



**unesco**

Intergovernmental  
Oceanographic  
Commission

**Decision to call for evacuation**

Harald Spahn  
UNSECO Consultant

ICG Indian Ocean Tsunami Warning & Mitigation System SOP Workshop August 2023:  
*Standard Operating Procedures (SOPs) for  
National Tsunami Warning Centres (NTWCs) and  
Disaster Management Organisations (DMOs)*



*"Surviving a tsunami is a matter of getting out of the reach of tsunami waves and inundating waters in time"*

# Northwest Indian Ocean Countries

## Decision making to call for evacuation

### **India, Iran, UAE**

Decision making at the local level

### **Oman**

Near-field threat: ROP (local level)

Far-field threat: NCEM (national level)

### **Pakistan**

Decision making at the local level

NTWC triggers sirens

# Challenges

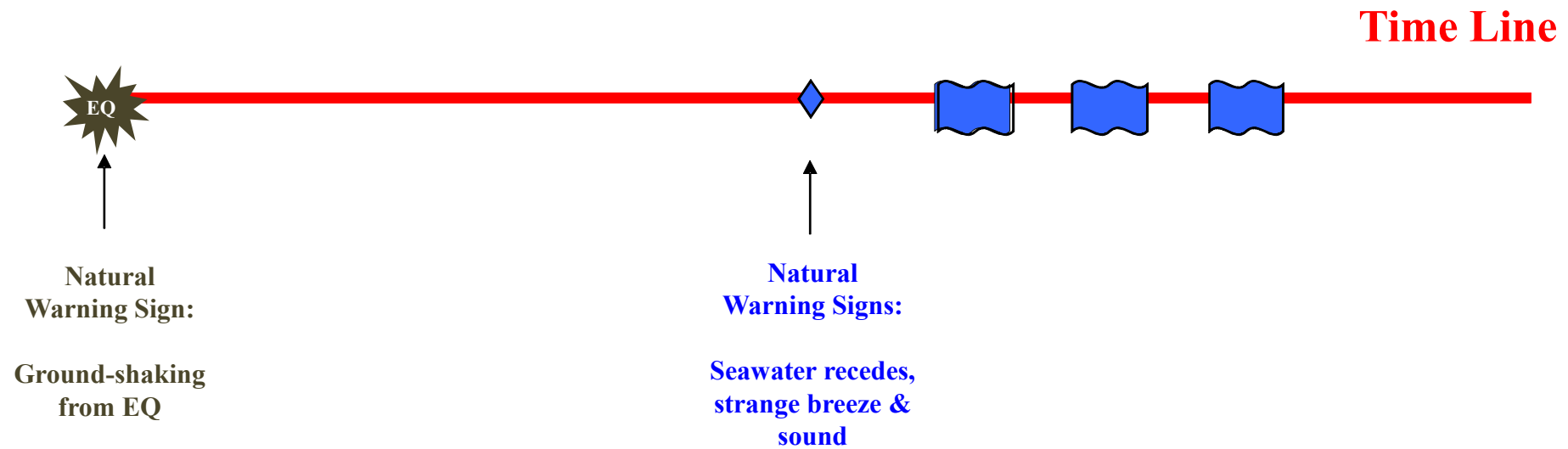
## Decision-making for evacuation

- **Timing:** must work 24/7 and within short time (minutes to hours, depending on tsunami travel time)
- **Decision making under uncertainty:** an issue especially for near-field tsunamis
- **Consequences:** in general, a far-reaching decision with significant consequences for public life
- **Authorization:** often decision has to be taken by highest authority (Mayor, Chief of agency, Minister). If delegated to lower levels, clear rules must be in place.
- **Communicate call for evacuation:** must reach communities, also in remote areas and at night times

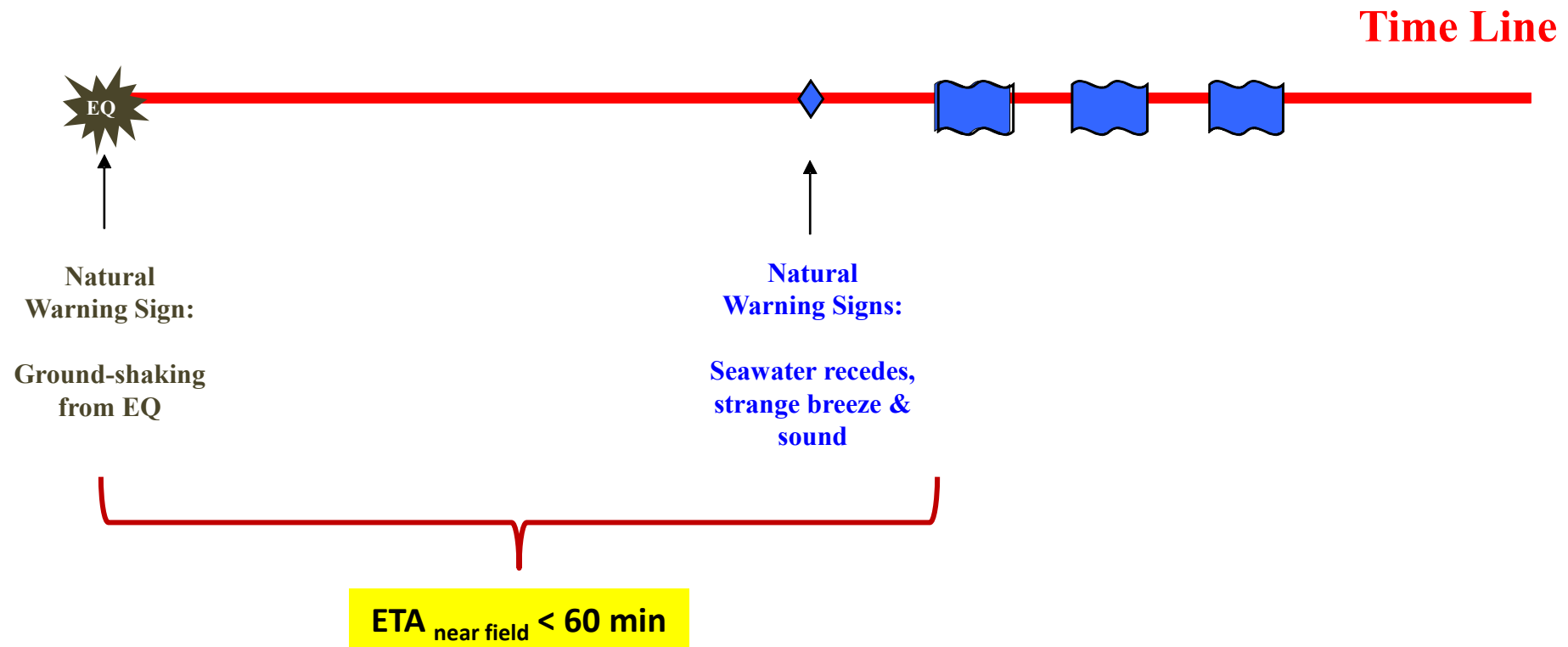
**Time is the most critical factor for near-field tsunamis**  
**Decision making under uncertainty**



# Understanding the time-line for near-field tsunamis

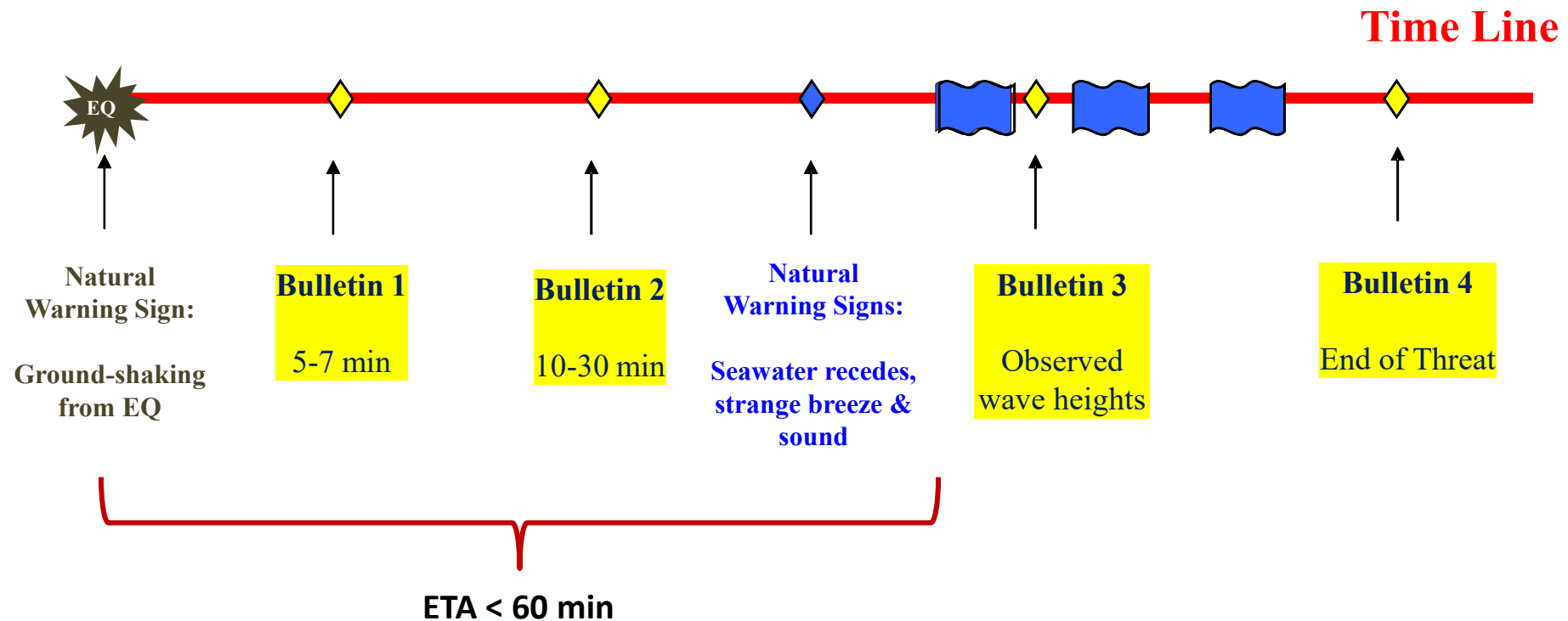


# Understanding the time-line for near-field tsunamis



# Understanding the time-line for near-field tsunamis

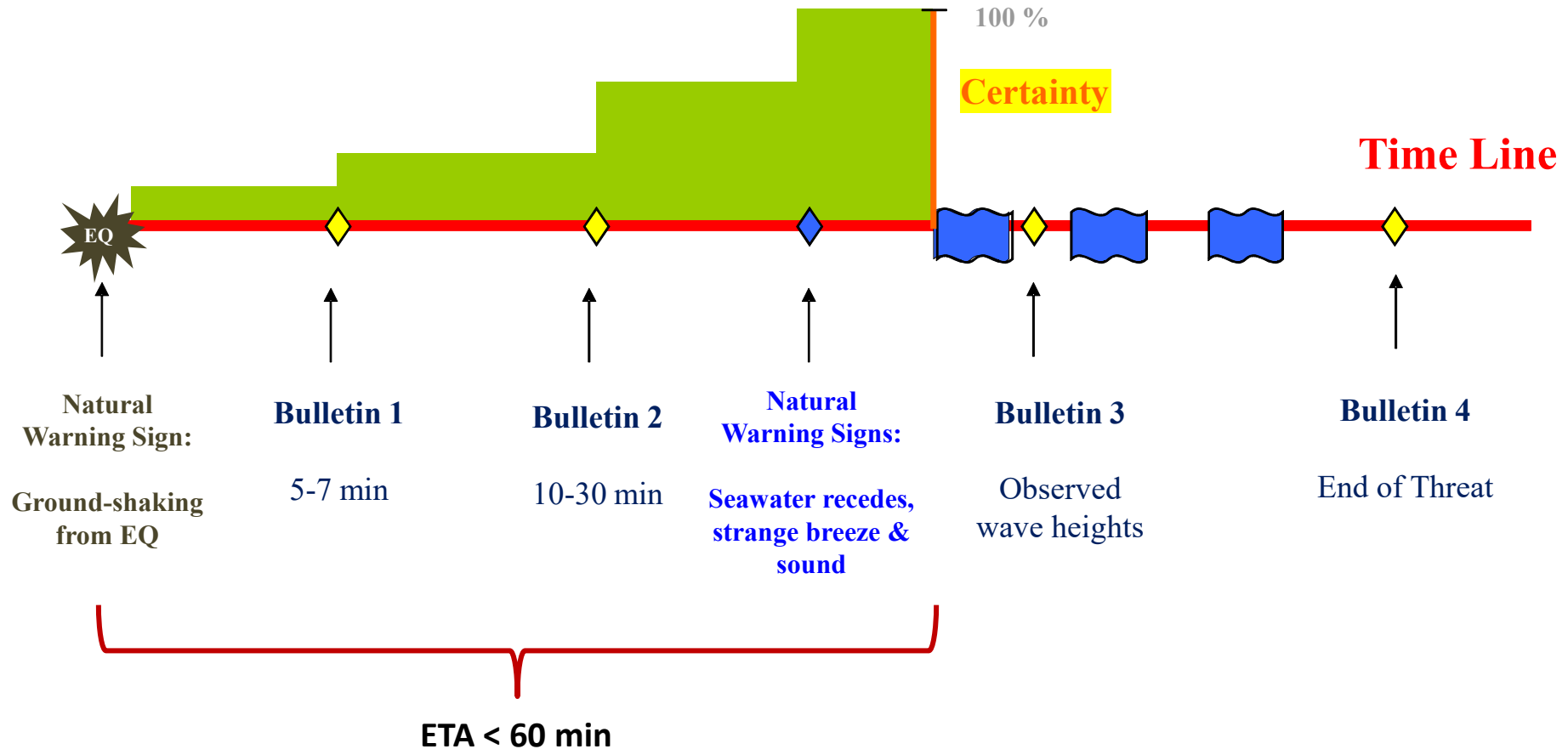
## Example warning sequence





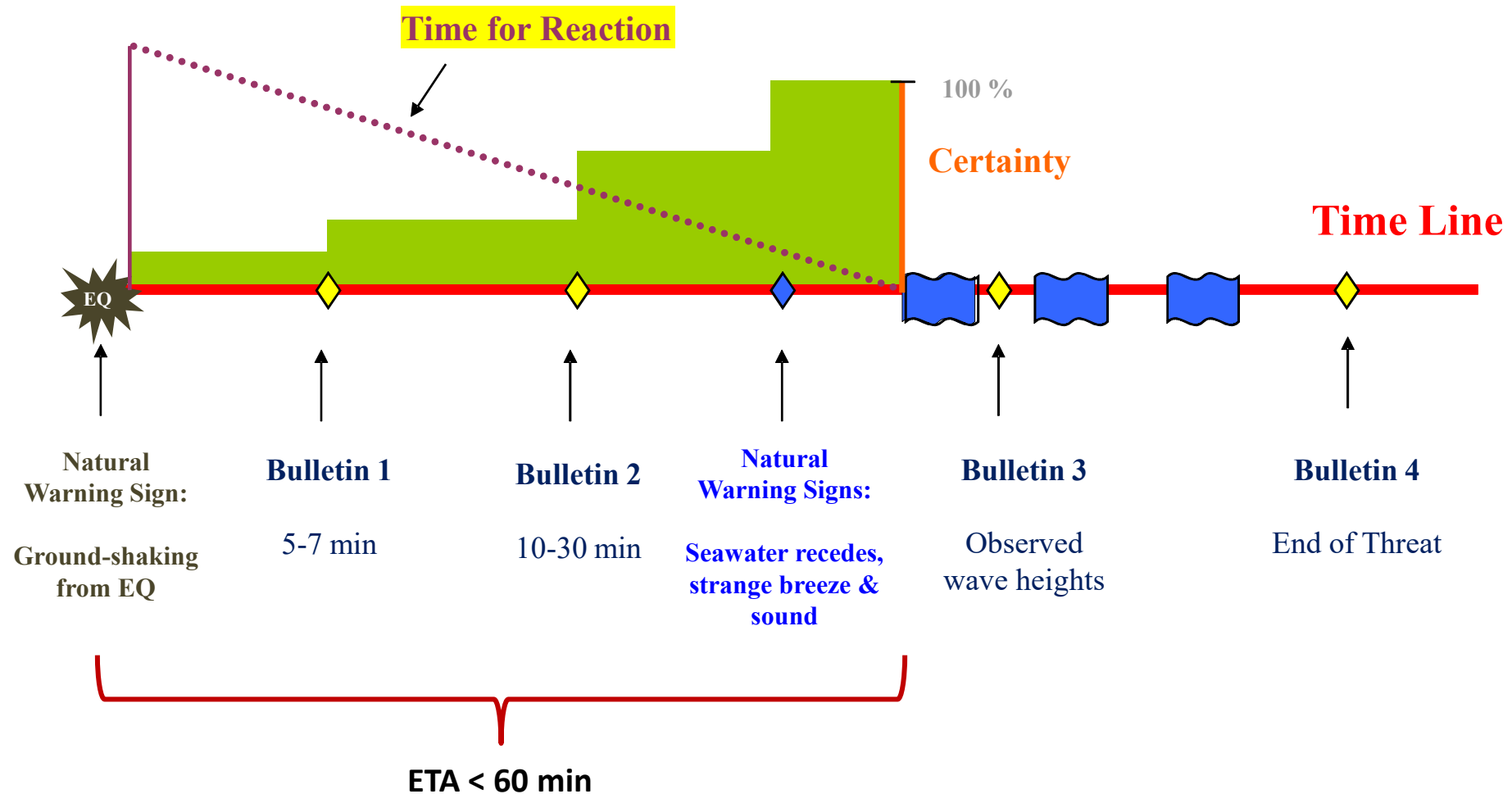
# Understanding the time-line for near-field tsunamis

## The dilemma of uncertainty







# Understanding the time-line for near-field tsunamis

## Challenge: decision-making under uncertainty



## Example of India

# Decision making based on NTWC warning levels and advice

Threat Status	Action to be taken	Dissemination to		
<b>WARNING</b>	Public should be advised to move inland towards higher grounds. Vessels should move into deep Ocean	MoES, MHA, NDMA, NCMC, NDRF Battalions, SEOC, DEOC, Public, Media	<b>WARNING</b>	
<b>ALERT</b>	Public should be advised to avoid beaches and low-lying coastal areas. Vessels should move into deep Ocean	MoES, MHA, NDMA, NCMC, NDRF Battalions, SEOC, DEOC, Public, Media	<b>ALERT</b>	
<b>WATCH</b>	No immediate action is required	MoES, MHA, NDMA, NCMC, NDRF Battalions, SEOC, DEOC, Media	<b>WATCH</b>	
<b>THREAT PASSED</b>	All clear determination to be made by the local authorities	MoES, MHA, NDMA, NCMC, NDRF Battalions, SEOC, DEOC, Public, Media	<b>THREAT PASSED</b>	

# Example of Indonesia

## From Warning and Advice to Guidance for Communities

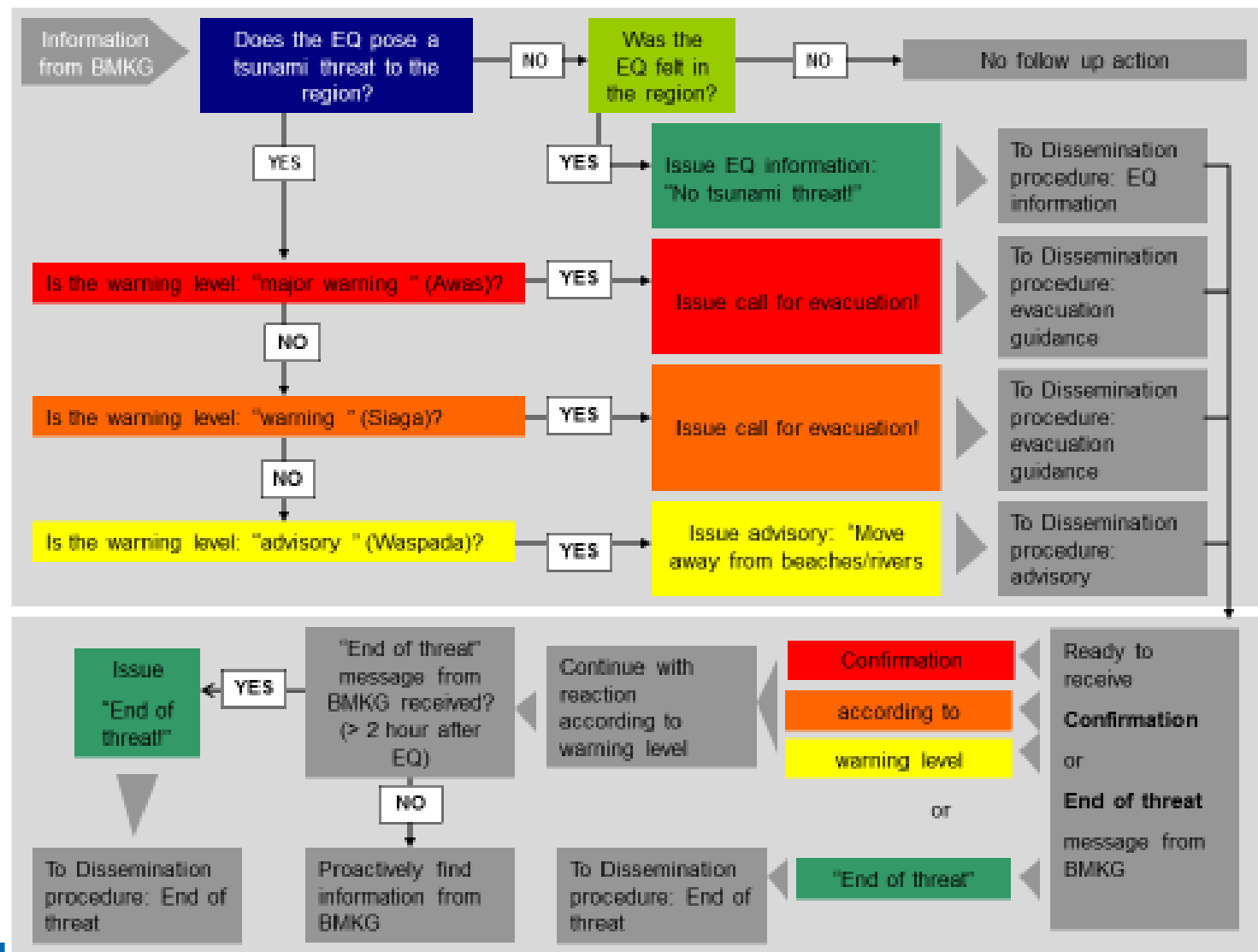
Warning Level	Advice from BMKG to Local Government	Guidance from Local Government to Community
<b>MAJOR WARNING (AWAS)</b>	Province/District/City government that are at "Major Warning" level are expected to pay attention to this warning and immediately guide their communities for full evacuation.	<b>Call for immediate evacuation!</b>
<b>WARNING (SIAGA)</b>	Province/District/City government that are at "Warning" level are expected to pay attention to this warning and immediately guide their communities for evacuation.	
<b>ADVISORY (WASPADA)</b>	Province/District/City government that are at "Advisory" level are expected to pay attention to this warning and immediately guide their communities to move away from the beach and river banks.	<b>Advice to move away from beaches and rivers!</b>
<b>EARTHQUAKE INFORMATION</b>	Earthquake on land, earthquake with minor magnitude or too deep – no tsunami threat	<b>No action!</b>

Warning & Advice from National Warning Centre at BMKG, Jakarta

Source: Tsunami Early Warning Service Guidebook for InaTEWS, 2012

<https://www.gitews.de/tsunami-kit/en/E3/tool/Tsunami%20Early%20Warning%20Service%20Guidebook%20for%20InaTEWS.pdf>

# Example of Indonesia Decision Making SOP



Source: Tsunami Early Warning Service Guidebook for InaTEWS, 2012

# Issues to consider

## Decision-making for evacuation

- **Information base:** warning information / warning levels provided by the NTWC
- **Timing:** Understand tsunami arrival times, determine critical decision point for each source / source region. How long will it take for a community to evacuate?
- **Authorization:** Decide when authorization is required and who will authorize? Essential to delegate authority for quick response
- **SOP:** use a Map, Table or Chart for easy reference
- **Communicate call for evacuation:** use message template for easy fill-in, trigger sirens, Media press-stop



**unesco**

Intergovernmental  
Oceanographic  
Commission

**THANK YOU**