



BMKG

COUNTRY REPORT SOUTHEASTERN ASIA-OCEANIA FLASH FLOOD GUIDANCE (SAOFFG)

METEOROLOGICAL CLIMATOLOGICAL AND GEOPHYSICAL AGENCY

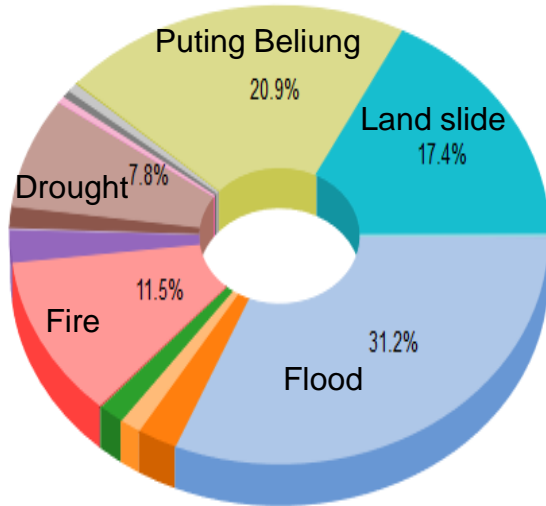
Muhammad Fadli

Grand Mercure – Kemayoran. Sunday, July 10th 2017

OUTLINE

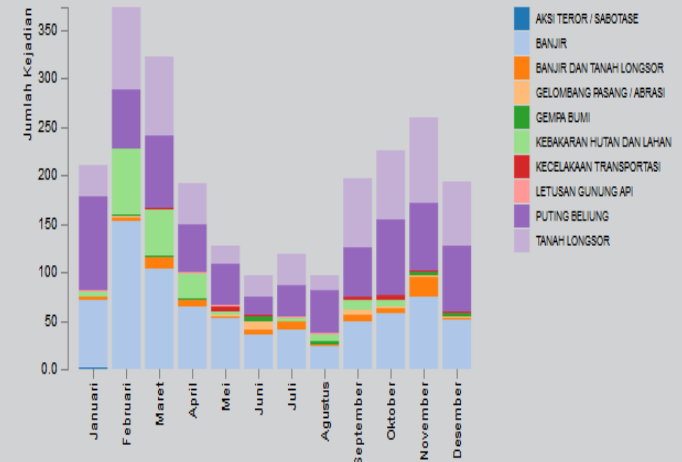
- Flash Flood in Indonesia
- Flood Forecasting Map
- Flood Early Warning System
- Support needed

UPDATE DISASTER DATA IN INDONESIA (1815 – 2016)



- AKSI TEROR / SABOTASE
- BANJIR
- BANJIR DAN TANAH LONGSOR
- GELOMBANG PASANG / ABRASI
- GEMPA BUMI
- GEMPA BUMI DAN TSUNAMI
- HAMA TANAMAN
- KEBAKARAN
- KEBAKARAN HUTAN DAN LAHAN
- KECELAKAAN INDUSTRI
- KECELAKAAN TRANSPORTASI
- KEKERINGAN
- KELAPARAN
- KLB
- KONFLIK / KERUSUHAN SOSIAL
- LETUSAN GUNUNG API
- PERUBAHAN IKLIM
- PUTING BELIUNG
- TANAH LONGSOR
- TSUNAMI

Statistik Bencana Indonesia 2016





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FLASH FLOOD IN INDONESIA (2012 - 2016)

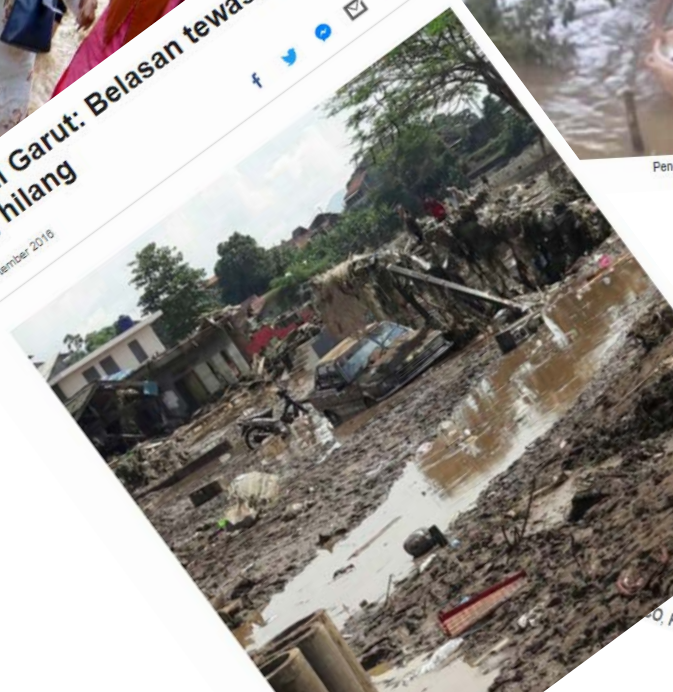
Banjir Bandang di Sulawesi Barat, 10 Tewas

Selain korban jiwa, banjir bandang ini juga menghancurkan dua rumah.
Oleh: Ita Lisnawati F. Malau, Ismoko Widjaya
Jumat, 9 November 2012 | 12:08 WIB



Banjir di Garut: Belasan tewas, sejumlah orang hilang

© 21 September 2018



Banjir bandang terjang Ambon, 8 orang tewas

Hasan Kurniawan
Selasa, 30 Juli 2013 - 12:19 WIB



Pengungsi banjir

Banjir Bandang Manado, 18 Warga Tewas, 1.000-an Rumah Rusak

© January 17, 2014
Thermy Doaly, Manado
Hutan, Laut, Lingkungan Hidup, Pertanian



Banjir dan Longsor di Sumbar, 3 Titik Jalan Negara Terputus

SELASA, 09 FEBRUARI 2010 | 11:38 WIB



Asa krik di sini.
Rabu (15/1/14), di Sulawesi Utara (Sulut) m
18 orang meninggal dunia, 4.000-an pengungsi

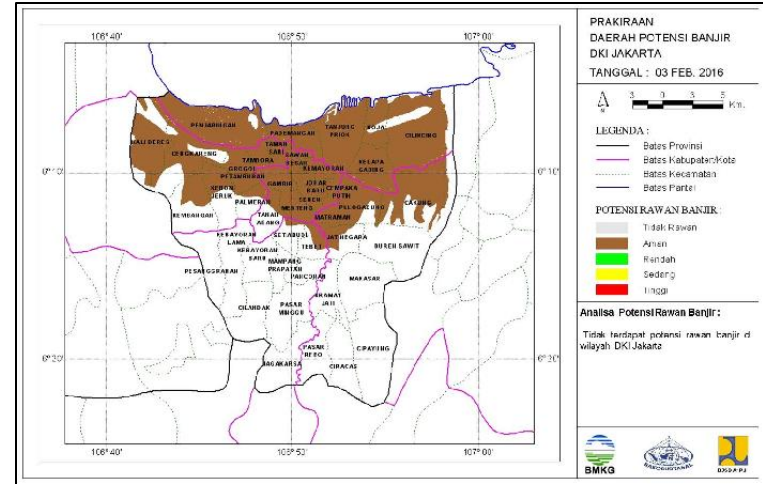
Kendaraan roda dua dan rumah yang rusak akibat banjir bandang yang menghantam Jorong Kampuang Nagan Air Manggis, Lubuk Sikapiang, Pasaman, Sumatera Barat, 16 Desember 2015. Asal banjir bandang yang melanda kawasan ini, yang lokasinya sekitar dua kilometer dari kampung ini. ANTARA/Muhammad Anif Priadi

FLOOD FORECASTING MAP

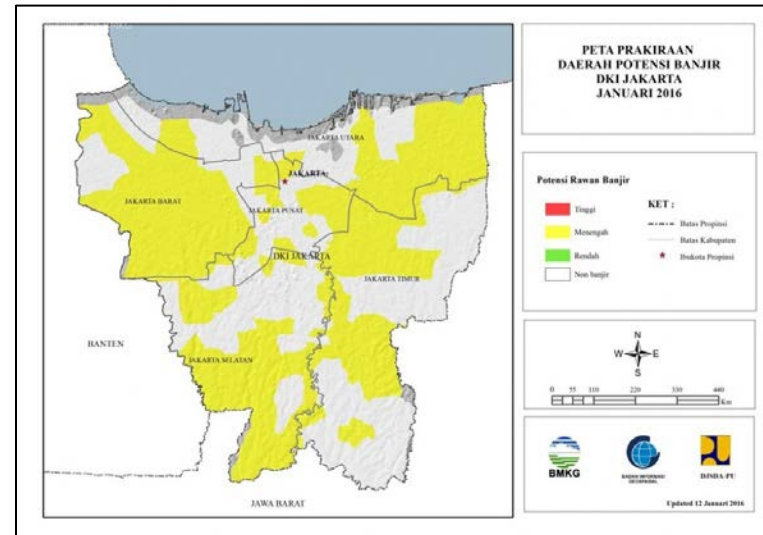
FLOOD FORECASTING MAP



Daily Flood Forecasting Map



Monthly Flood Forecasting Map





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DAILY FLOOD FORECASTING MAP

Daily Rainfall Forecast

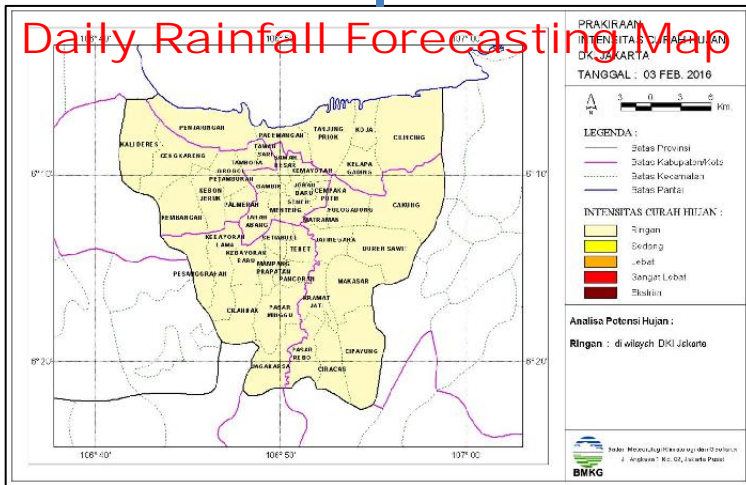
Base Map (Jabodetabek)

Map of Flood Events

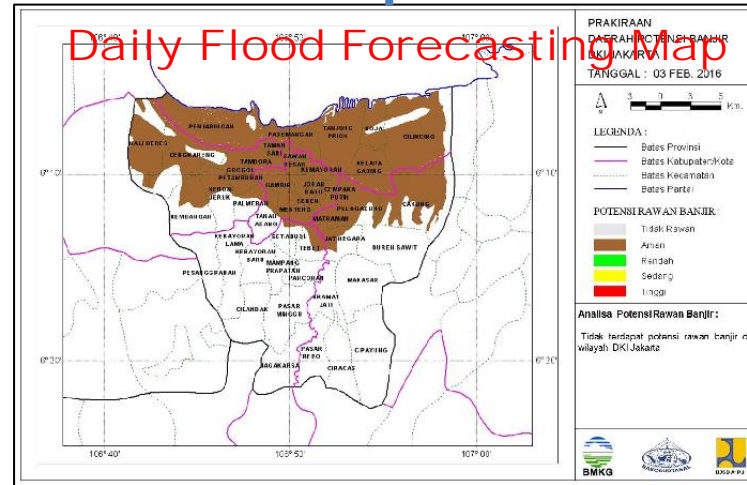
Overlay

Interpolation

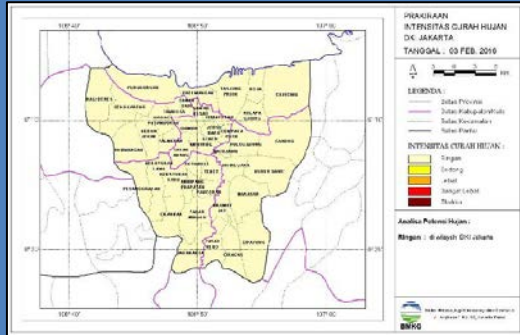
Daily Rainfall Forecasting Map



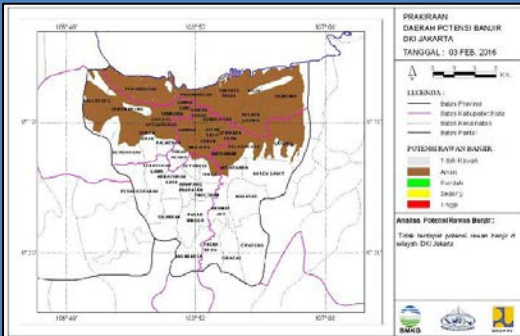
Daily Flood Forecasting Map



Product Dissemination



Website



Email



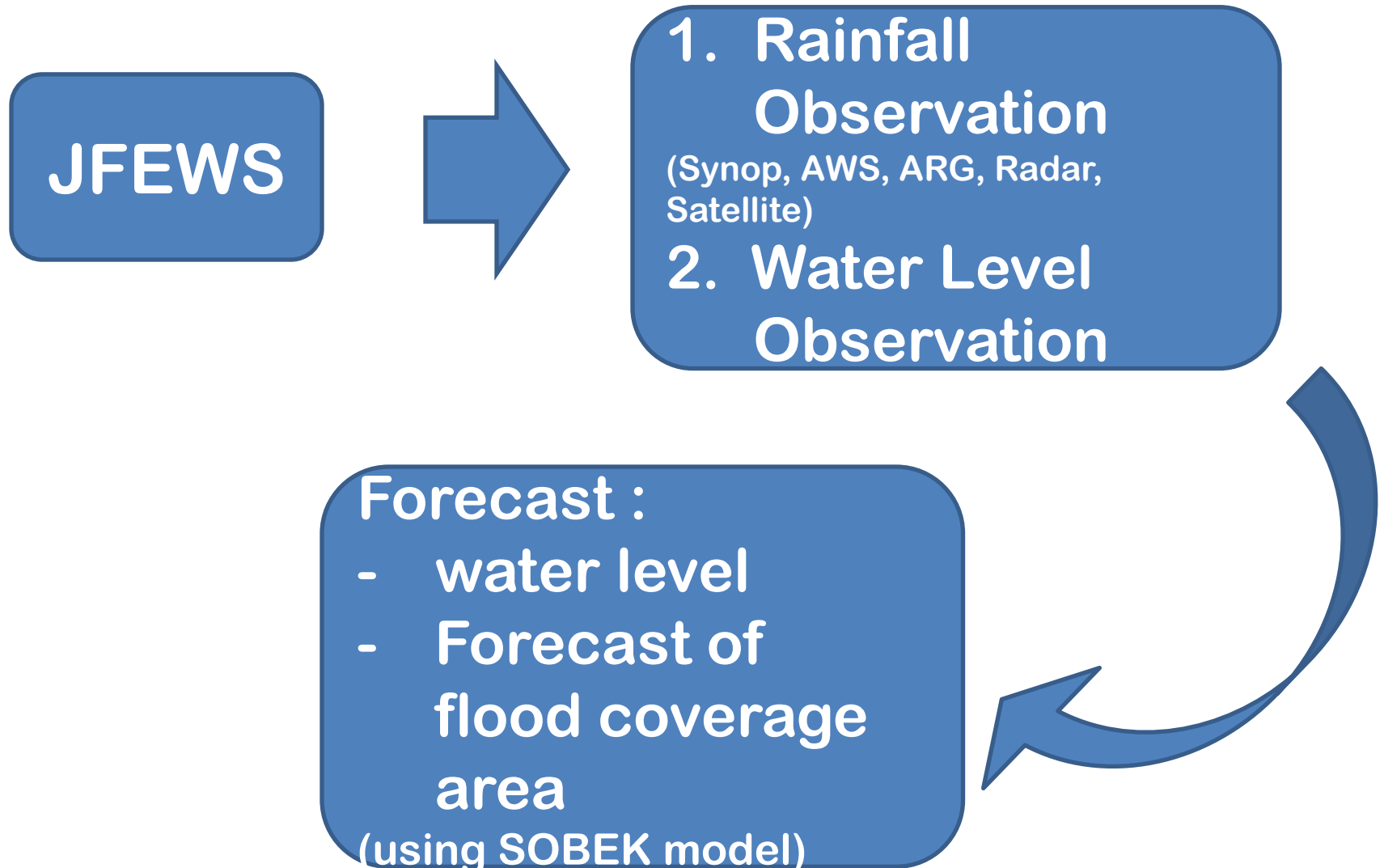
www.meteo.bmkg.go.id

- BNPB
- BPBD
- Local government
- Ministry of Environment and Forestry

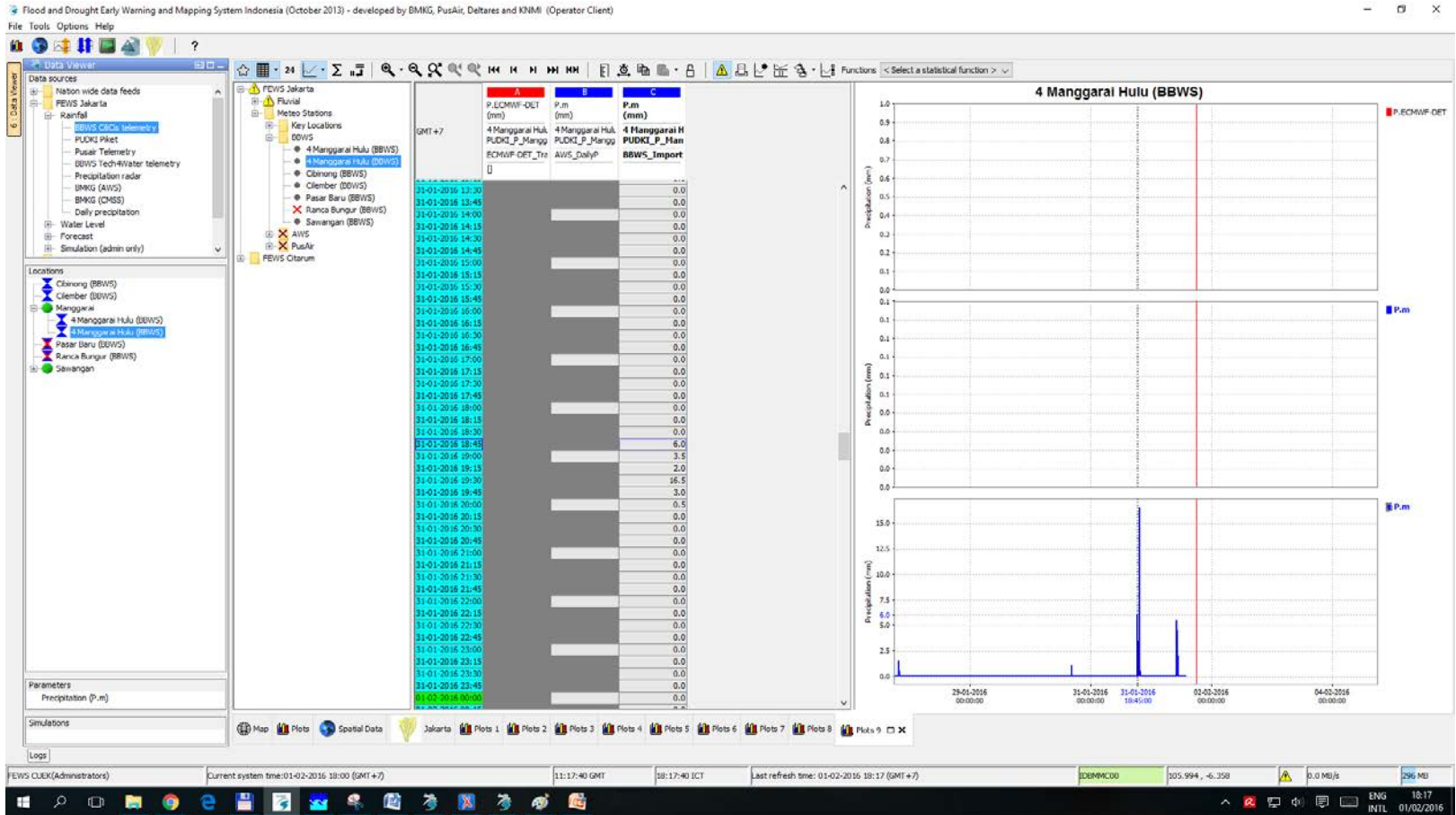


Jakarta Flood Early Warning System

MAIN COMPONENTS OF JAKARTA FLOOD EARLY WARNING SYSTEM (JFEWS)



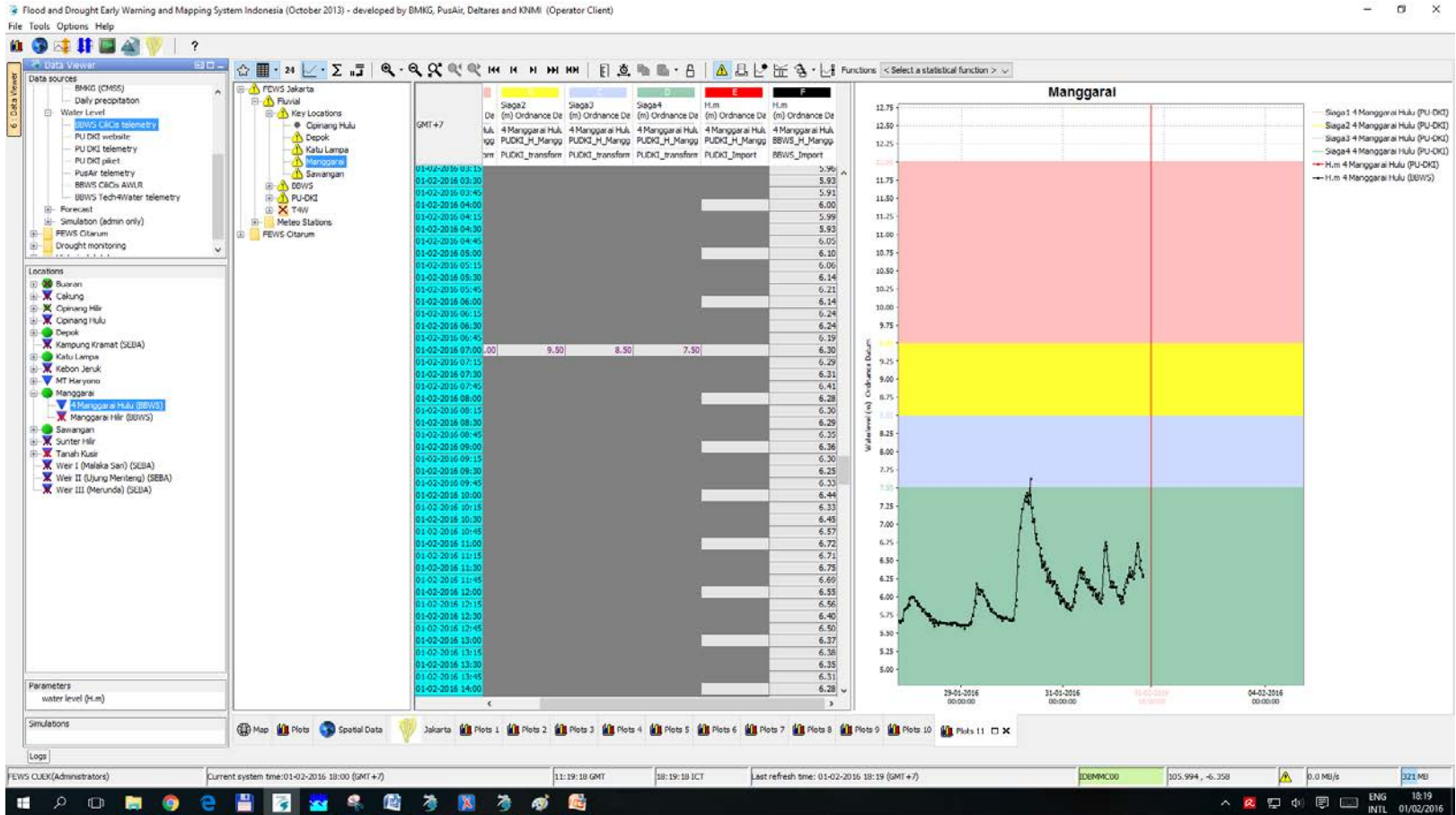
RAINFALL OBSERVATION





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WATER LEVEL OBSERVATION

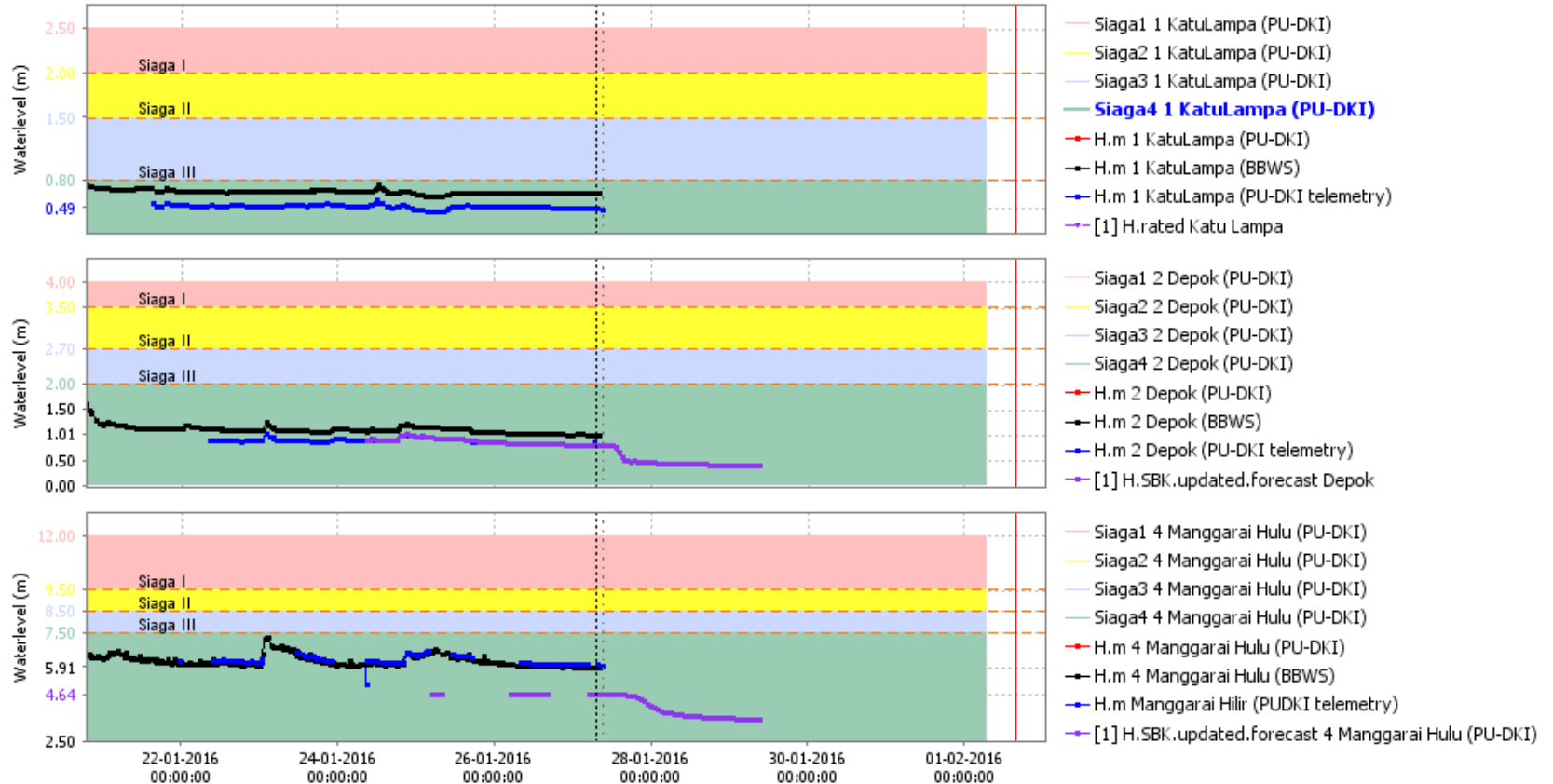




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WATER LEVEL FORECAST

Ciliwung



Run_Jakarta_KatuLampa_Ciliwung_Forecast_GFS: [1] 27-01-2016 09:00:00 Current

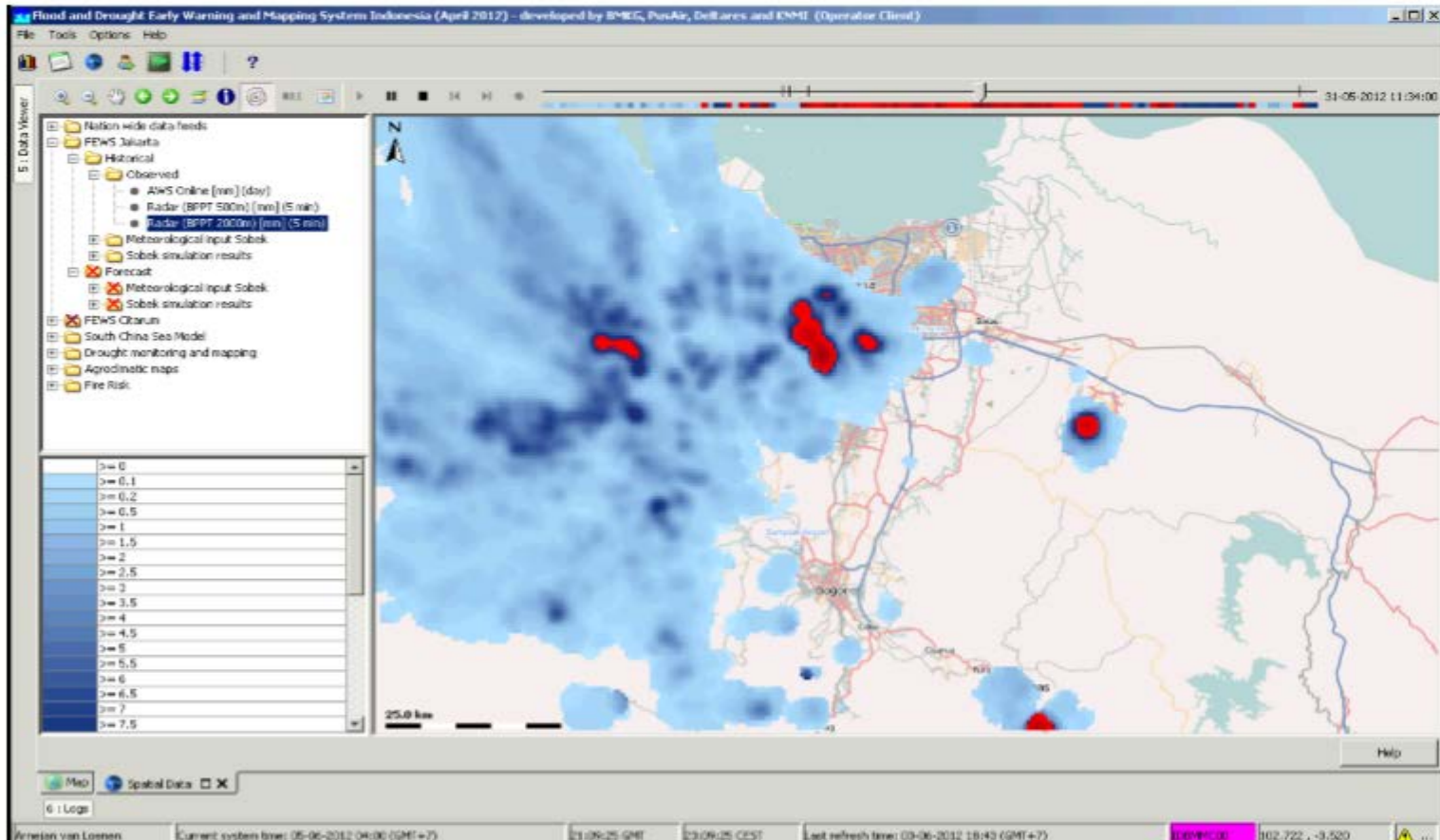


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FLOOD FORECASTING MODEL

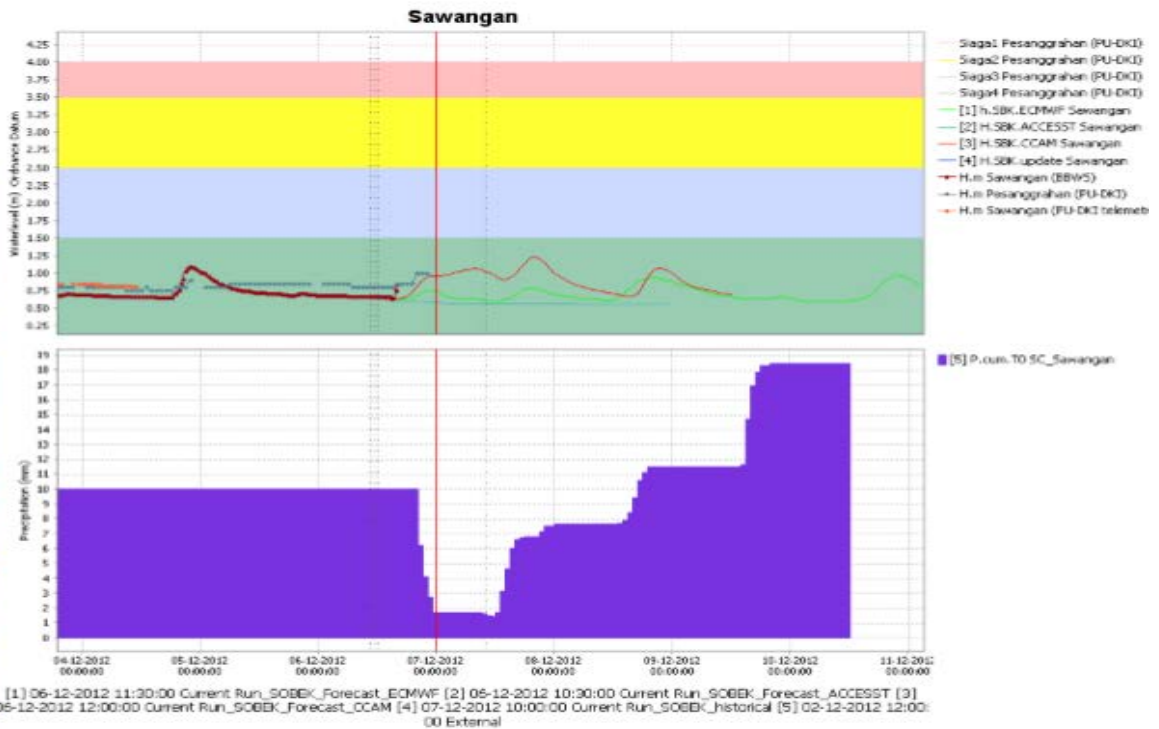
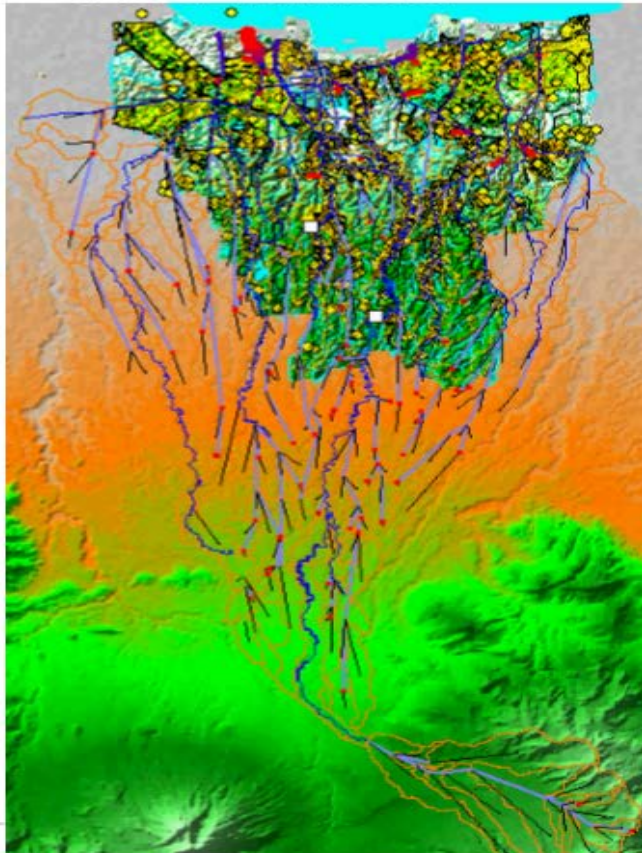
Present - current status J-FEWS – Flood Forecasting

Rainfall radar



Present - current status J-FEWS – Flood Forecasting

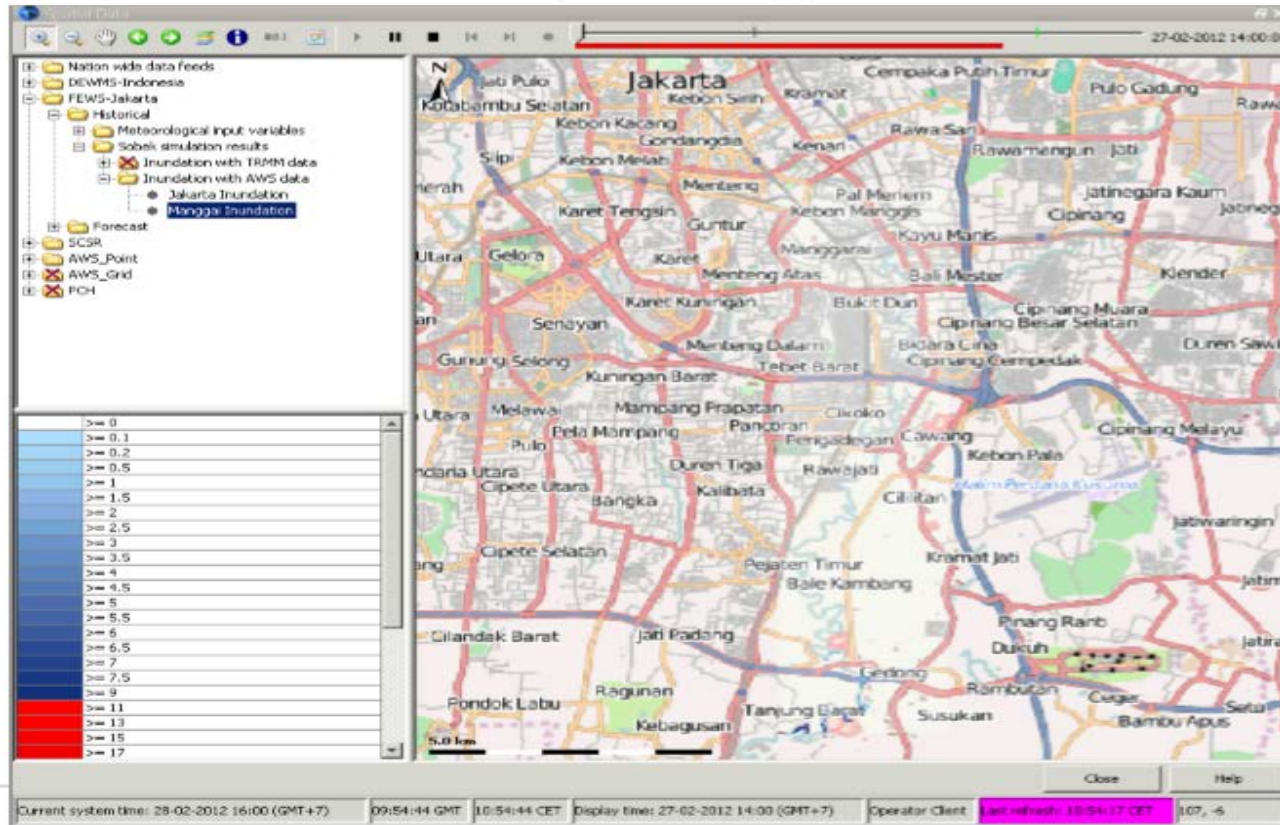
SOBEK model



FLOOD FORECASTING MODEL

Present - current status J-FEWS – Flood Forecasting

SOBEK flood forecast (Ciliwung)



FLOOD CRISIS CENTER

Kemiringan Lahan

SISTEM FEWS

- TRMM (Observed)
- BMKG->ECMWF (Forecasting)

Boundary :

- 1 day > 50 mm
- 3 days accumulation > 100 mm

Peta Bahaya Banjir



Peta Kerentanan Sosial Ekonomi



Peta Potensi Banjir



**Peta Peringatan Dini Banjir
(Sampai 2 hari kedepan)**



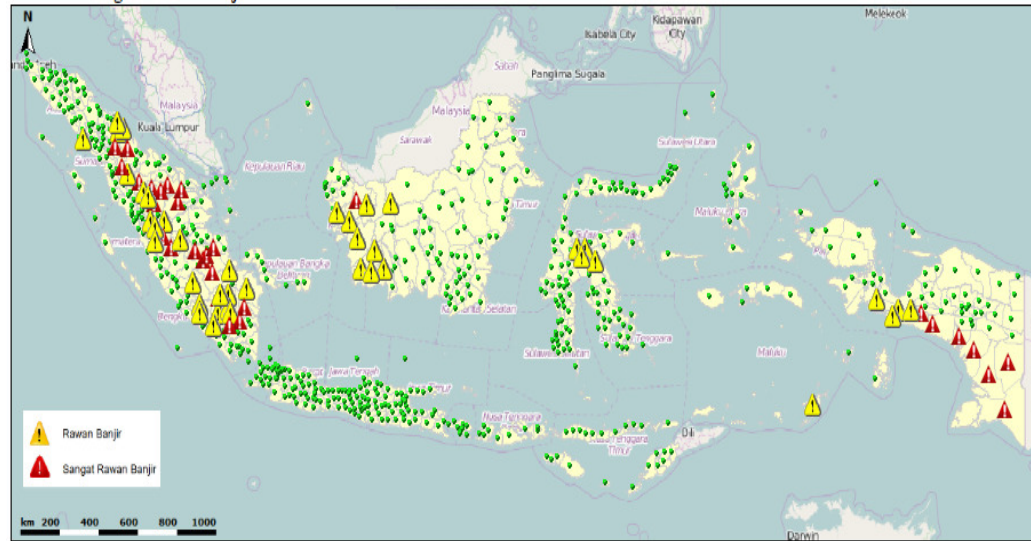
**EMERGENCY
RESPONSE
AND EARLY
WARNING**

**Share Information to :
Stakeholder by Social
Media (7 am and 5 pm
everyday)**



FLOOD POTENTIAL INFORMATION FOR DISTRICT AREA

V. Peta Peringatan Dini Banjir 27-04-2017



Disebarkan Melalui Media Sosial

Whatsapp Group

SATGAS Banjir dan Longsor
BBWS Brantas, BNPB Bambang, BNP...

Get Notified of New Messages
Turn on desktop notifications

Search or start new chat

Pusair Hida
selamat pagi, berikut laporan satgas banjir 27 April 2017
07:53

V. Peta Peringatan Dini Banjir 27-04-2017

VI. Tabel Peringatan Dini Banjir tiap Kabupaten dalam Wilayah Sungai 27 04 2017

No	Kewenangan Balai	Wilayah Sungai	Kabupaten	Status Hari Ini	Status Besok	Status Besok Lusa
186	BBWS Papua Barat	WS OMBI	KAB MIMIKA	Rawan Banjir		
474	Kewenangan provinsi dan kabupaten	WS LAA-TAMBALAYO	KAD MOROWALI	Rawan Banjir		
475	Kewenangan provinsi dan kabupaten	WS LAA-TAMBALAYO	KAB POSO	Rawan Banjir		
501	Kewenangan provinsi dan kabupaten	WS WAGO-A-MIMIKA	KAB ASMAT	Sangat Rawan Banjir		
503	Kewenangan provinsi dan kabupaten	WS WAGO-A-MIMIKA	KAB DEWA	Sangat Rawan Banjir		
504	Kewenangan provinsi dan kabupaten	WS WAGO-A-MIMIKA	KAB DOGUYAI	Rawan Banjir		
509	Kewenangan provinsi dan kabupaten	WS WAGO-A-MIMIKA	KAB MIMIKA	Sangat Rawan Banjir	Rawan Banjir	
530	Kowotongan provinsi dan kabupaten	WS TAWAN	KETAWAN	Rawan Banjir		
617	Kewenangan provinsi dan kabupaten	WS BAH BOLON	KAB ASAHAN	Rawan Banjir		
620	Kewenangan provinsi dan kabupaten	WS WAMPU-BESITANG	KAB LANGKAT		Rawan Banjir	
623	Kewenangan provinsi dan kabupaten	WS NIAS	KAB NIAS		Rawan Banjir	
670	Kewenangan provinsi dan kabupaten	WS BARUMUN-KUALUH	KAB LABUHAJATU	Sangat Rawan Banjir		
677	Kewenangan provinsi dan kabupaten	WS BARUMUN-KUALUH	KAB TAPAN III SFI ATAN	Sangat Rawan Banjir		
674	Kewenangan provinsi dan kabupaten	WS BARUMUN-KUALUH	KAB TOBASSANDIR	Sangat Rawan Banjir		

Summary:

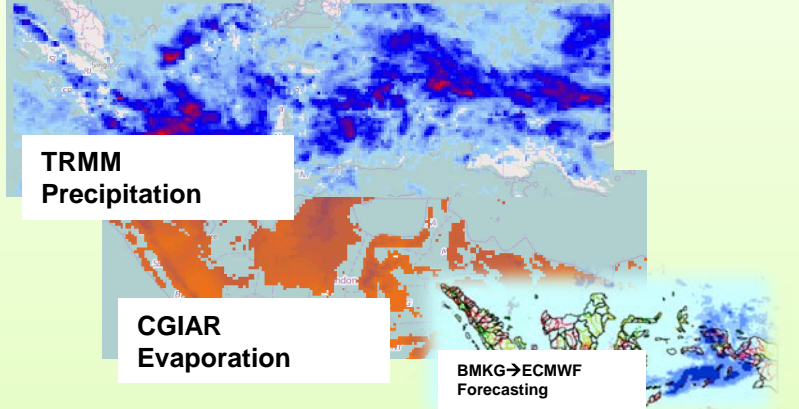
- Data Hujan Satelit TRMM Realtime
- Data Hujan Larian Forecasting DMKG
- Peta Indeks Ancaman Banjir BNPB
- Kepres No. 12 tahun 2012 Tentang Penetapan Wilayah Sungai
- Permen P1 No 71 PRT/M/2010 Tentang Organisasi dan Tata Kerja Tim Pelaksana Teknis Kementerian Pekerjaan Umum

Tim Picket Balai Hidrologi dan Tata Air - Pusitbang SDA
Jalan Ir. H. Juanda 103, Bandung 40135, Indonesia
email: pusair@pusair-pu.go.id
Phone: +62-22-2504033, Fax: +62-22-2500163

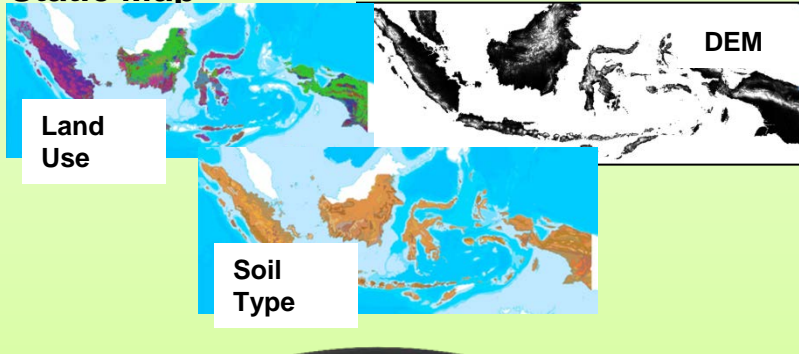
VI. Tabel Peringatan Dini Banjir tiap Kabupaten dalam Wilayah Sungai 27 04 2017

No	Kewenangan Balai	Wilayah Sungai	Kabupaten	Status Hari Ini	Status Besok	Status Besok Lusa
1	BBWS Sumatera VIII	WS MUSU-SUCHAIH-BANYUASIN	KAB BANYUASIN	Rawan Banjir	Rawan Banjir	
2	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB BITANGHARI	Sangat Rawan Banjir	Rawan Banjir	
4	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB LAHAT	Rawan Banjir	Rawan Banjir	Rawan Banjir
6	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB MUARTAMU	Sangat Rawan Banjir	Rawan Banjir	Rawan Banjir
7	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB MULARJAMBI	Sangat Rawan Banjir	Rawan Banjir	
8	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB MUSIBANYUASIN	Sangat Rawan Banjir	Rawan Banjir	
9	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB MUSIRAUASIN	Rawan Banjir	Rawan Banjir	
10	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB OGAN ILIR	Rawan Banjir	Rawan Banjir	
11	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB OGAN KOMERING ILIR	Rawan Banjir	Rawan Banjir	
12	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB OGAN KOMERING ULU	Rawan Banjir	Rawan Banjir	Rawan Banjir
13	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB OGAN KOMERING ULU SELATAN	Rawan Banjir	Rawan Banjir	
14	BBWS Sumatera VIII	WS MUSU-SUGHAN-BANYUASIN	KAB OGAN KOMERING ULU TIMUR	Rawan Banjir	Rawan Banjir	
18	BBWS Meusi Sekelompok	WS MESULU-TULANG BAWANG	KAB SAROLI ANSONJIN	Rawan Banjir	Rawan Banjir	
19	BBWS Meusi Sekelompok	WS MESULU-TULANG BAWANG	KAB OGAN KOMERING ULU TIMUR	Rawan Banjir	Rawan Banjir	
145	BBWS Meusi Sekelompok	WS MESULU-TULANG BAWANG	KAB TILI ANORBAJANG BARAT	Sangat Rawan Banjir	Rawan Banjir	
146	BBWS Meusi Sekelompok	WS MESULU-TULANG BAWANG	KAB WARTANAN	Sangat Rawan Banjir	Rawan Banjir	
159	BBWS Sumatera I	WS ALAS-SINGKIL	KAB ACEH SINGKIL	Rawan Banjir		Rawan Banjir
200	BBWS Sumatera I	WS ALAS-SINGKIL	KAB ACEH TENGGARA			Rawan Banjir
204	BBWS Sumatera I	WS ALAS-SINGKIL	KAB KARO			Rawan Banjir
213	BBWS Sumatera II	WS TOBA-ASAHAN	KAB ASAHAN	Rawan Banjir		
210	BBWS Sumatera II	WS TOBA-ASAHAN	KOTA TANJUNGPALAI	Rawan Banjir		
220	BBWS Sumatera III	WS HOKAN	KAB SAMUDIR	Sangat Rawan Banjir		
230	BBWS Sumatera III	WS ROKAN	KAB TIRINGULU SELATAN	Rawan Banjir		
233	BBWS Sumatera III	WS SIAK	KAB KAMPAR	Sangat Rawan Banjir		
234	BBWS Sumatera III	WS SIAK	KAB SAMUDIR	Rawan Banjir		
235	BBWS Sumatera III	WS SIAK	KAB SIAK	Sangat Rawan Banjir		
236	BBWS Sumatera III	WS SIAK	KOTA PEKANBERRU	Sangat Rawan Banjir		
239	BBWS Sumatera III	WS KAMPAR	KAB KAMPAR	Sangat Rawan Banjir		
243	BBWS Sumatera III	WS KAMPAR	KAB PEI AL ANJAN	Sangat Rawan Banjir		
244	BBWS Sumatera III	WS KAMPAR	KAB SAMUDIR	Rawan Banjir		
246	BBWS Sumatera III	WS KAMPAR	KAB SIAK	Sangat Rawan Banjir		

Dynamic Data Data Input



Static Map

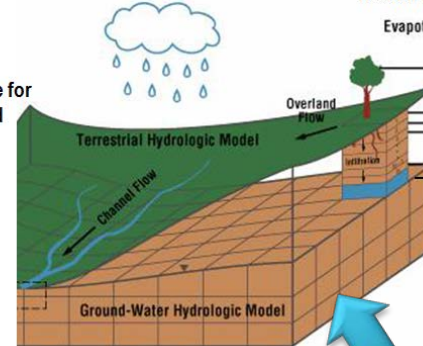


Wflow MODEL



Hydrologic Model System

2. Kinematic wave for overland flow and river flow



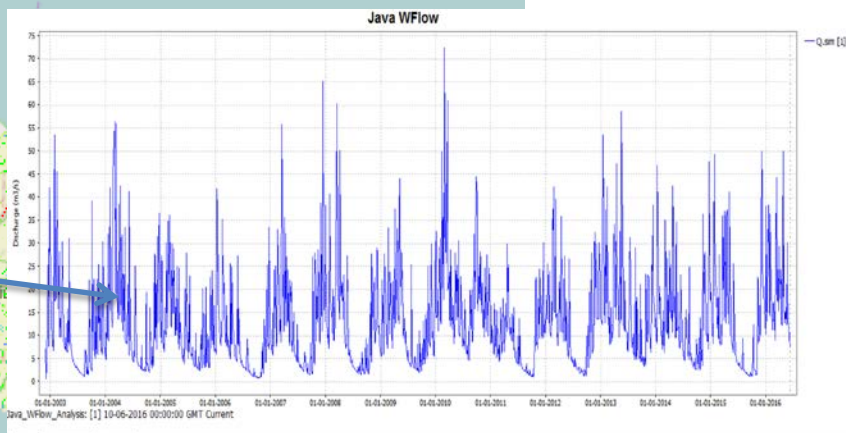
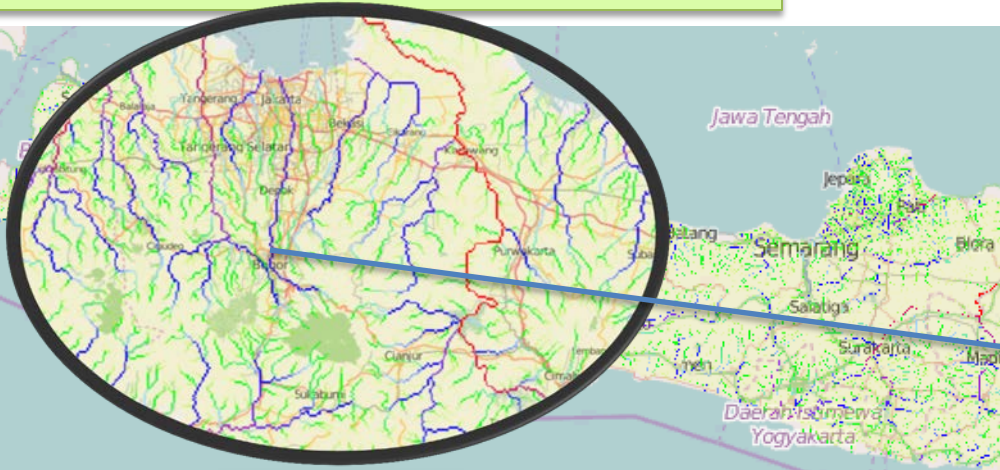
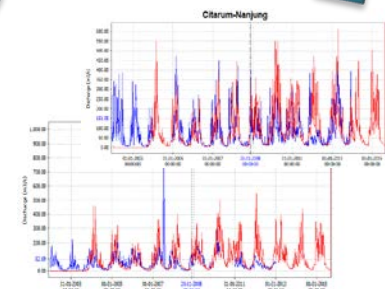
1. Gash model for interception

3. SBM model for soil processes

4. Darcy for sub lateral flow

Adjustment Parameters

- CanopyCapFraction
- CanopyStorage
- FirstZoneCapacity
- FirstZoneMinCapacity
- MaxCanopyStorage
- N_CoverR
- M
- InfiltrCapSoil
- RootingDepth
- N_River
- ThetaS
- FirstZoneKsatVer
- ThetaR
- PathFrac





LOCAL CAPACITY

Provider data for flash flood early warnings :

- BMKG
- The Jakarta Municipality
- Hydrology Departement
- Geospatial Information Agency
- Public works Departement

- ❑ Meteorology data (GTS, 3 hours, 124 station, since 2000) – AWS (it is still on progress for 10 minute)
- ❑ NWP Models (WRF, ECMWF etc) for spatial and temporal resolution.
- ❑ Soil type and texture, vegetation cover, stream network and relation between chaneel geometry and catchment
→ coordination and collaboration NHS (PU DKI Jakarta, PUSAIR, BIG etc)

1. System and Methode Flash Flood Training (basic – expert)
2. Availability of Server and Monitoring System in BMKG,
3. BMKG can be access data from countries SAOFFG
4. Flood Flash method can be tested at one location / region in Indonesia as Project Pilot.



USAID
FROM THE AMERICAN PEOPLE



Development and Implementation of the Southeastern Asia-Oceania Flash Flood Guidance (SAOFFG) Project



Terima Kasih