KEMENTERIAN
PEKERJAAN UMUM
REPUBLIK INDONESIA

BMKG

NATIONAL FRAMEWORK FOR FLOOD DISASTER MANAGEMENT IN INDONESIA

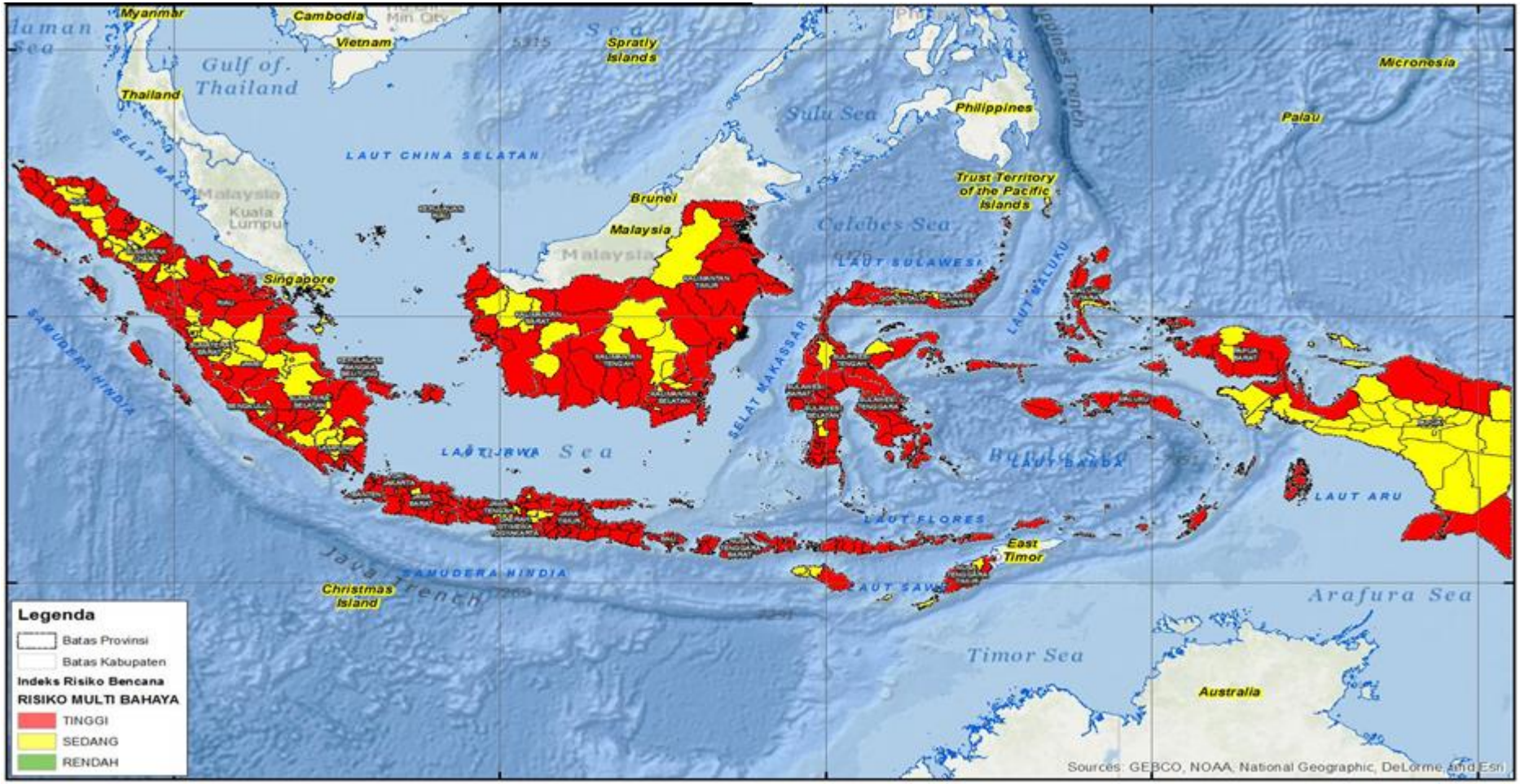
11th GEOSS ASIA – PASIFIC SYMPOSIUM
Kyoto, 24-26 October 2018

OUTLINE

- Disasters in Indonesia
- The Disaster Management Mechanism
- Current Status of Flood Early Warning Systems
- Currently and Activity Plan
- Follow up in The Future

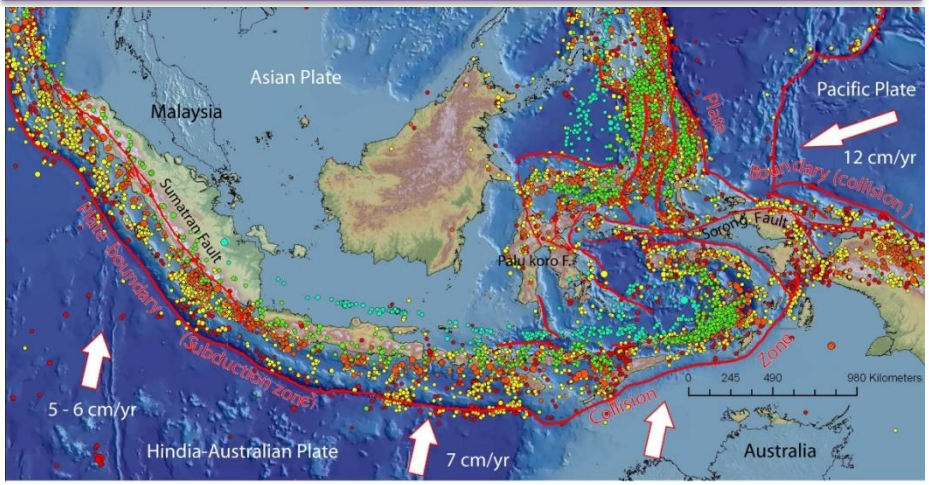
DISASTERS IN INDONESIA

Map of Disasters Risk Index in Indonesia

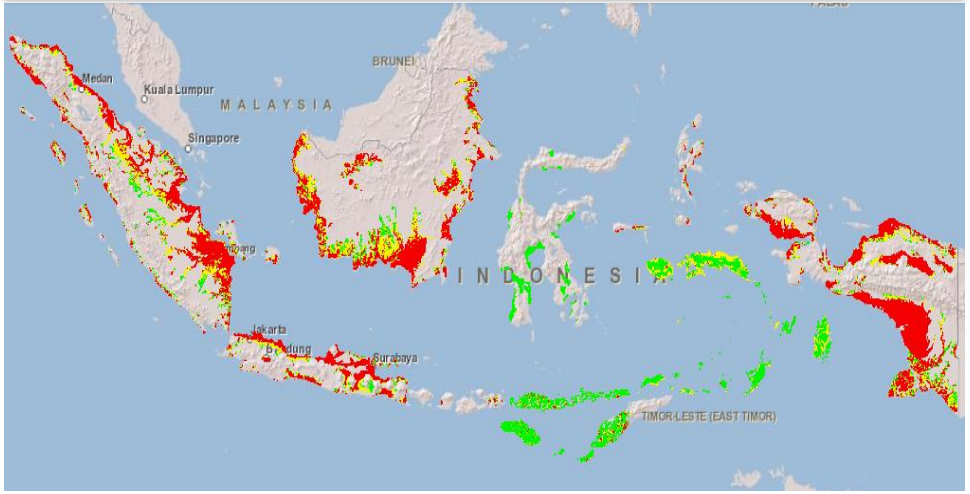


Source:BNPB

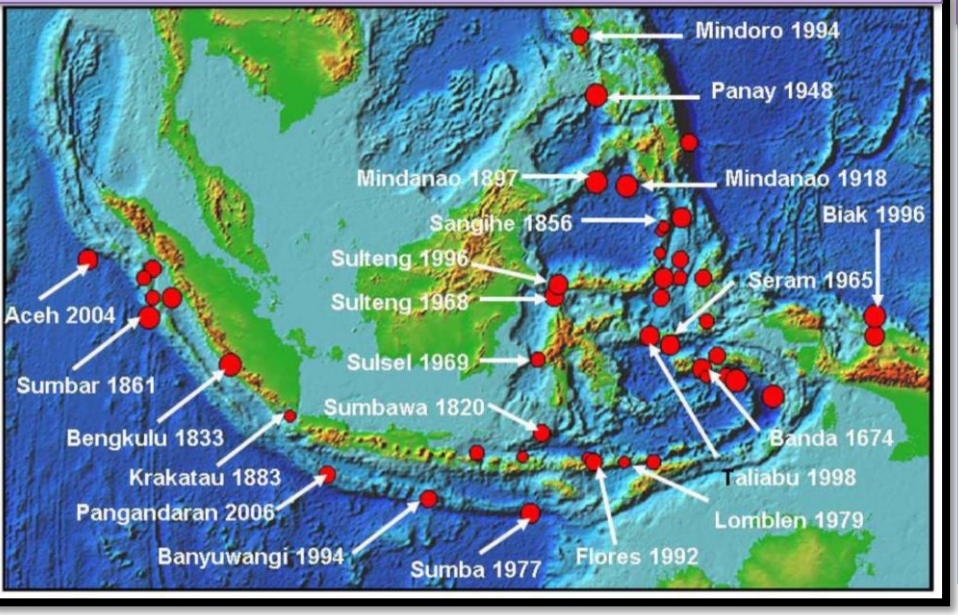
Seismo-Tectonics Indonesia



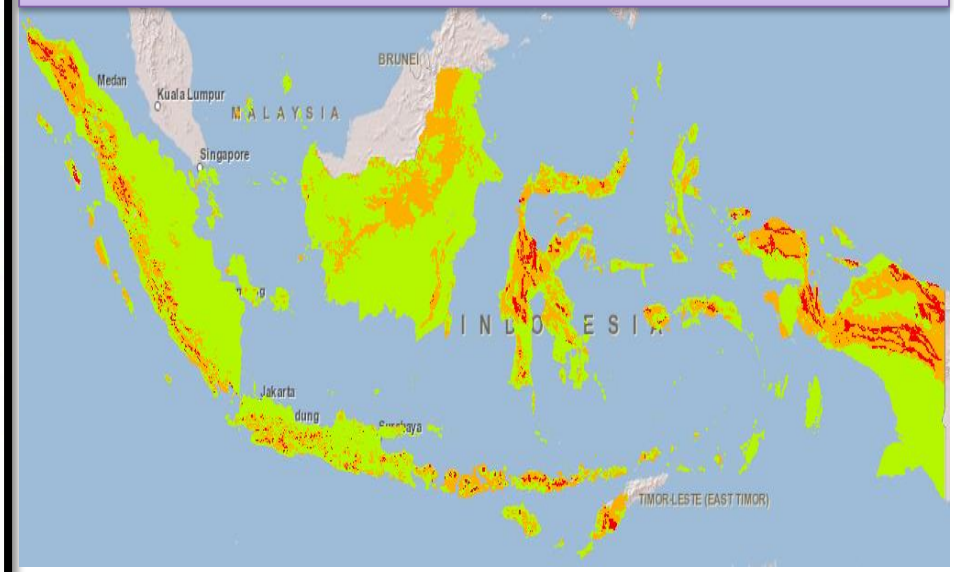
Flooding Threats



173 Tsunamis (1629 sd 2014)



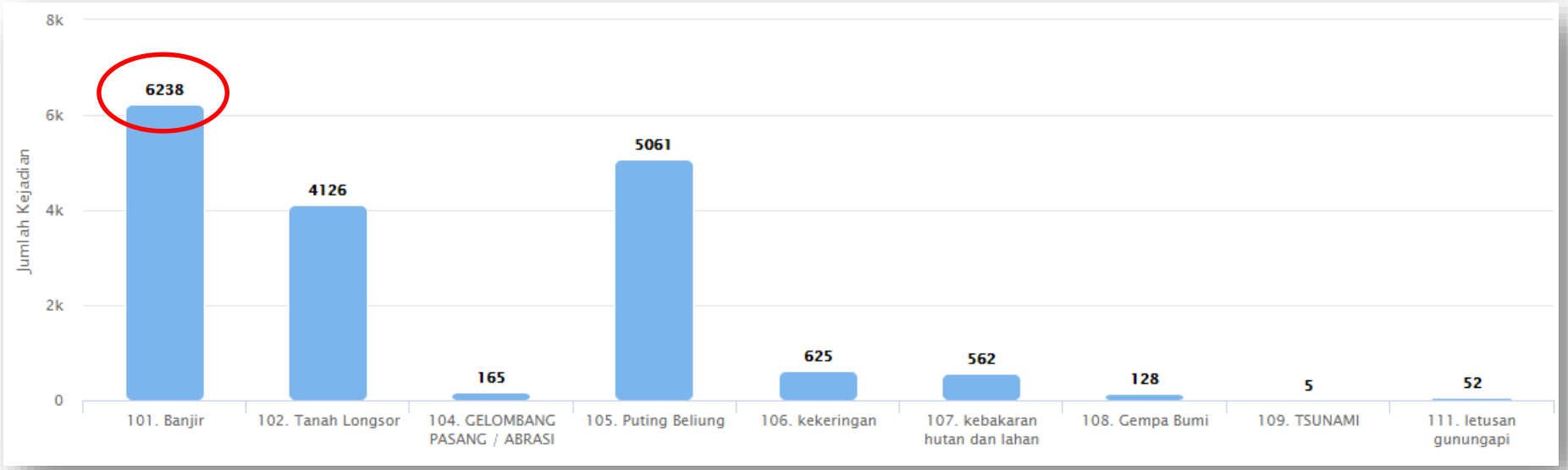
Landslides Threats

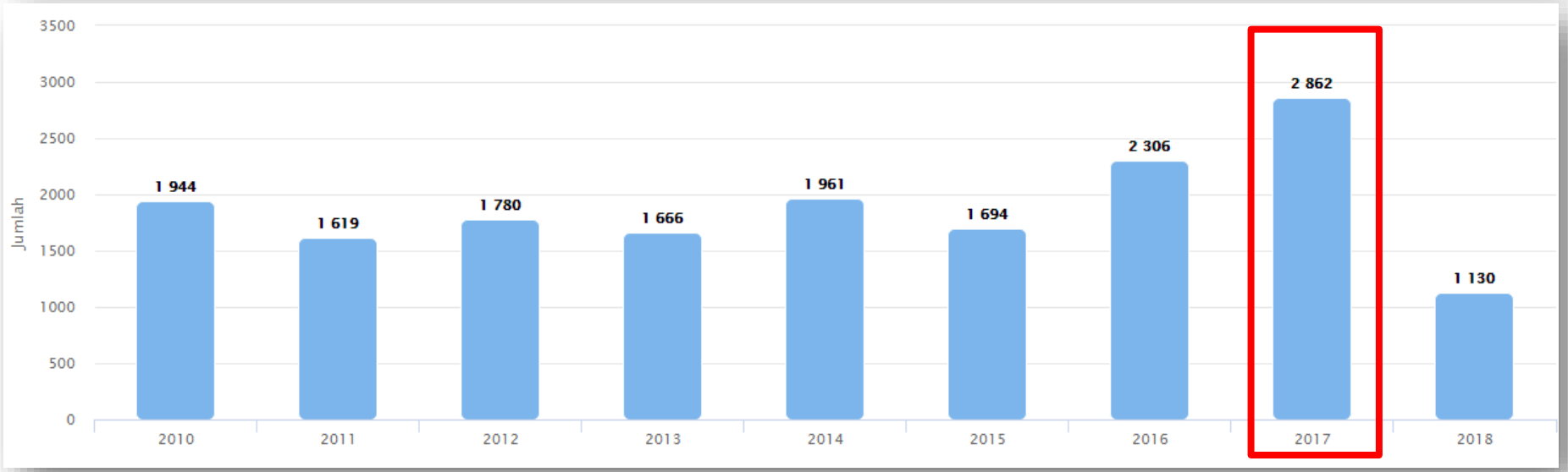


Frequency of Disasters 2010 – Augst 2018

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





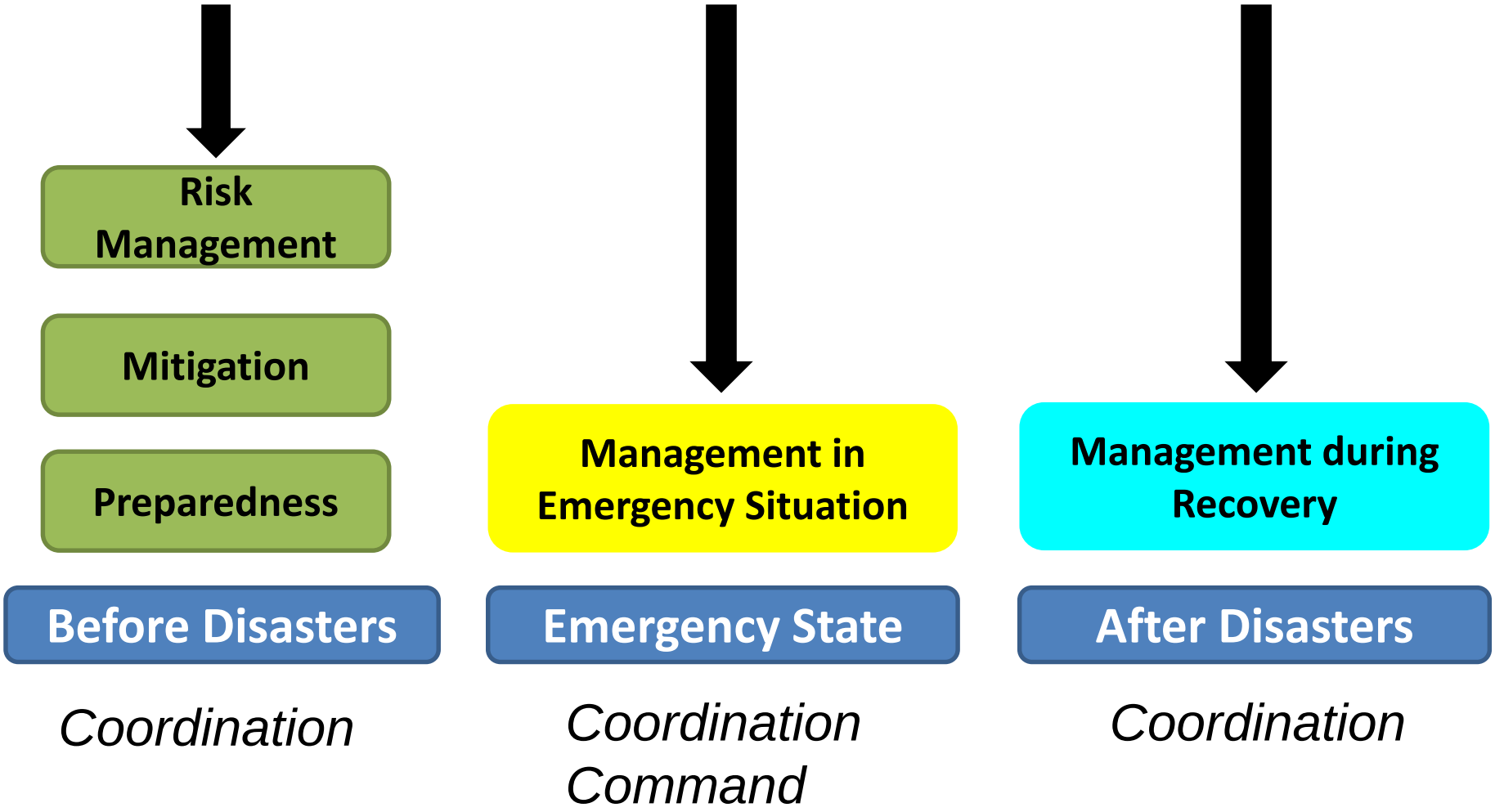
- Flood is the most disaster occurred in 2010 – Augst 2018
- So many disasters occurred in year 2017

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



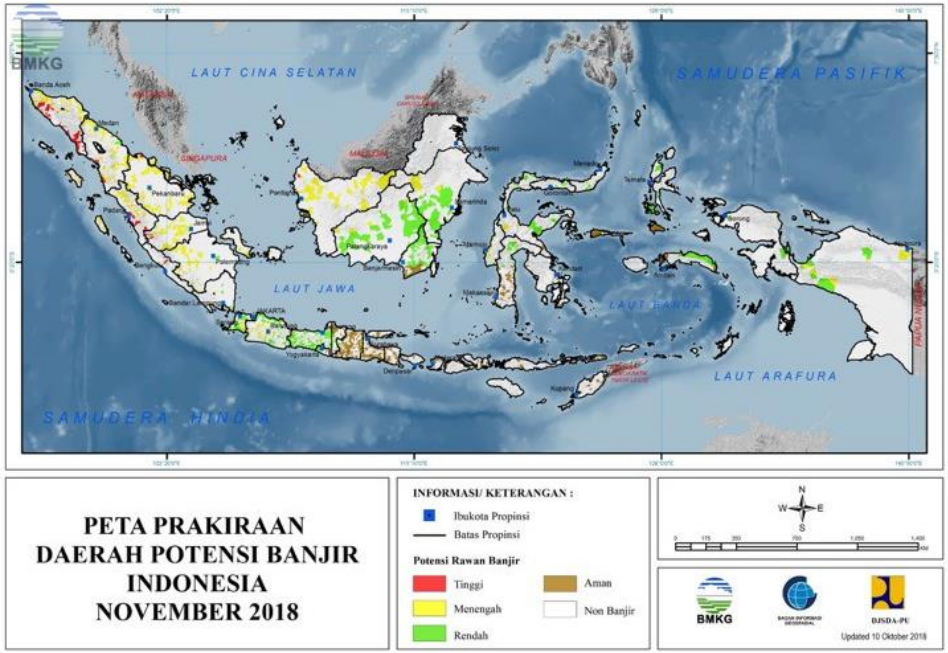
(Flood) Disaster Management need prediction information and early warning

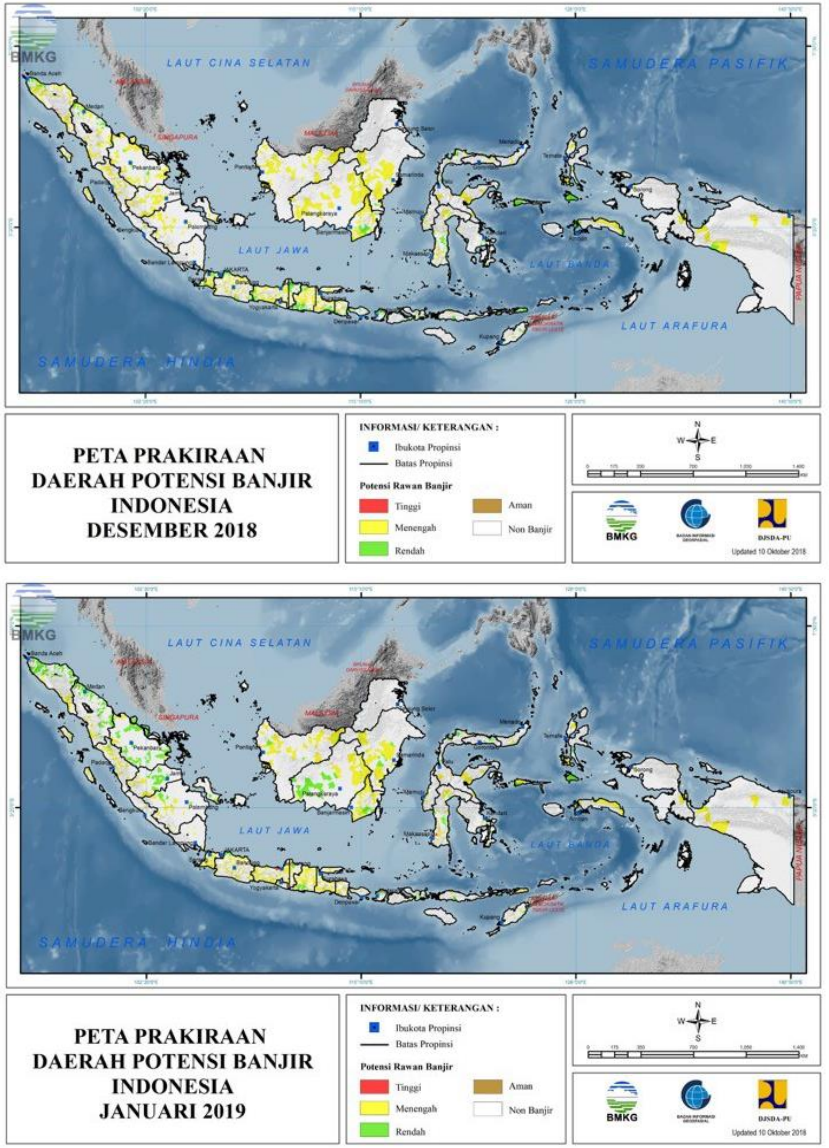
Task and Functions of Ministries/ Institutions retated to Disaster Management Mechanism

Before Disasters	Emergency State	After Disasters
• Disaster information services – **BNPB, BIG** • MCG information services – **BMKG** • Hotspot monitoring – **LAPAN** • Broadcasting of disaster information - **Kemenkominfo**	• Emergency disaster management – **BNPB, Kemensos, Kemenkes** • Handling emergency infrastructure – **Kemen PUPR**	• 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

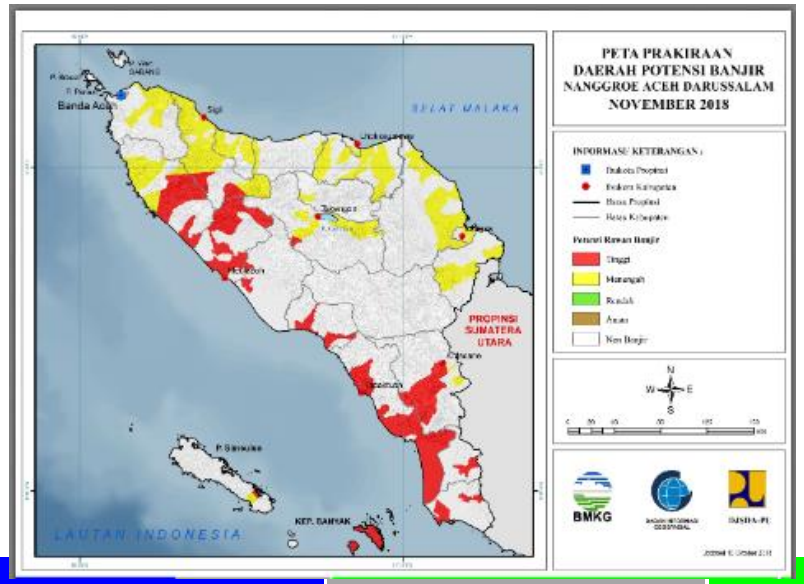




Information flood potential forecasts are made in the legend of high, medium, low, safe and no flood event

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)

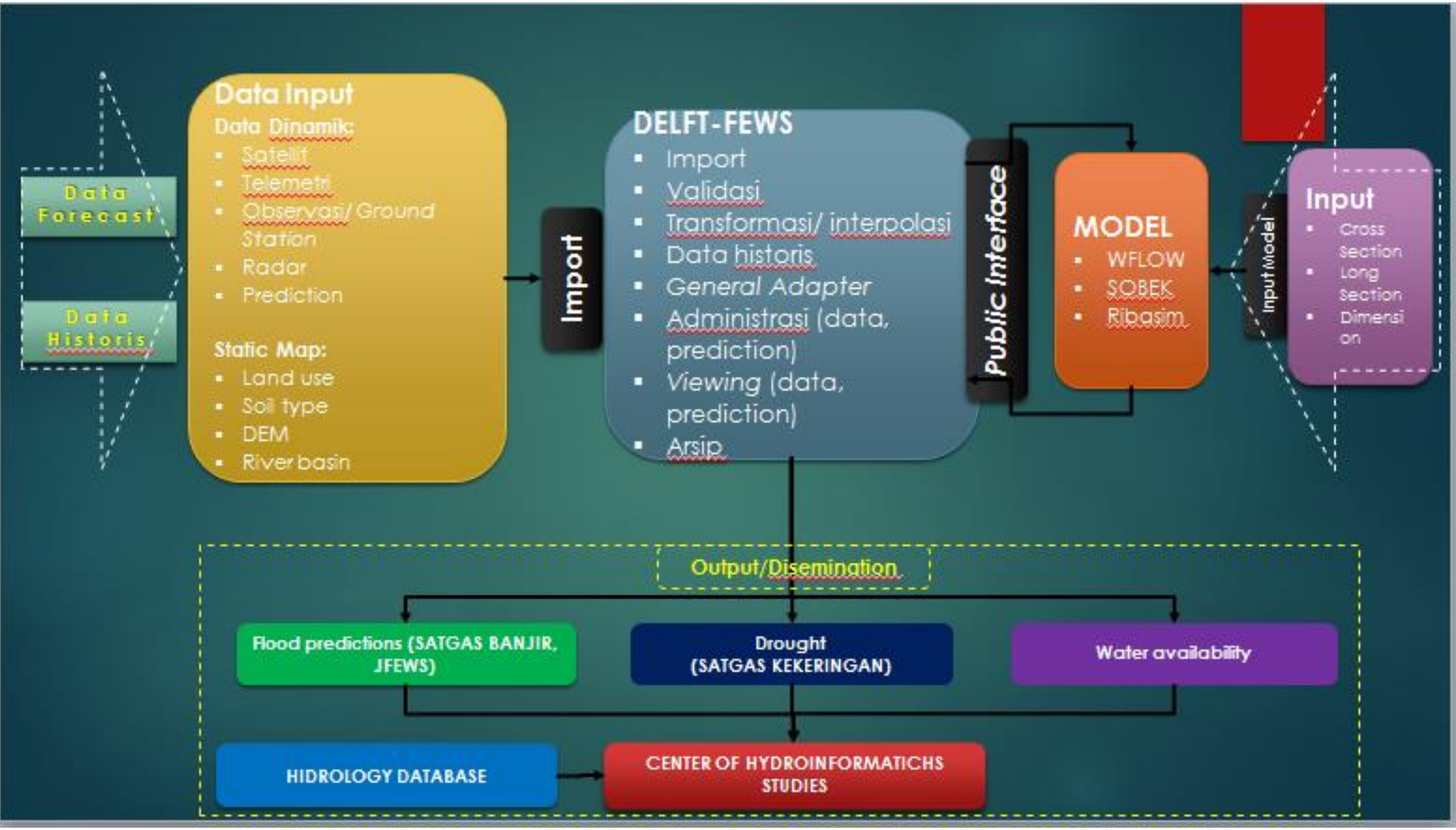


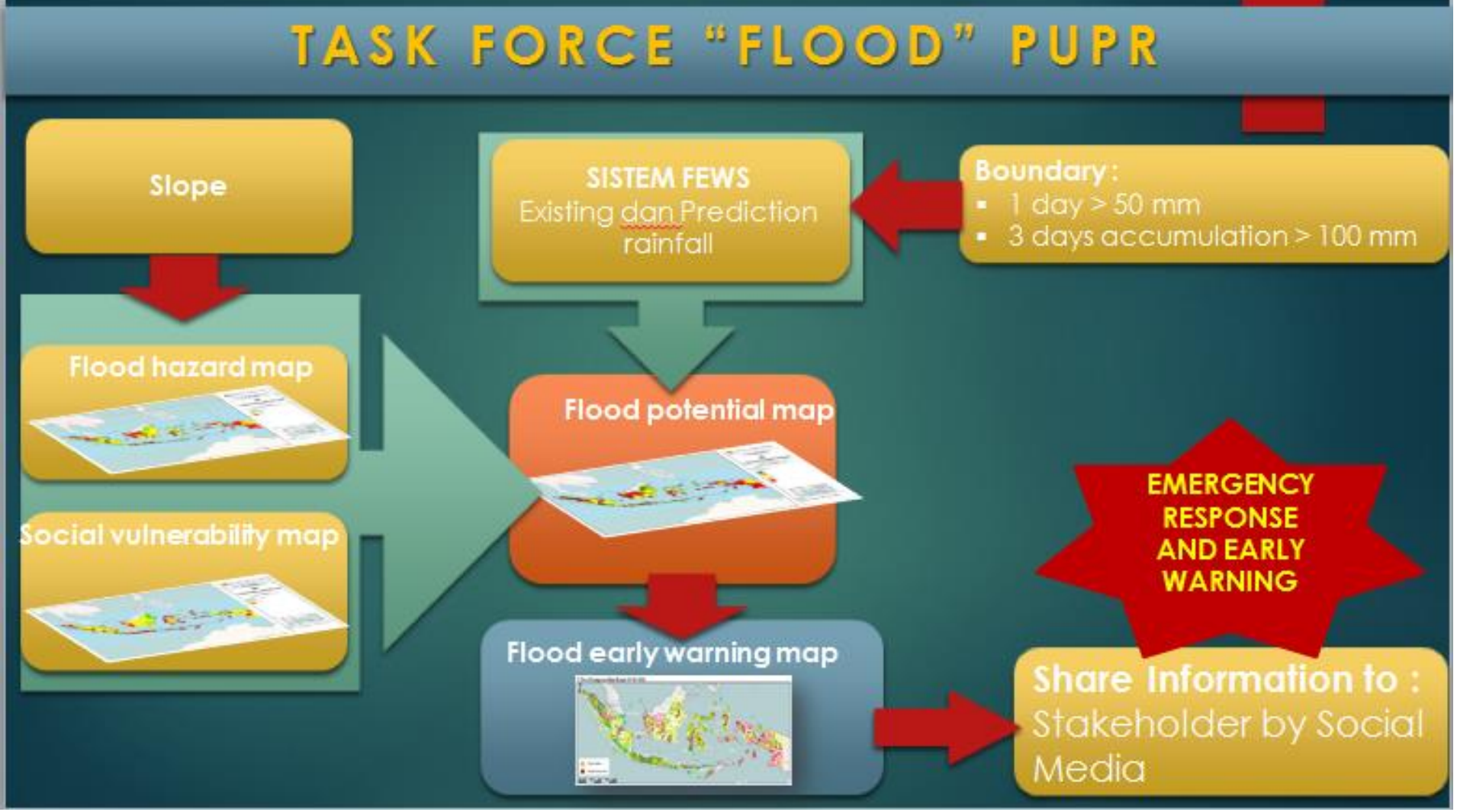
PRAKIRAAN DAERAH POTENSI BANJIR
ACEH
NOVEMBER 2018

BMKG

TINGKAT POTENSI BANJIR		
TINGGI	MENENGAH	RENDAH
KAB. ACEHBARAT: (KEC. JOHANPAHWALAN, KAWAY XVI, SAMATIGA, SUNGAIMAS, WOYLA) KAB. ACEHBARAT DAYA: (KEC. KUALA BATEE, MANGGENG, SUSOH, TANGAN-TANGAN) KAB. ACEHSELATAN: (KEC. BAKONGAN, KLUET SELATAN, KLUET UTARA, KOTA BAHAGIA, SAMADUA, SAWANG, TAPAK TUAN, TRUMON, TRUMON TENGAH, TRUMON TIMUR) KAB. ACEH SINGKIL: (KEC. PULAU PANGGUNG, SIMPANG KANAN, SINGKIL) KAB. ACEHTENGAH: (KEC. PEGASING) KAB. ACEHTENGGARA: (KEC.BAMBEL, LAWE ALAS) KAB. ACEHJAYA: (KEC. KRUENGSABEE, SETIABAKTI, TEUNOM) KAB. NAGANRAYA: (KEC. KUALA, SEUNAGAN) KAB. PIDIE: (KEC. GEUMPANG, TANGSE) KAB. SIMEULU: (KEC. SIMEULUTIMUR) KAB. SUBULUSSALAM: (KEC. SIMPANG KIRI)	KAB. ACEHBARAT: (KEC. SUNGAIMAS) KAB. ACEHBESAR: (KEC. INDRAPURI, MESJID RAYA, SEULIMEUM) KAB. ACEHTAMIANG: (KEC. KEJURUAN MUDA, KUALA SIMPANG, SERUWAY, TAMIANG HULU) KAB. ACEHTENGAH: (KEC. BINTANG, PEGASING, SILIHNARA) KAB. ACEHTENGGARA: (KEC. BAMBEL, LAWE SIGALA-GALA) KAB. ACEHTIMUR: (KEC. BIREUM BAYEUM, DARULAMAN, IDIRAYEUK, JULOK, NURUSSALAM, PEURELLAK, RANTAU SELAMAT, RANTO PEURELAK, SIMPANGJULIM) KAB. ACEHUTARA: (KEC. BAKTIYA BARAT, COTGITREK, KUTAMAKMUR, LHOKSUKON, MATANGKULI, PIRAK TIMUR, SAMUDERA, SAWANG, SYAMTALIRAARON, TANAH LUAS, TANAH PASIR) KAB. ACEHJAYA: (KEC. INDRAJAYA, KRUENGSABEE, SAMPOINIET, SETIABAKTI) KAB. BENERMERIAH: (KEC. TIMANGGAJAH) KAB. BIUREUN: (KEC. KUALA, MAKMUR, SAMALANGA) KOTA LANGSA: (KEC. LANGSA BARAT, LANGSATIMUR) LHOKSEUMAWE: (KEC. BANDA SAKTI, BLANGMANGAT) KAB. PIDIE: (KEC. BATEE, DELIMA, GEUMPANG, GEUMPANG TIGA, INDRAJAYA, KEMBANG TANJONG, MILA, MUARA TIGA, MUTIARA, PADANGTIJI, PEUKAN BARO, PIDIE, SAKTI, SIMPANG TIGA, TANGSE, TIRO/TRUSEB, TITEUE) KAB. PIDIE JAYA: (KEC. BANDAR DUA, BANDAR BARU, MEUREUDU, ULIM) KAB. SIMEULU: (KEC. SIMEULU TIMUR)	—

Scheme of The Central of Hydroinformatichs Studies - PUPR (DELFT - FEWS)



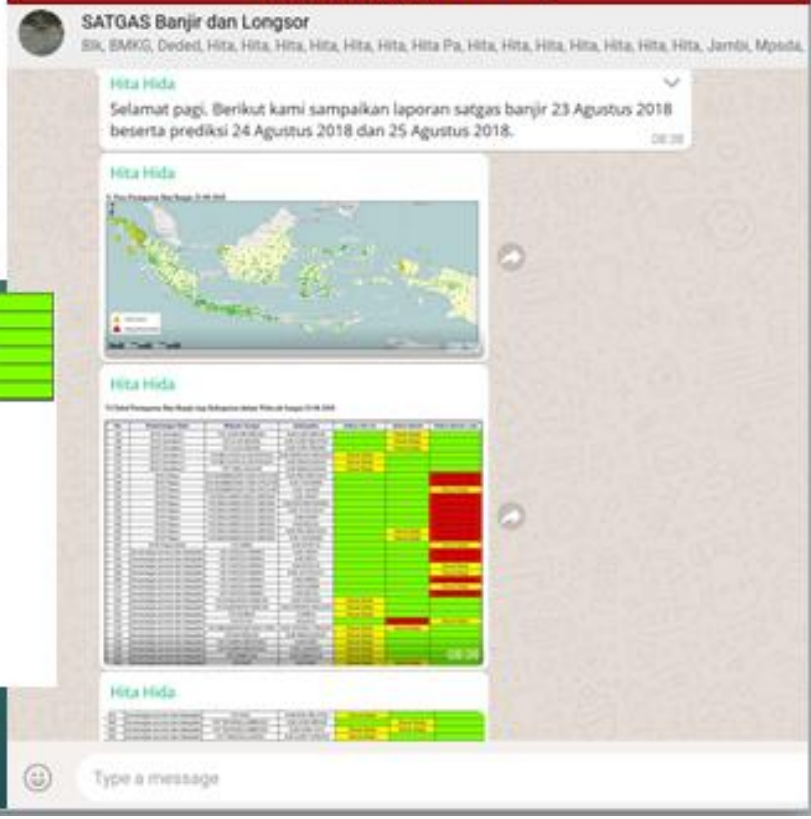


Flood Early Warning System is a software create by Deltares (Netherland) and developed by PUSAIR through the Joint Cooperation Program (JCP)

Flood Potential Information per District

Share by Media Social

Whatsapp Group

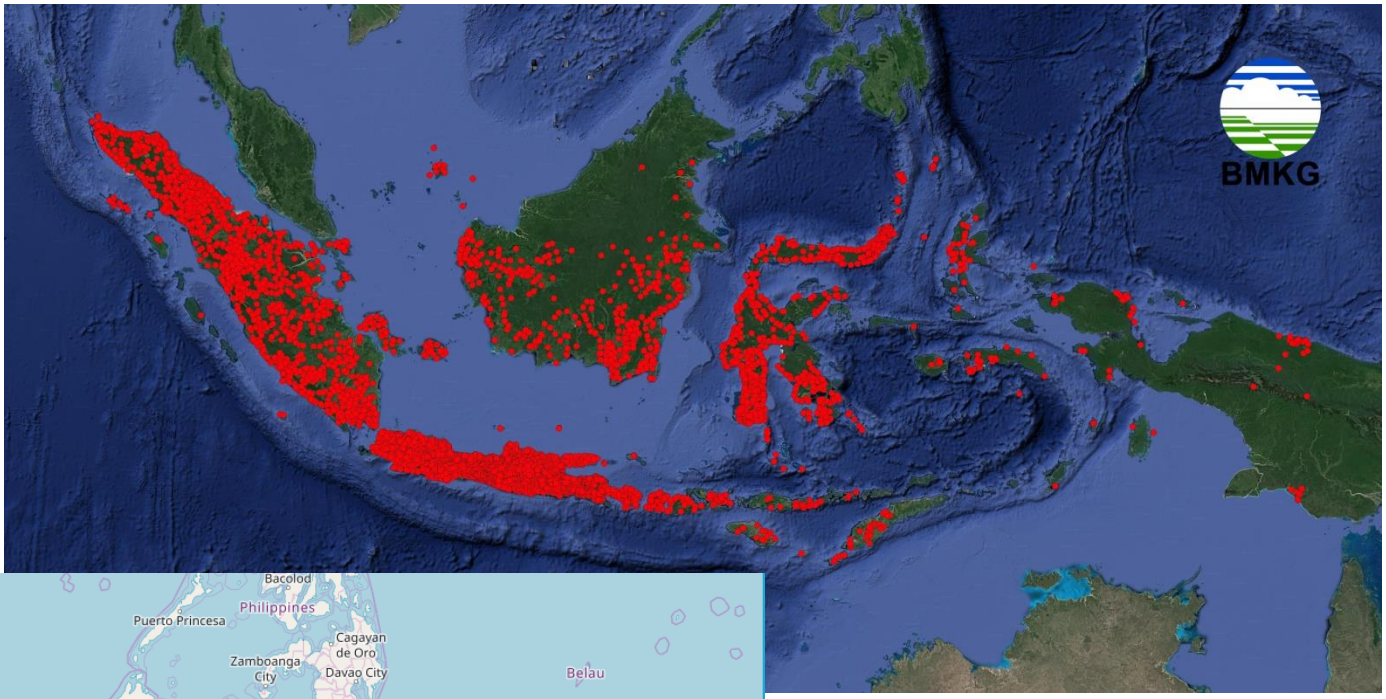


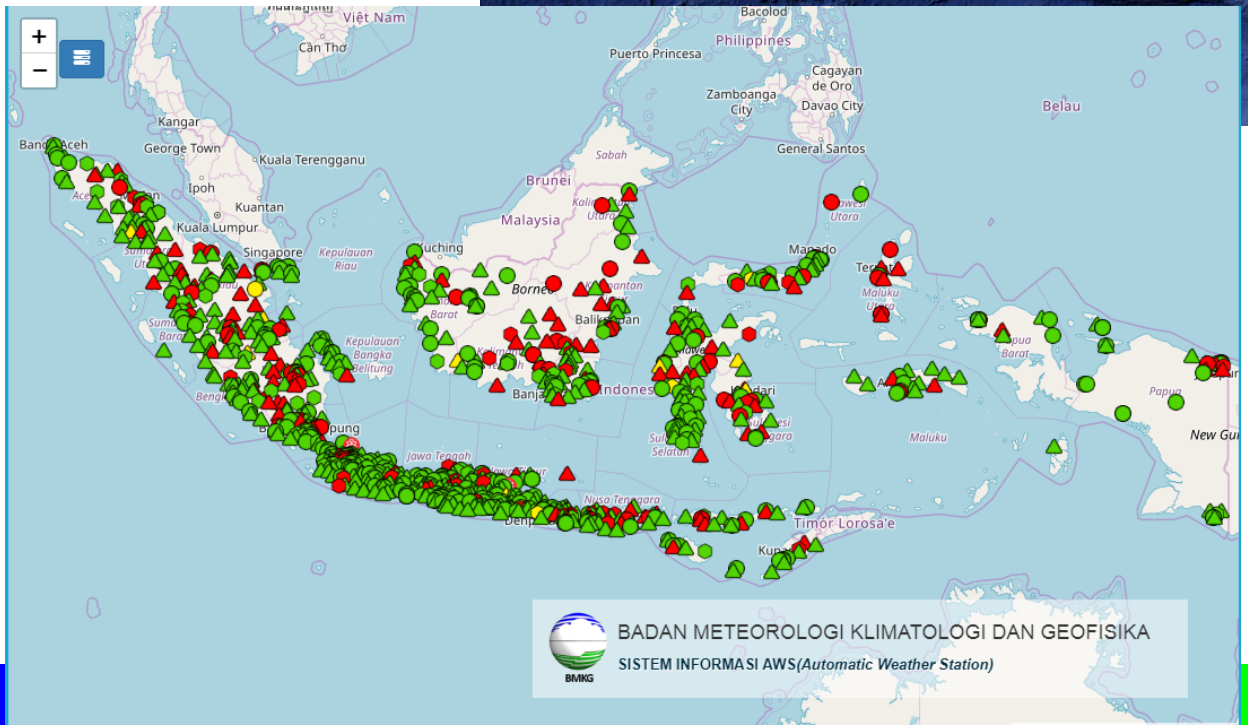
Data Input

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**

CURRENT ACTIVITY AND ACTIVITY PLANNING

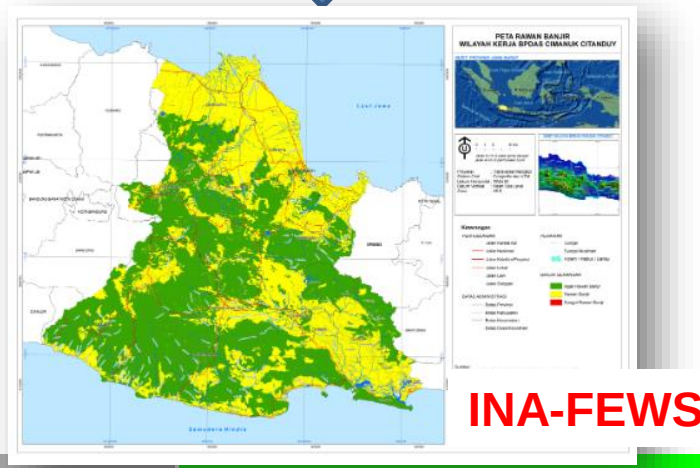
BMKG	PUPR
Coordination with PUPR, BIG "Flood potential forecast"	Coordination with BMKG, BIG "Flood potential forecast"
Coordination with BNPB about MHEWS	JCP3 J-FEWS
JCP3 climate change	Development web integration about The Central of Hydroinformatichs Studies
SATREPS (Science and Technology Research 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

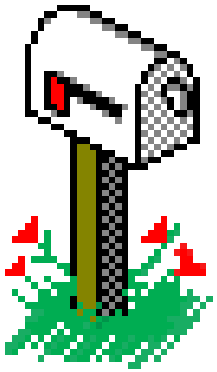


INA-FEWS

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

BMKG

Thank You



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