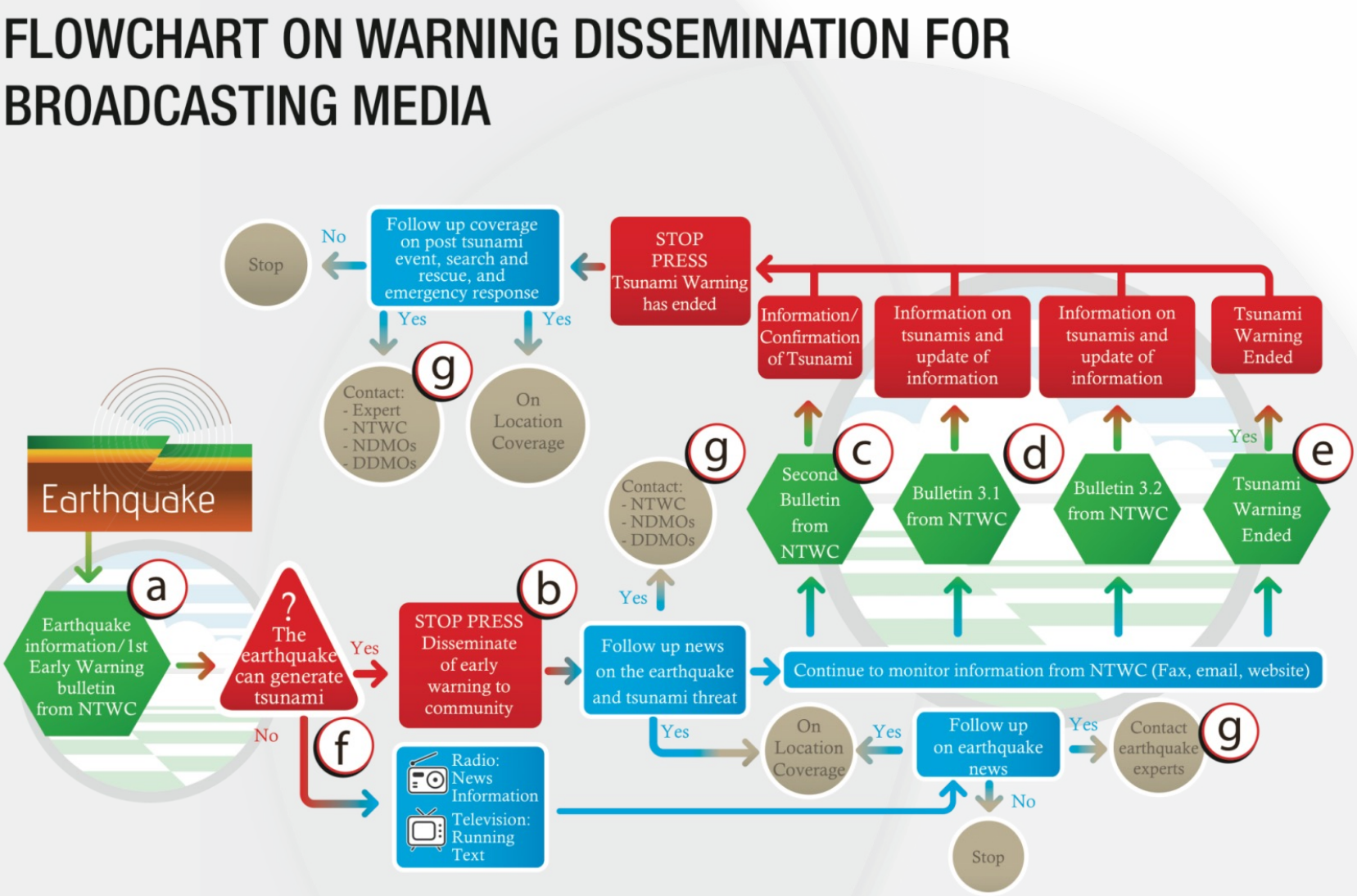
- Role and responsibility beyond the warning
- National vs Local TV
- Language
- Diversity in Broadcast Media Characteristics
- Public and Private Broadcasting Media



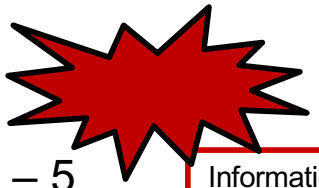
Challenge in developing SOP Broadcasting Media

- The Source of TEW messages
  - Tsunami Warning Centers or Disaster Management Offices
  - Official warning – International information
- Decision Making Process in Media
- Understanding the warning message
  - Warning bulletin
  - Warning level
- Understanding time-lines
  - Local, Regional, and Ocean Wide
- SOP for local tsunami vs distance tsunami
- Ending of early warning

Establish EW broadcasting SOP



EW Broadcasting SOP



0 – 5 minutes

Information on shaking of earthquake

- **0 – 5 minutes**
- **Monitor situation based on sensing of earthquake, before official information received.**

± 5 mnt

WARNING 1 :
EQ Parameter & possibility of tsunami at different level: MAJOR WARNING, WARNING, ADVISORY of NO THREAT

± 6-7 mnt

WARNING 2:
Updated EQ parameter, warning level and estimated time of arrival based on tsunami model / scenarios

10 - 60 mnt

WARNING 3.1 – 3.n
Updated EQ parameters, tsunami observation and updated warning level and areas hits by the tsunamis

90 – 120 mnt

Warning 4
Warning ended

1. Check and monitor warning receiving modes from NTWC
2. MCR to go to Stop Press SOP
3. Monitor, analyze and understand the warning messages (1 until 4)
4. Producer to start breaking news SOP
5. Contact Local contributor
6. Contact experts and resources
7. Material and image development
8. Provide safety information
9. Continue to update warnings and running text

EW Broadcasting SOP
(Observation from local contributor)

Up to 5 minutes after the EQ

Timeline	Description	What	Who	Note
EQ Occurs	Received information from Local Contributor	• Monitor NTWC communication mode • Get detailed information from local contributor ➔ to decide breaking news • Preparation for the Stop Press, Running text, and breaking news	Duty Officer	WRS, SMS, Email, and Fax
00:00:00	Received warning from NTWC	Analyze the message (Potential tsunami or not). If yes, go to “Stop Press”	MCR on Duty and Duty officer	WRS Switch SMS (dedicated Mobile phone)
00:00:30-00:01:00		Stop Press Mode	MCR on Duty	WRS Switch: Freeze Pane and High tone for 30 second

EW Broadcasting SOP

(No observation from local contributor)

Timeline	Description	What	Who	Note
00:00:00 (+ time from EQ)	Received warning 1 from NTWC	Analyze the message (Potential tsunami or not). If yes, go to “Stop Press”	MCR on Duty	WRS, SMS (dedicated mobile phone)
00:00:30 – 00:01:00		Stop Press Mode	MCR on Duty	WRS Switch: Freeze Pane and High tone for 30 second
00:00:00 – 00:02:00		Monitor NTWC communication mode	Duty officer	SMS, Email, Fax
00:00:00 – 00:02:00		Contact Producer on duty and news team	Duty officer	By phone
00:00:00 – 00:05:00	Check warning 2 from NTWC	Monitor NTWC communication mode	Duty officer	SMS, Email, Fax
00:02:00 – 00:10:00		Preparation for breaking new	Producer on Duty and News team	

Online Media and Social Media in Tsunami Warning Chain

Buoy Tak Berfungsi, BMKG Tak Bisa Prediksi Adanya Tsunami

RABU, 02 MARET 2016 | 22:24 WIB

The New York Times http://nyti.ms/24DCFFF

ASIA PACIFIC

Indonesia's Tsunami Sensors Were Down During Quake

By JOE COCHRANE MARCH 3, 2016

JAKARTA, Indonesia — Indonesia was compelled to rely on tsunami warnings from other nations' buoys in the Indian Ocean this week after a huge earthquake off the west coast of Sumatra because its detection system was disabled, a senior disaster agency official said on Thursday.

The earthquake struck on Wednesday night, had a magnitude of 7.8 and set off warnings in multiple countries, but it did not cause a tsunami. Indonesia's warning system, completed in 2008, has not been operable since last year, said Sutopo Purwo Nugroho, a spokesman for the National Disaster Management Agency.

Indonesia began deploying a chain of German-built buoys less than a year after the Indian Ocean tsunami of Dec. 26, 2004, which killed 230,000 peopl... in more than a dozen countries, including around 177,000 in ... province of Aceh alone.

In the years ...

MEDIA INDONESIA

...gatan Dini Tsunami di Sumbar tidak

METRO DUNIA BOLA GAYA SELEB CANTIK TEKNO OTOMOTIF TRAVEL FOTO

BMKG: Potensi Tsunami dari Aceh hingga Lampung

RABU, 02 MARET 2016 | 20:32 WIB

TribunNews.com

Netizen Bingung Gempa 8,3 SR atau 7,8 SR? Ini Infonya dari BMKG

Rabu, 2 Maret 2016 21:02 WIB

BMKG

BMKG

@infoBMKG

Official Twitter of BMKG Indonesia - Twitter resmi BMKG - Informasi Cuaca, Iklim dan Gempa bumi di Indonesia - Badan Meteorologi Klimatologi dan Geofisika.

Indonesia

bmkg.go.id

Bergabung Januari 2010

TWEET 15.4 rb MENGIKUTI 12 PENGIKUT 2.41 jt SUKA 12

Tweet Tweet & balasan Foto & video

BMKG @infoBMKG · 53 mnt

Gempa Mag:8.3 SR,02-Mar-16 19:49:41 WIB,Kedlmn 10 Km,(682 km BaratDaya KEP-MENTAWAI-SUMBAR)#BMKG

BMKG @infoBMKG · 53 mnt

#Gempa Mag:7.8 SR, 02-Mar-16 19:49:4

YouTube

International Tsunami Information Center

Why Social Media

- Social media has become a central and decisive element in the realm of crisis;
- Social media is definitely not perfect, but become a better alternative from the traditional media in term of getting faster and timely information. **Social media makes sure breaking news and events get into the hand of the public faster than ever**;

- Social media affects how knowledge is collected and organized, how information is delivered, how people communicate, and how people collaborate;
- Social media **shifted people on how to discover, read and share news, information, message, and content**. Social media has become the global village where authorities, citizens and journalist collect and share their information;
- **Social media is dynamically accelerating because users have more options to access the information**. ➔ smart phones and access to internet provides easy access to their social media account;

- During and after disasters, social media have the potential to support in the coordination of providing warnings, setting preparedness and relief responses by connecting individuals to resources, and engaging a wider community beyond those directly affected.

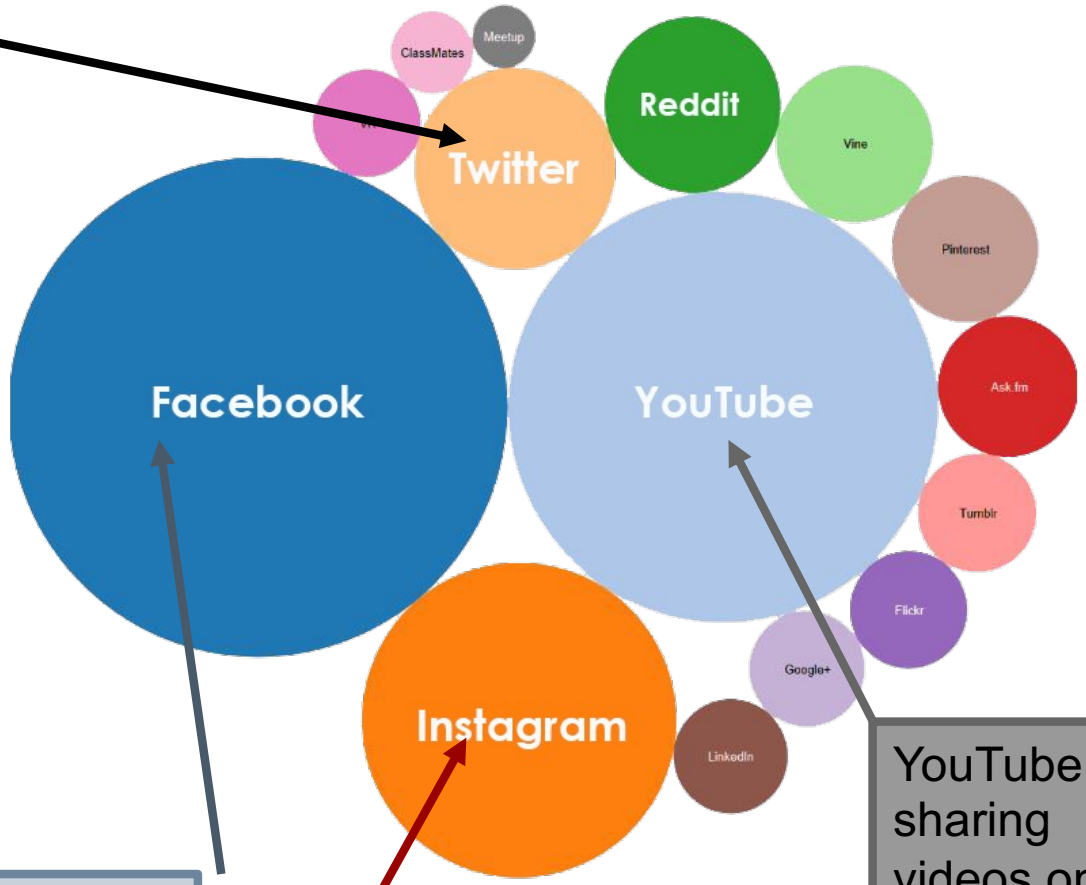
Challenges in Social Media

- Social media transmit information faster than traditional media source ➔ **lack of the complete situation analysis and might be biased with opinion**;
- **Decision making face new challenges**, with new rules, new actors and identifying false information is one of the new factor people need to learn;
- The **degree of trust to information** has always been the central;
- **Contagion of false rumour on social media is very rapid**, however, usually it decreases quickly as soon as negation of the false rumour appears. Social media could also works as collaborative information filter;

- In this world of **high-speed connectivity, and poorly prepared people, people will be stunned and feel panic**;
- **Poorly prepared official will also be stunned and feel threatened**.

Different Social Media
(How they work with early warning 2020)

Twitter (X) has always put a huge emphasis on real-time communication. Twitter is fast-paced, concise, and easy way to connect with followers. Twitter is based on information of limited character to be read, clicked, followed, and re-tweeted. **Twitter generates over 175 million tweets daily and allows to share quick pieces of information and photos.**



Facebook is one of the most popular platforms. Created a strong following status updates. Facebook as a personal network connects with their friends and their contacts

YouTube is sharing videos only

Instagram is all about capturing moments. Photo and short videos only

Social Media: The Latest Frontier in Warning Dissemination ?

- Public have develop information seeking habits through social media;
- Twitter (X) and Facebook are the two most use for public alert, however every country need to look into other social media and messenger media that are commonly use in the country (i.e. WhatsApp, Facebook Messenger, Telegram, etc.)
- **Twitter (X) users tend to follow those who transmit exclusive and new information, this is an opportunity for authority to communicate using this mean in crisis situation;**
- **Twitter (X) meets the requirement for early warning: Wide reachability, Speed of Communication, and the authority need to ensure the information quality;**
- Facebook's timeline users are provided with information from pages they interact with, but most people do not often interact with authorities;

Social Media: The Latest Frontier in Warning Dissemination ?

- It is crucial for any official to **envision social media as a useful tool for information dissemination**, as it has the potential to provide faster and wider information, warning and mobilization, leading to a more powerful and adequate collective response;
- The challenge of social media to **meet the different characteristic and requirement for warning and response for Local, Regional, and Distant** Tsunamis;
- Official in charge is to enter the world of social media and rapidly adjust and make the best of this new deal;
- Need to have a **dedicated and official person t**o manage, take care, and response to social media.
- Need to have **specific SOP and Template** for social media as public alert.

unesco
Intergovernmental
Oceanographic
Commission

Thank You

Ardito Kodijat
IOC/UNESCO - Indian Ocean Tsunami Information Centre
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Pacific Community
Communauté du Pacifique

Social Media : BOM Australia

Buearau of Meteorology current social media platforms

Est. 2011

746 374 followers

Est. 2014

490 011 followers

9 accounts

Coming soon!

Est. 2011

8017 subscribers

Est. 2011

6443 followers

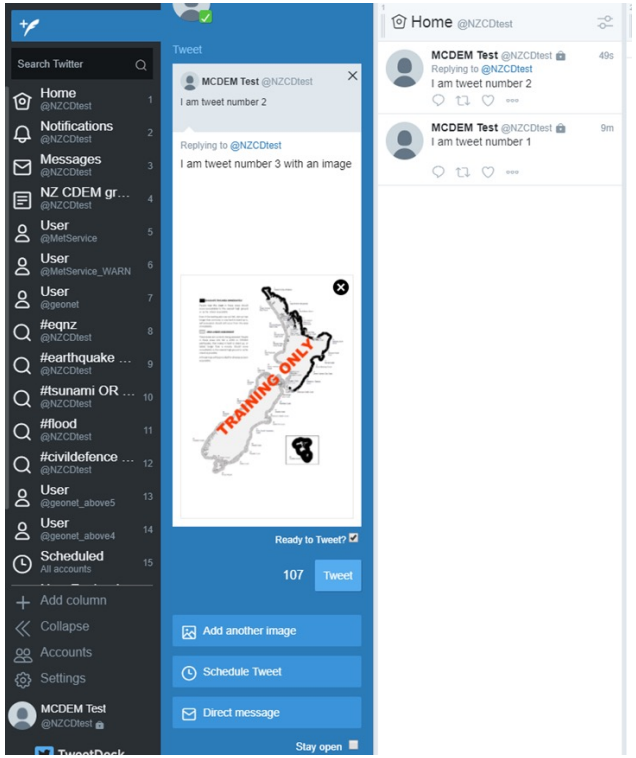
Australian Government
Bureau of Meteorology

Data as at 9 Feb 2018

UNESCO/IOC-NOAA SHOA
International Tsunami Information Center

Social Media: NZ MCDEM

NZCivilDefence Facebook page	A public education focus during business as usual. Used to broadcast and share information during emergencies.
@NZCivilDefence Twitter account	Emergency information focus only; primary Twitter account during an emergency. Tweetdeck is used to tweet and retweet during an emergency.
@NZGetThru Twitter account	A public education focus during business as usual. Used to broadcast and retweet information during emergencies. Tweetdeck is used to tweet and retweet during an emergency.
@NZCDEM Twitter account	Used to share news and articles of interest to the CDEM sector. Not currently used during emergencies.



Social Media: InaTEWS

3.400.000

Followers (as of Jan 2018)

Since 2009 - July 2012 (@BMKGnews 10.k Followers)

July 2012 change from @BMKGnews to @infoBMKG

twitter

@infoBMKG

621.000

Followers

BMKG Facebook Page

50

Groups

± 3000

Members

WhatsApp

WhatsApp Group