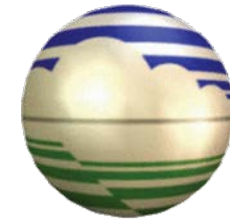




KEMENTERIAN  
PEKERJAAN UMUM  
REPUBLIK INDONESIA



**BMKG**

# NATIONAL FRAMEWORK FOR FLOOD DISASTER MANAGEMENT IN INDONESIA

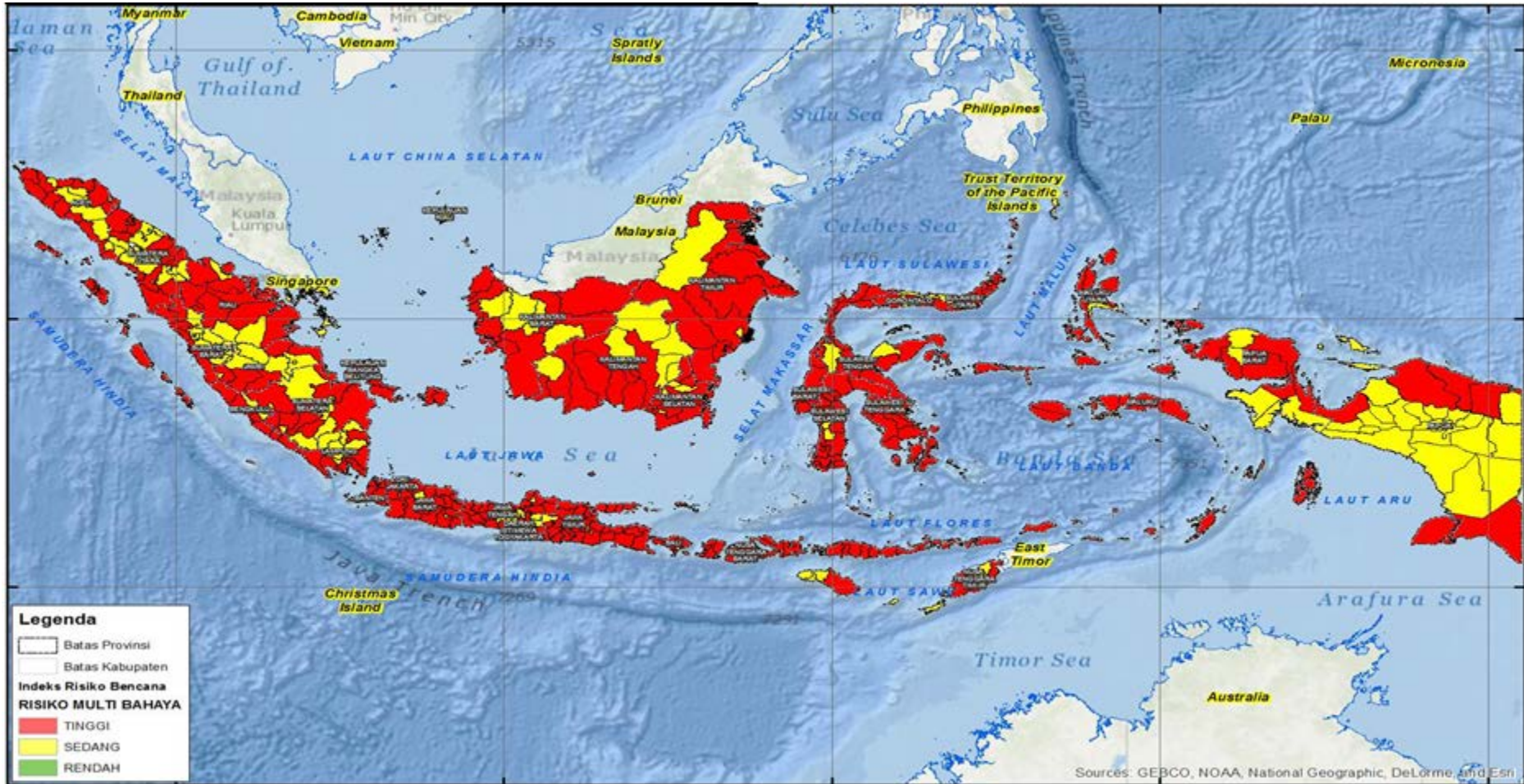
**11<sup>th</sup> GEOS ASIA – PASIFIC SYMPOSIUM  
Kyoto, 24-26 October 2018**

# OUTLINE



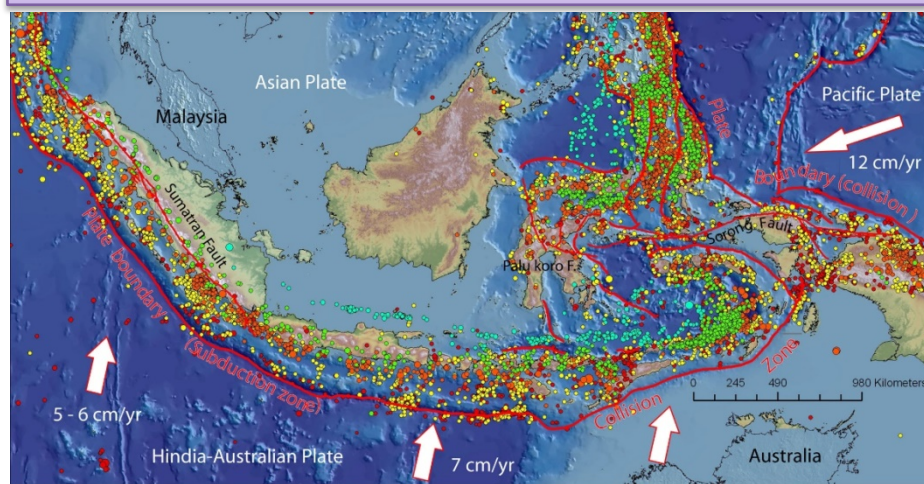
# DISASTERS IN INDONESIA

## Map of Disasters Risk Index in Indonesia

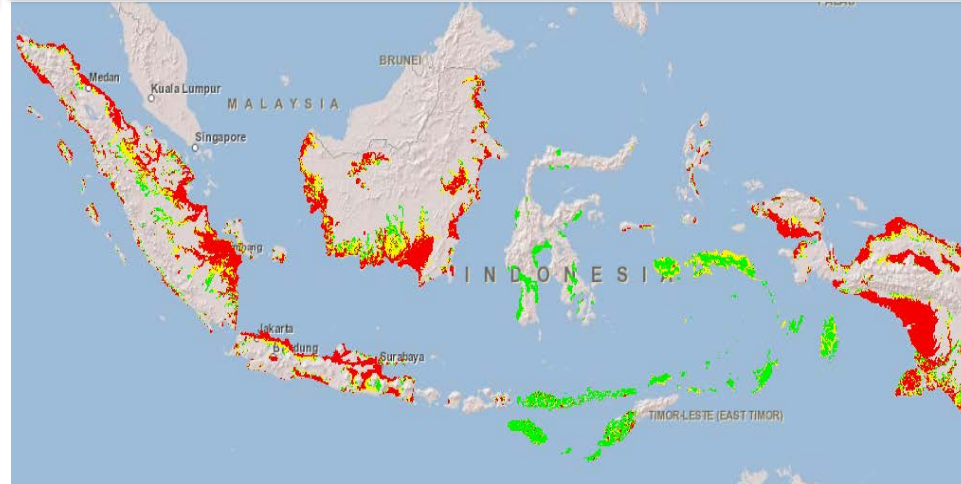


Source:BNPB

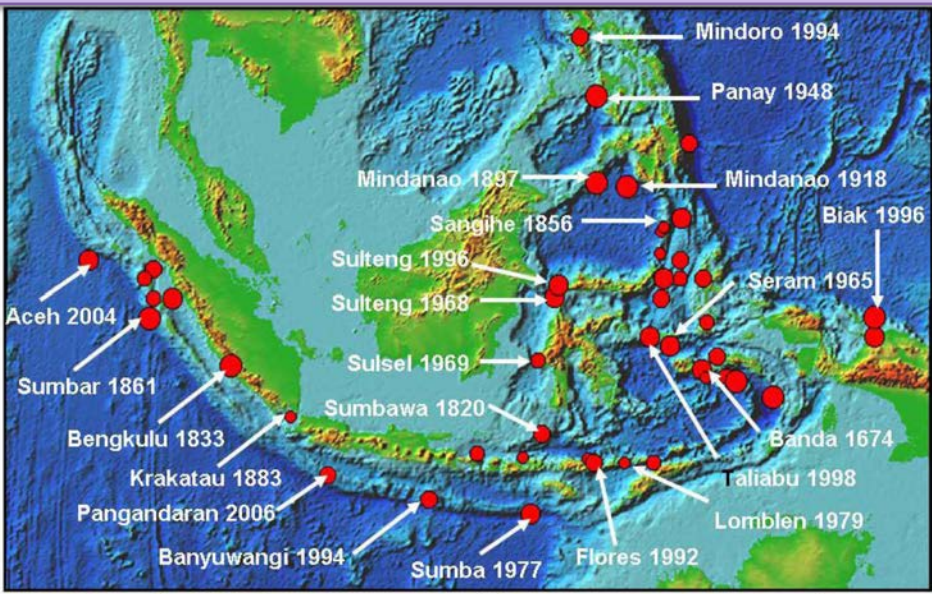
## Seismo-Tectonics Indonesia



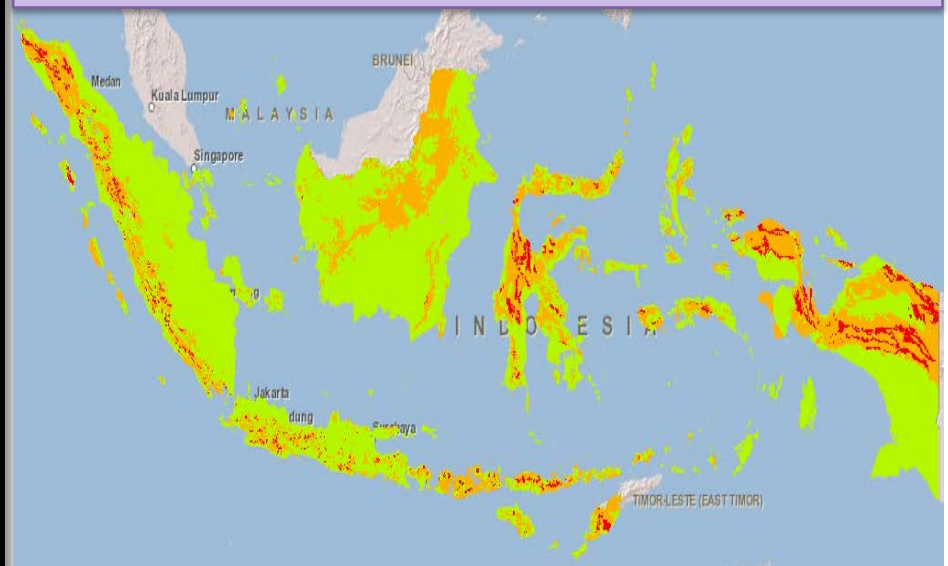
## Flooding Threats



## 173 Tsunamis (1629 sd 2014)



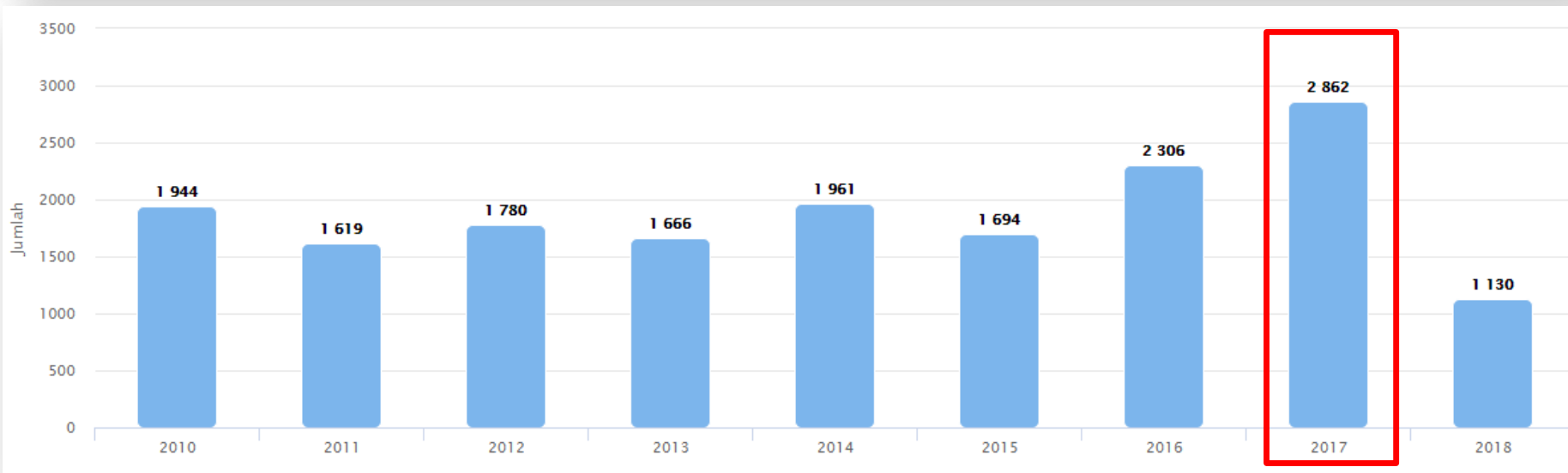
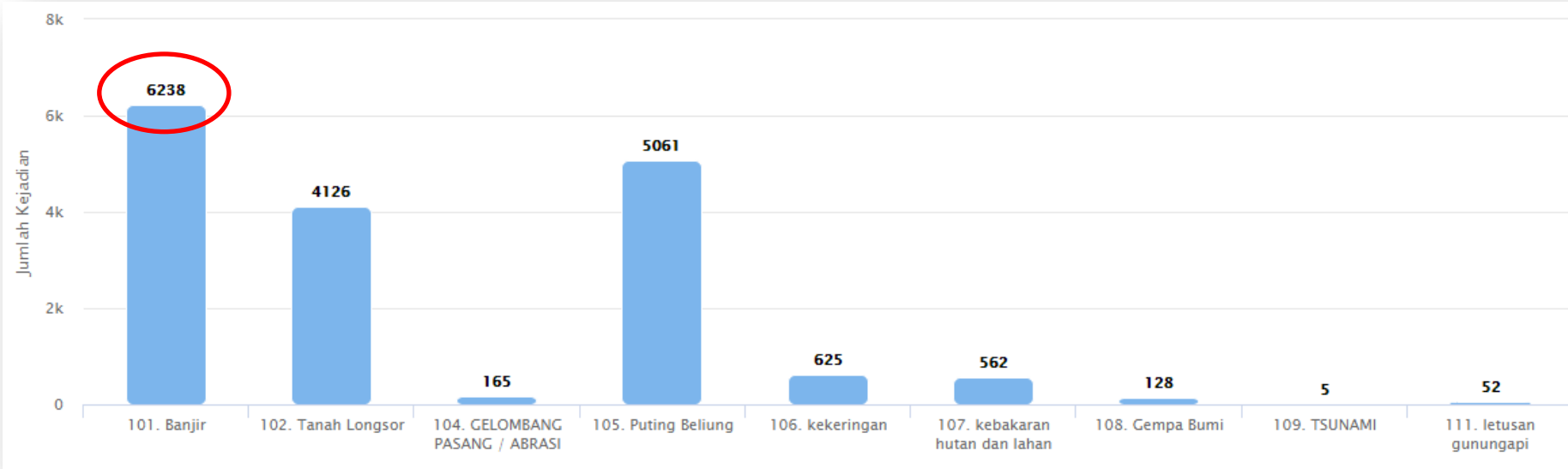
## Landslides Threats



## Frequency of Disasters 2010 – Augst 2018

Rank	Disasters	Frequency
1	Flood	6258
2	Putting Beliung (tornado)	5061
3	Landslide	4126
4	Drought	625
5	Forest Fire	562
6	Tidal Wave/Abration	165
7	Earthquake	128
8	Volcanic Eruptions	52
9	Tsunami	5

Source:BNPB



- Flood is the most disaster occurred in 2010 – Augst 2018
- So many disasters occurred in year 2017

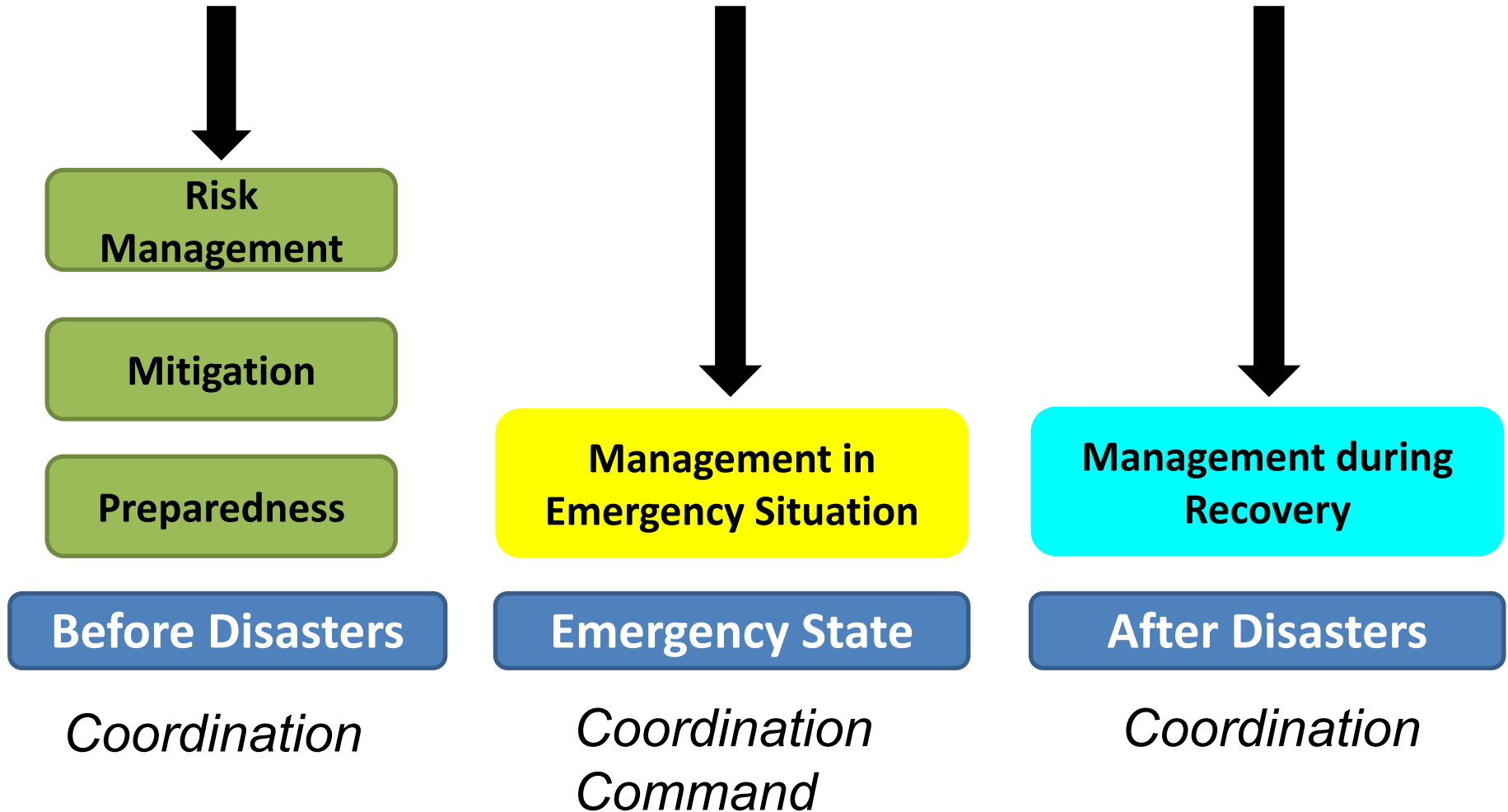
Source:BNPB

# The Factors that Causes The Disasters

- ✓ The high rainfall
- ✓ The land conversion
- ✓ The deforestation
- ✓ The steep slope
- ✓ The condition of Geological and Geotechnical local soil
- ✓ The watershed characteristics and river morphology
- ✓ The ring of fire
- ✓ The high temperature
- ✓ Habits of humans



# THE DISASTERS MANAGEMENT MECHANISM IN INDONESIA



(Flood) Disaster Management need prediction information and early warning



# Task and Functions of Ministries/ Institutions related to Disaster Management Mechanism

## Before Disasters

- Disaster information services – **BNPB, BIG**
- MCG information services – **BMKG**
- Hotspot monitoring – **LAPAN**
- Broadcasting of disaster information - **Kemenkominfo**

## Emergency State

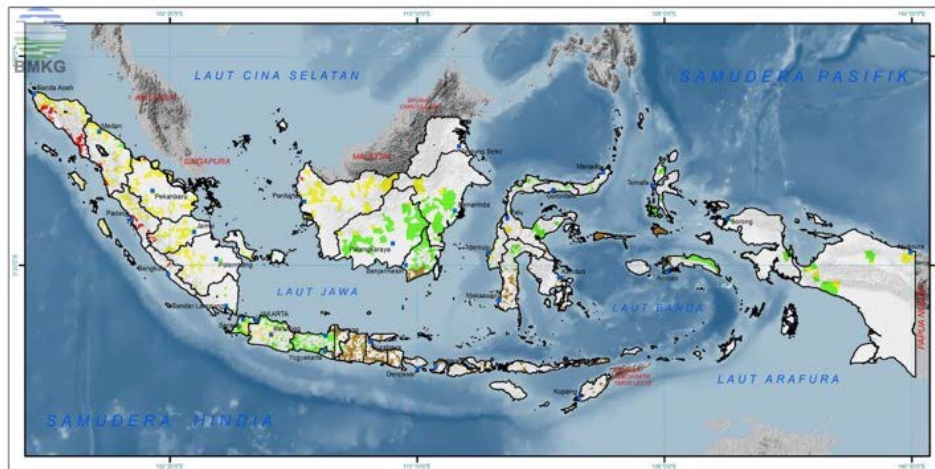
- Emergency disaster management – **BNPB, Kemensos, Kemenkes**
- Handling emergency infrastructure – **Kemen PUPR**

## After Disasters

- Rehabilitation of infrastructure in disaster area – **BNPB, BIG, Kemen PUPR**
- Revitalization of critical river basin – **KLHK**
- Rehabilitation of agriculture area – **Kementan**
- Rehabilitation epidemic of disease - **Kemenkes**

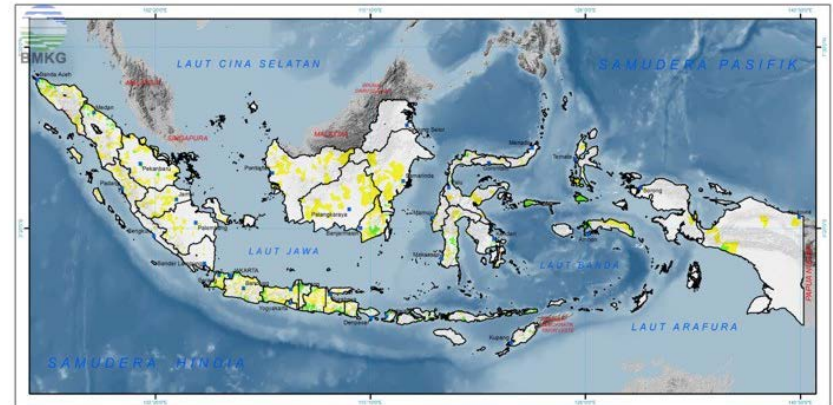
Challenge: Need coordinations related to the task and functions of ministries and institutions

# CURRENT STATUS OF FLOOD EARLY WARNING SYSTEM



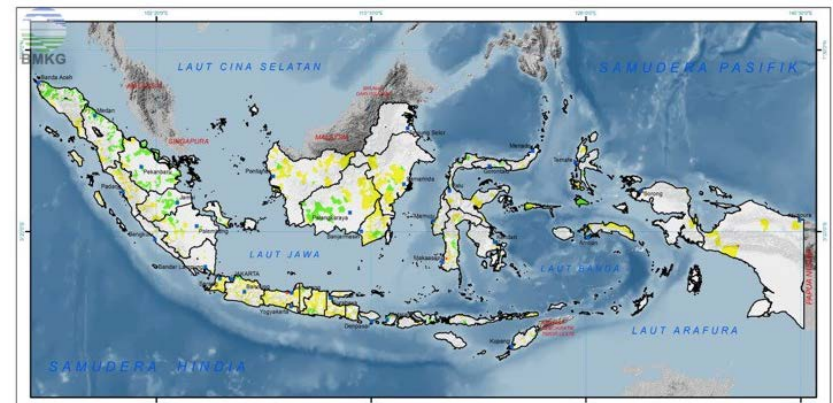
**PETA PRAKIRAAN  
DAERAH POTENSI BANJIR  
INDONESIA  
NOVEMBER 2018**

**INFORMASI/ KETERANGAN :**  
 ■ Ibukota Propinsi  
 — Batas Propinsi  
**Potensi Rawan Banjir**  
 ■ Tinggi  
 ■ Menengah  
 ■ Rendah  
 ■ Aman  
 ■ Non Banjir



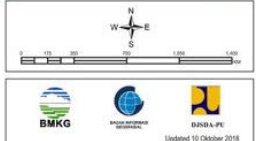
**PETA PRAKIRAAN  
DAERAH POTENSI BANJIR  
INDONESIA  
DESEMBER 2018**

**INFORMASI/ KETERANGAN :**  
 ■ Ibukota Propinsi  
 — Batas Propinsi  
**Potensi Rawan Banjir**  
 ■ Tinggi  
 ■ Menengah  
 ■ Rendah  
 ■ Aman  
 ■ Non Banjir



**PETA PRAKIRAAN  
DAERAH POTENSI BANJIR  
INDONESIA  
JANUARI 2019**

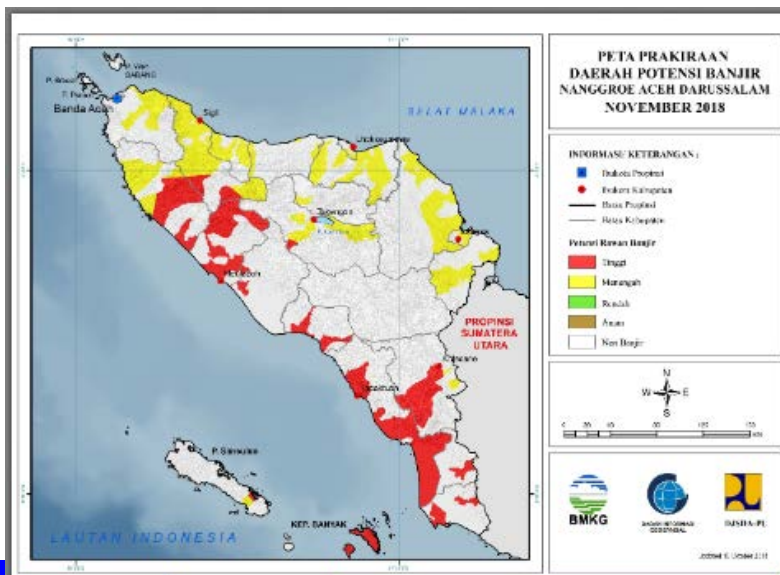
**INFORMASI/ KETERANGAN :**  
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 ■ Rendah  
 ■ Aman  
 ■ Non Banjir



Information flood potential forecasts are made in the legend of high, medium, low, safe and no flood event

# Flood potential forecast is the result of collaboration by 3 Agencies

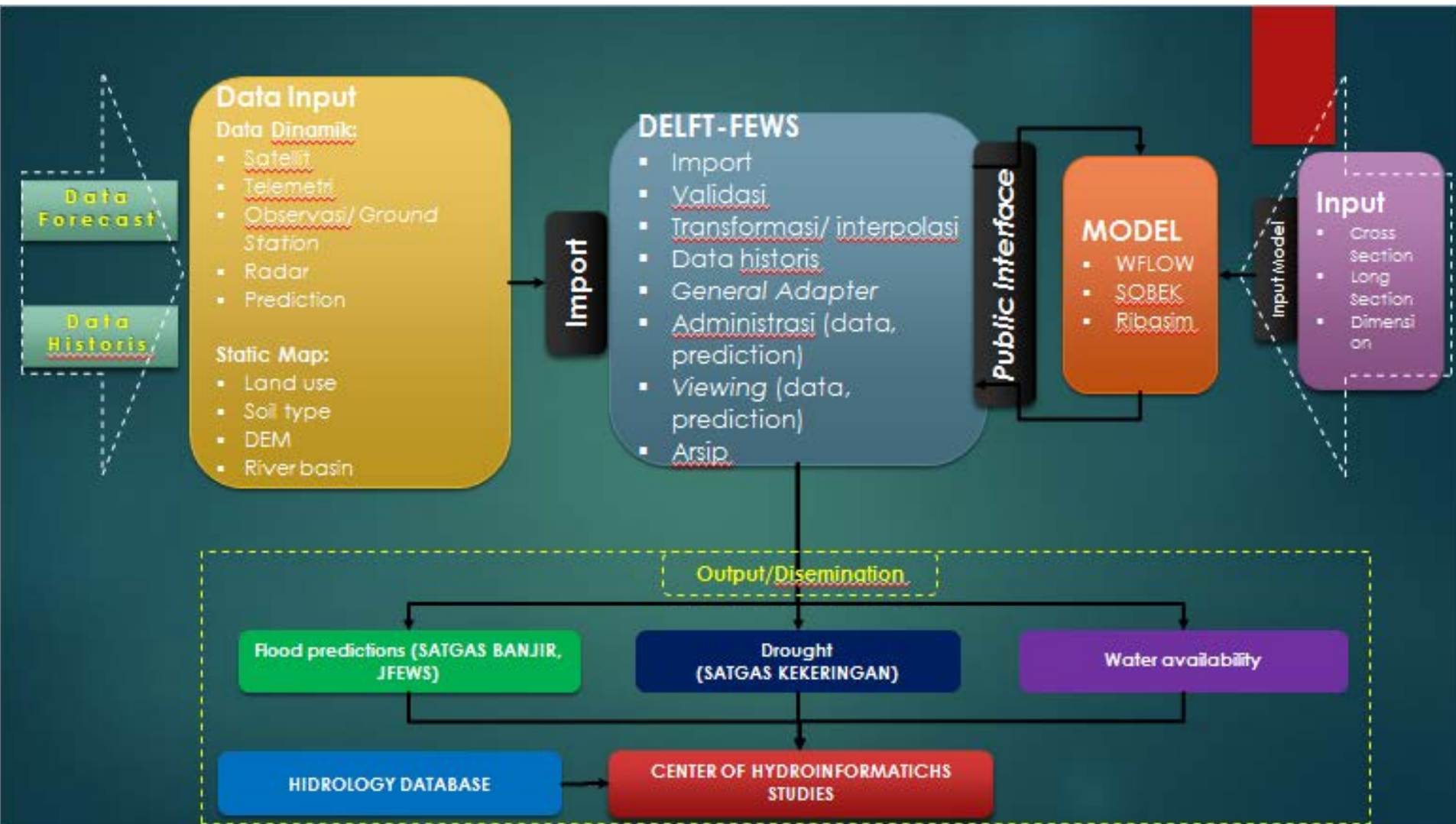
Agencies	Provide
BMKG	Monthly rainfall forecast
Directorate General of Water Resources – Ministry of Public Works (PSDA-PUPR)	Information of flood prone areas
Geospatial Information Agency (BIG)	Base map (RBI, land system, land cover)



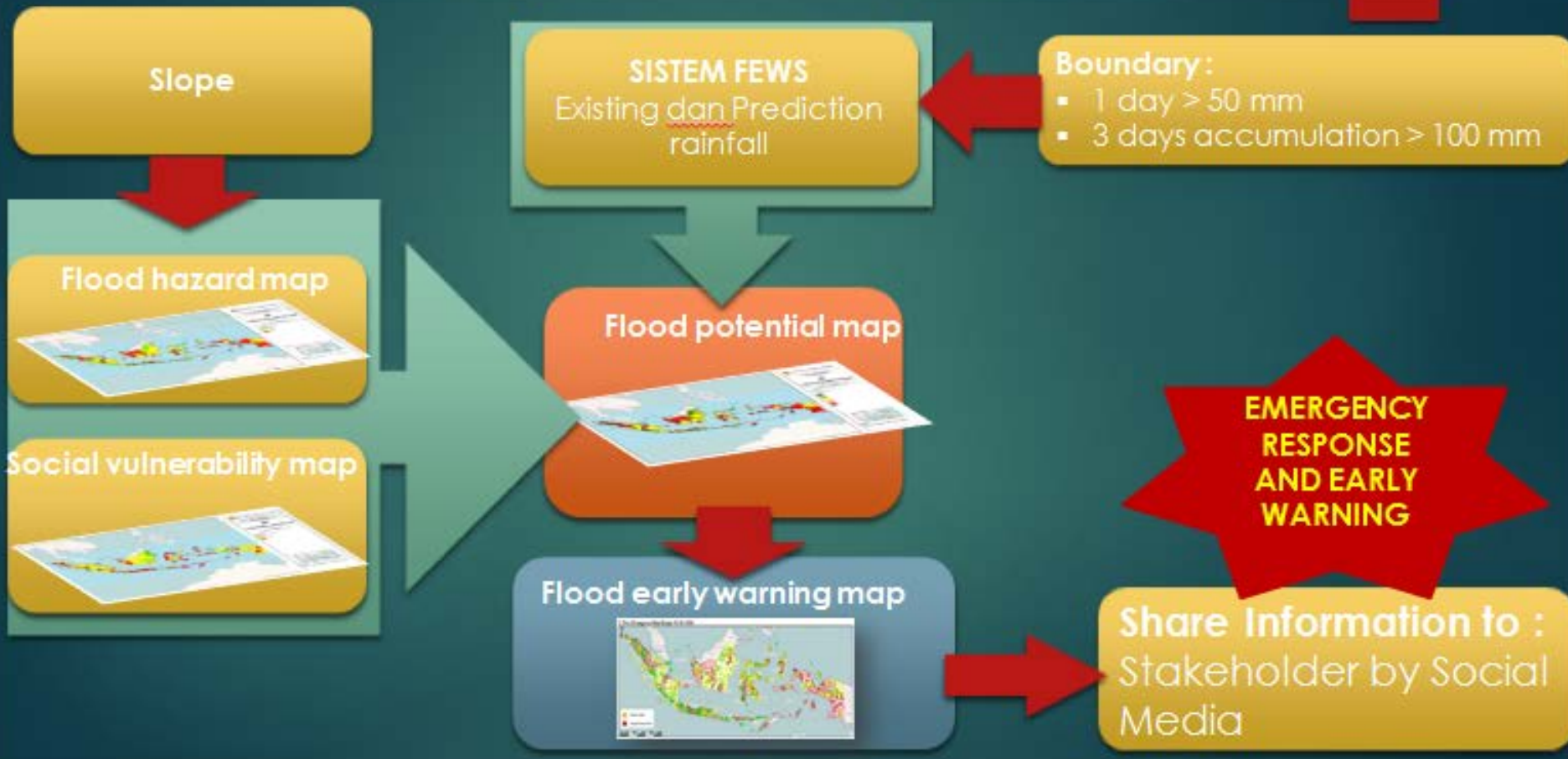
**PRAKIRAAN DAERAH POTENSI BANJIR ACEH NOVEMBER 2018**

TINGKAT POTENSI BANJIR		
TINGGI	MENENGAH	RENDAH
KAB. ACEH BARAT (KEC. JOHANPAHWALAN, KAWAY XVI, SAMATIGA, SUNGAIMAS, KOTIJA) KAB. ACEH BARAT (DAYA) (KEC. KUALABATEE, MANGONG, SUSOH, TANGAN-TANGAN) KAB. ACEH SELATAN (KEC. BAKONGAN, KLUET SELATAN, KLUET UTARA, KOTA BAHAGIA, SAMADUA, SAWANG, TAPAKTUAN, TRUMON, TRUMON TENGAH, TRUMON TIMUR) KAB. ACEH SINGKIL (KEC. PULAU PANGGUNG, SIMPANG KANAN, SINGKIL) KAB. ACEH TENGAH (KEC. PEDASING) KAB. ACEH TENGGARA (KEC. BAMBEL, LAWE ALAS) KAB. ACEH JAYA (KEC. KRUENG SABEE, SETABAKTI, TEUKOH) KAB. NAGAN NYA (KEC. KUALA, SEUNAGAN) KAB. PIDIE (KEC. GEUMPANG, TANGSE) KAB. SIMEULU (KEC. SIMEULU TIMUR) KAB. SUBULUSSALAM (KEC. SIMPANG KIRI)	KAB. ACEH BARAT (KEC. SUNGAIMAS) KAB. ACEH BESAR (KEC. INORAPURI, MESJID RAYA, SELUMELUM) KAB. ACEH TAMANG (KEC. KEJURUAN MUDA, KUALA SIMPANG, SERUNJAY, TAMANG HULU) KAB. ACEH TENGGH (KEC. BINTANG, PEDASING, SILIH NARA) KAB. ACEH TENGGARA (KEC. BAMBEL, LAWE SIGALA-GALA) KAB. ACEH TIMUR (KEC. BIREUM BAYEUM, DARULAMAN, IDRAYEK, JULOK, MURUSSALAM, PEUREULAK, RANTAU SELAMAT, RANTO PEUREULAK, SIBINGULUM) KAB. ACEH UTARA (KEC. BAKTI YA BARAT, COT GITREK, KUTAMAKULIR, LHOKSUKON, MATANDIKULI, PIRAK TIMUR, SAMUDERA SAWANG, SYAMTALIRAKRON, TANAH LUKS, TANAH PASIR) KAB. ACEH JAYA (KEC. INDRAJAYA, KRUENG SABEE, SAMPONET, SETABAKTI) KAB. BENER MERAIH (KEC. TIMANGGAJAH) KAB. BUREUN (KEC. KUALA, MAKJUR, SAMALANGA) KOTA LANGSA (KEC. LANGSA BARAT, LANGSATIMUR) LHOKSUNAWAYE (KEC. BANDA SAKTI, BLANGMAYAT) KAB. PIDIE (KEC. BATEE, DELIMA, GEUMPANG, GEUMPANG TIGA, INDRAJAYA, KEMBANG TANJONG, MILA, MUARA TIGA, MUTARA, PADANG TUA, PEUKAN BARU, PIDIE, SAKTI, SIMPANG TIGA, TANGSE, TINDI TRISBI, TITELI) KAB. PIDIE JAYA (KEC. BANDAR DUA, BANDAR BARU, MEUREUDU, ULUM) KAB. SIMEULU (KEC. SIMEULU TIMUR)	—

# Scheme of The Central of Hydroinformatics Studies - PUPR (DELFT - FEWS)



# TASK FORCE "FLOOD" PUPR



Flood Early Warning System is a software create by Deltares (Netherland) and developed by PUSAIR through the Joint Cooperation Program (JCP)

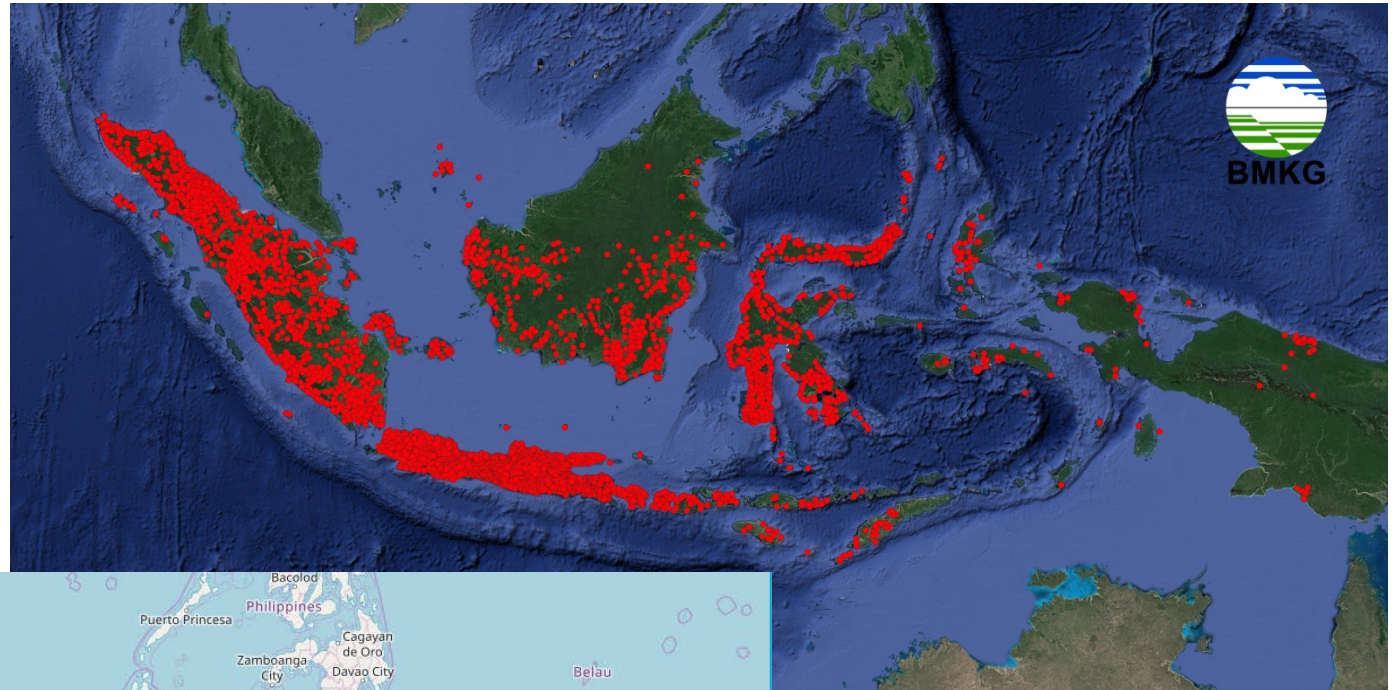


## Data Input

Forecat data	PIC
Observation data	BMKG
NWP (National Weather Prediction)	BMKG
GWP (Global Weather Prediction)	BMKG
ECMWF (European Centre for Medium-Range Weather Forecast)	BMKG
GFS (Global Forecast System)	NASA
Access-A, R, T	NASA

Historical data	PIC
TRMM (Tropical Rainfall Measuring Mission)	NASA
GPM (Global Precipitation Measurement)	NASA
Radar AWS	BMKG
Radar	BPPT
Ground Station/Observasi	BMKG/BBWS/BWS/Dinas PU
Telemetri	BBWS/BWS, Dinas PU, PUSAIR SEBA

# Data Input and evaluation (observation)



- **> 6000 rainfall station**
- **336 AWS**
- **573 ARG**
- **105 AAWS**



BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA  
SISTEM INFORMASI AWS(Automatic Weather Station)



# CURRENT ACTIVITY AND ACTIVITY PLANNING

BMKG	PUPR
Coordination with PUPR, BIG “Flood potential forecast”	Coordination with BMKG, BIG “Flood potential forecast”
Coordination with BNPB about MHEWS	JCP3 J-FEWS
JCP3 climate change	Development web integration about The Central of Hydroinformatics Studies
SATREPS (Science and Technology Research Partnership for Sustainable Development) about MHEWS (proposal)	etc
etc	

# FOLLOW UP (IN MY OPINION)

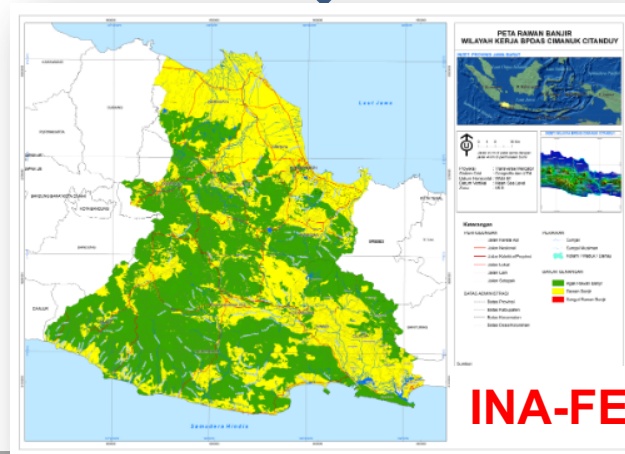
Need team task force from all institutions that related in disaster management mechanism

- BMKG
- PUPR
- BIG
- BNPB
- etc

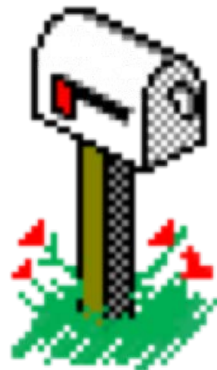


Team leader

1. Resources Capacity Building (Big data, AI, IoT)
2. Benchmarking
3. Infrastruktur improvement (storage, platform database, etc)
4. Financial supporting



# Thank You



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