

**CLIMATE INFORMATION
FOR MITIGATION
OF RELATED
CLIMATE HAZARDS
IN INDONESIA**

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BACKGROUND

- **INDONESIA HAVE VARIOUS CLIMATE, FROM HEAVY RAINFALL AND WET AREA UNTILL DRY AREA. FROM HOT AND HUMID UNTILL COLD AND ARID.**
- **MANY SECTOR IS INFLUENCES BY CLIMATE ELEMENT, CLIMATE EXTREM CAUSES DISASTER AND HAZARDEUS.**
- **BMG IS OFFICIAL INSTITUTE WHICH RESPONSIBLE TO PROVIDE WEATHER ANDCLIMATE FORECAST. SO TO REDUCE THE RISK AND MINIMIZE LOSS DUE TO CLIMATE HAZARD BMG MUST DEVELOP AND PRODUCE THE MORE ACCURATE FORECAST.**

SOME HISTORICAL CLIMATE HAZARD

1. During strong El Nino 1997:

- ❖ Many farmers loss the harvest caused by drought ; crop in plantation was died because severe drought is exceed of wilting point the crop and the crop must be start to grow from zero point. Severe drought also caused forest fire over wide area.
- ❖ created energy crisis in many province because hydropower cannot normal operated due to decreased water level in water reservoir.

2. Late of onset wet season 2006 caused :

- ❖ National rice product significant decreased, so Indonesia must import rice from other country.

3. Heavy rainfall in September to October 2006 causes :

- ❖ Land-fall and flood over northern , western part of Sumatera, and western part of Kalimantan causes hundreds of people died and thousand people injured ,but in same time Java and Bali suffering drought that causes water resource crisis.

4. Surface strong wind over Indonesia In the last week of December 2006 to first week of January 2007 created high tide of wave and causes :

- ❖ at least 4 vessels collapse and sink to the sea, hundred of people died high-tide wave also causes many fisherman cannot fishing and they loss economic potential.

5. Heavy rainfall in early February 2007 caused :

- ❖ Serious Flood ,almost 70% area in Jakarta (capitol city) was immerse by rising water(in same places rising water was 2 – 5 meter), make Jakarta paralyzed at least for two days. At least 80 people died, hundred injured, 240.000 people be must evacuated.
Total economic potential lost : US \$ 4.100.000.000.

**6. Outbreak diseases in related climate hazard
(result of analyses and observed) :**

- ❖ In the period of transition from dry season to wet season increase cases is : bird flu, common flu and diarrhea.
- ❖ In the early period wet season increase cases is : blood dengue fever.
- ❖ After flood period increase cases is : diarrhea, blood dengue fever, leptospirosis.

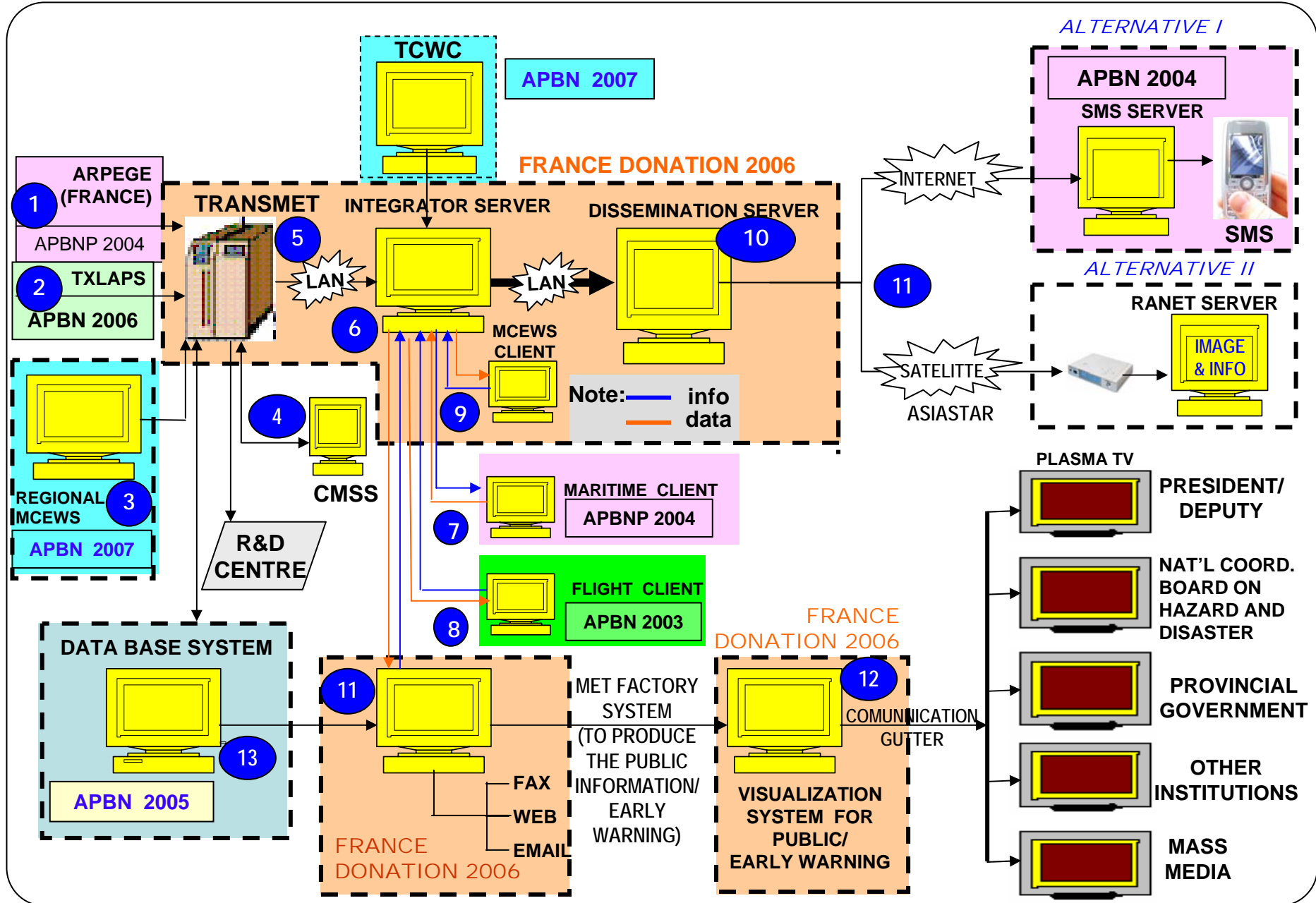


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BMG CURRENT CONDITION

- COLLABORATING WITH MET FRANCE DEVELOP MCEWS (METEOROLOGICAL AND CLIMATOLOGICAL EARLY WARNING SYSTEM).

END TO END SYSTEM OF MCEWS



EXIST SERVICES

FORECAST PRODUCES BY BMG :

1. DAILY FORECAST :

- HEAVY RAINFALL PROBABILITY**
- WEATHER FORECAST (FOR 32 CITIES IN INDONESIA)**
- WAVE HEIGHT FORECAST.**

2. MONTHLY FORECAST :

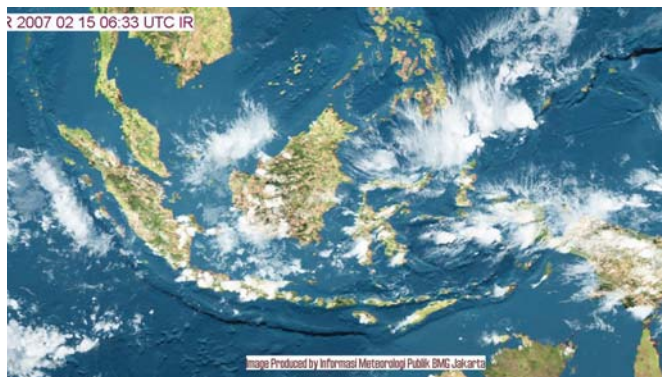
- RAINFALL FORECAST (FOR 3 MONTHS AHEAD AND UPDATE EVERY EARLY OF MONTH.**
- SEASONAL FORECAST (WET AND DRY SEASON)**



WEATHER AND WIND FORECAST

VALID : 00.00 Z ,16 FEBRUARY 2007 – 00.00Z , 17 FEBRUARY 2007

SATELITE IMAGE



SLIGHT RAINFALL :

- Sumatera Selatan
- Kalimantan Timur
- Sulawesi Utara
- Maluku Utara
- Jawa bagian Barat
- NTB

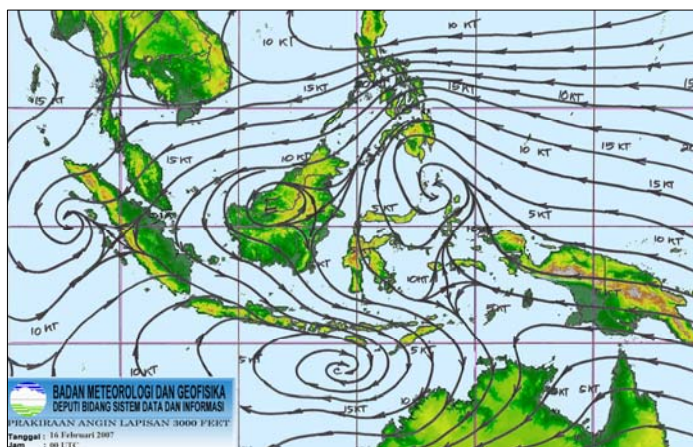
MODERATE RAINFALL :

- Sumatera bagian Utara
- Kalimantan Tengah
- Kalimantan Selatan
- Sulawesi Selatan
- Sulawesi Tenggara
- Papua bagian Barat dan Utara
- Jawa bagian Tengah dan Timur
- Bali
- NTT

HEAVY RAINFALL :

- Pesisir Pantai Sumatera Barat bagian Utara
- Kalimantan Barat

STREAM LINE FORECAST

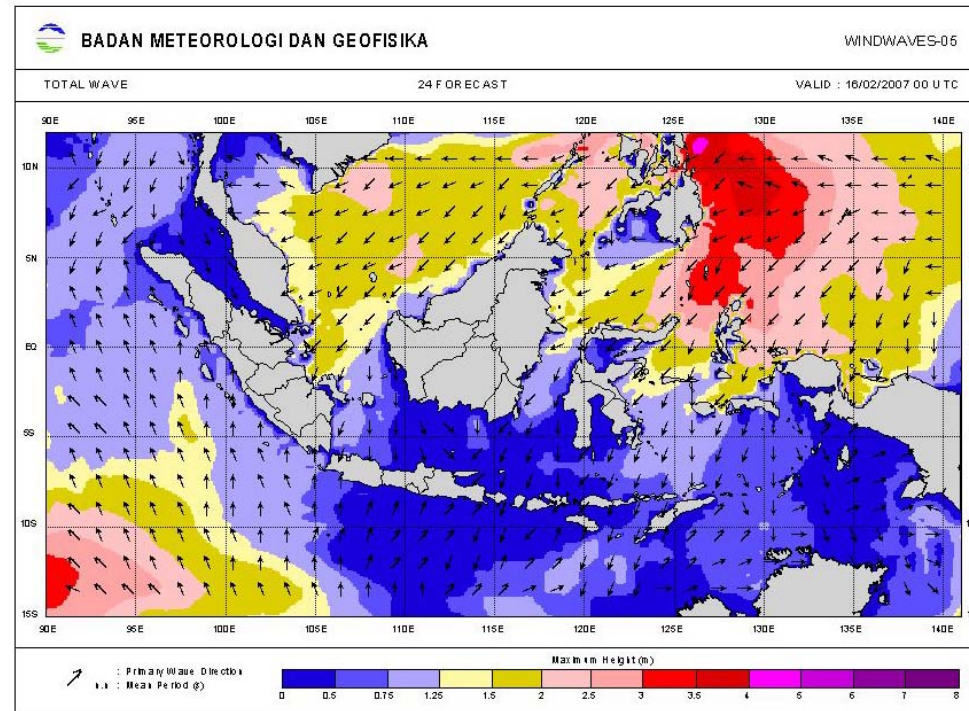


Wind speed \geq 20 knots (37 Km/Jam) :

- Samudra Hindia sebelah Barat Banda Aceh

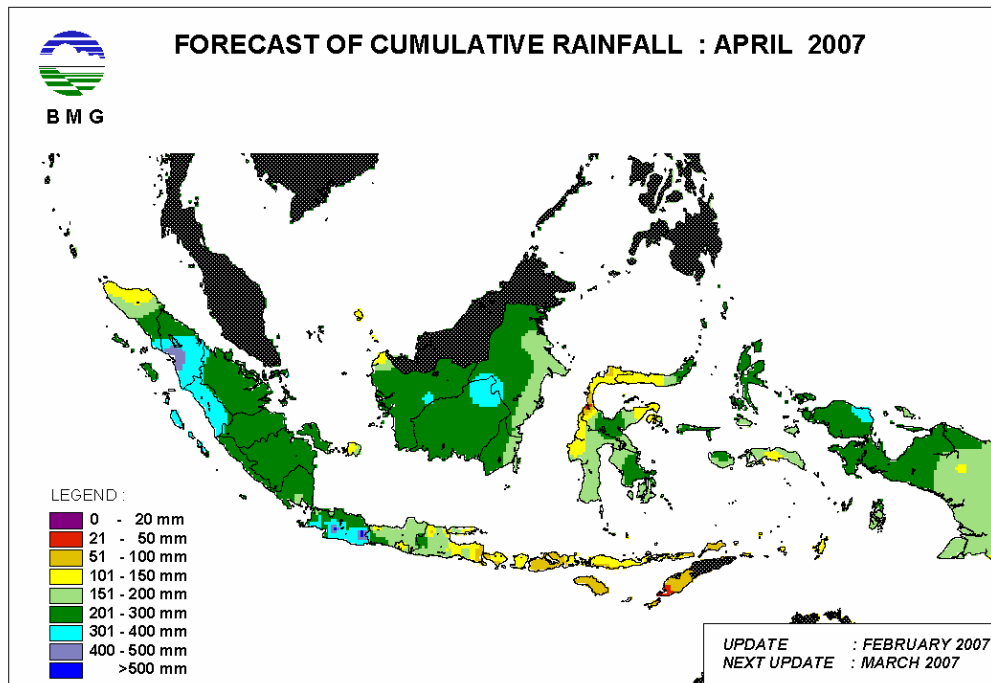
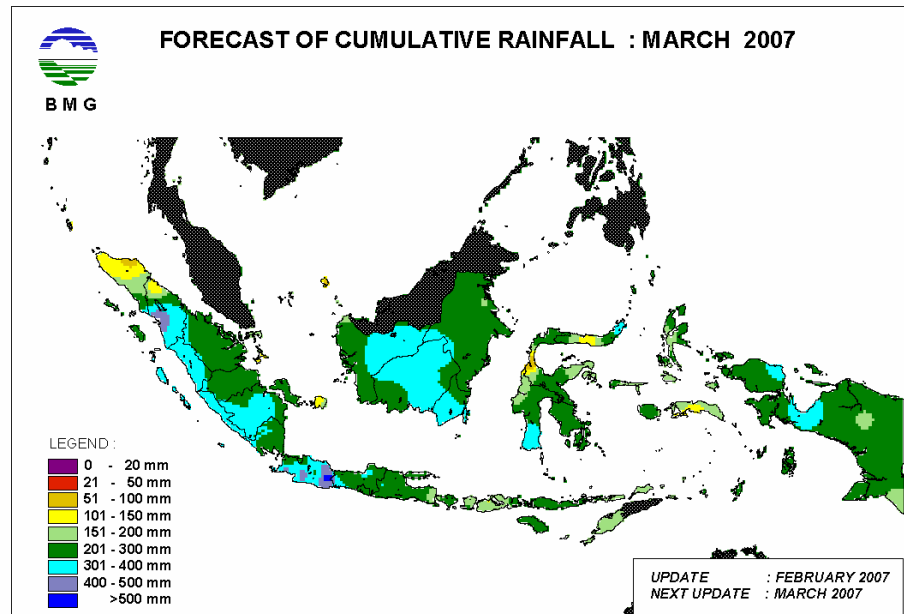
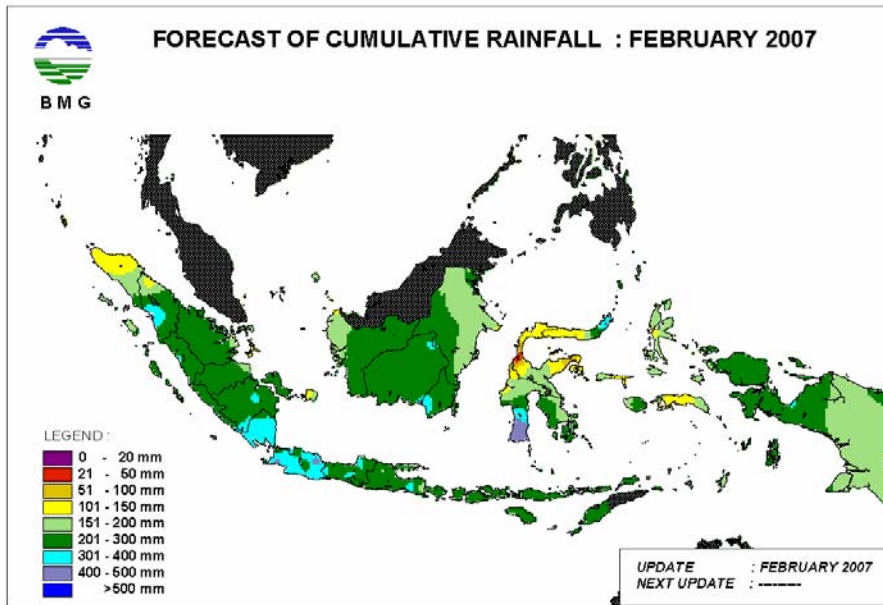


WAVE HEIGHT FORECAST VALID : 0.00Z, 16 February 2007 – 00.00Z, 17 February 2007.



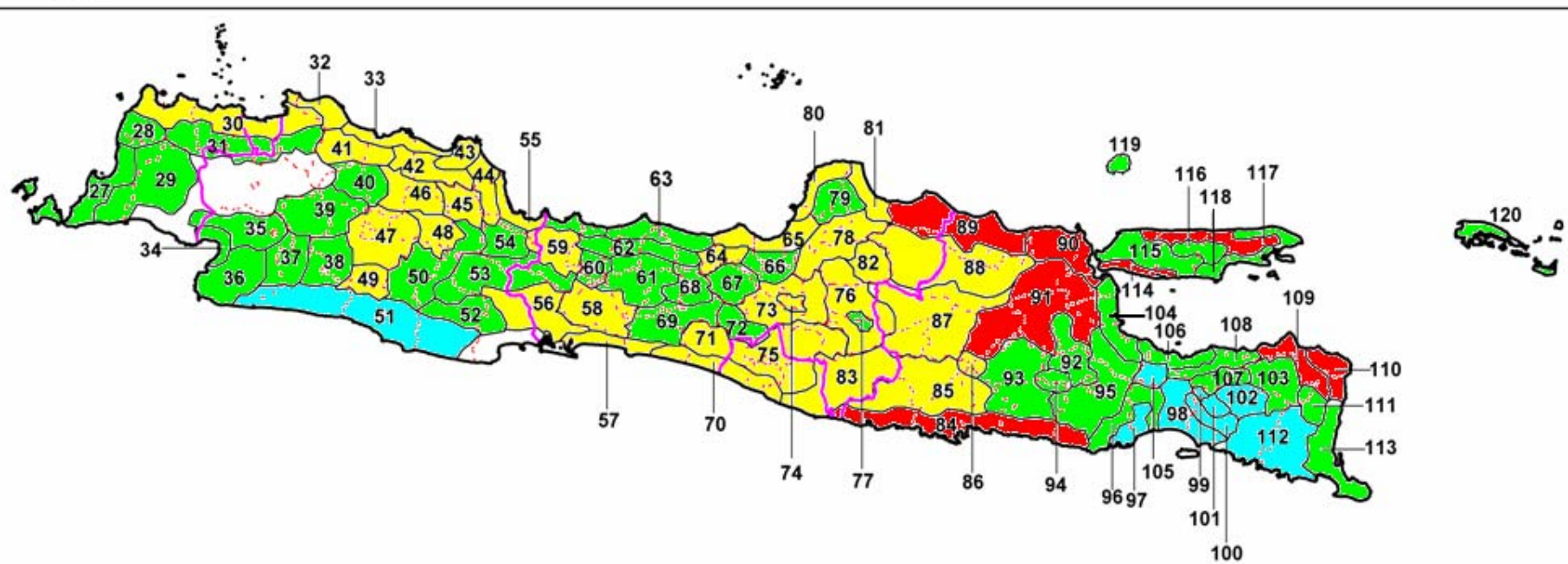
WAVE HEIGHT AREA :

- 1.25 – 2.0 m : Perairan sebelah barat Sumatera, Perairan selatan Banten, Selat Karimata, Laut Natuna, Laut Banda yang berbahaya bagi perahu nelayan.
- 2.0 – 3.0 m : Laut Sulawesi, Laut Maluku, Perairan sebelah utara Papua yang berbahaya bagi nelayan dan tongkang.
- 3.0 – 3.5 m : Laut Halmahera yang berbahaya bagi kapal nelayan, tongkang dan ferry





FORECAST OF ONSET DRY SEASON 2007 CLIMATE FORECAST ZONE (ZPI) JAVA

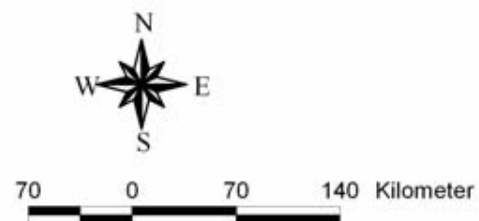


LEGEND :

- ZPI BOUNDARY
- REGENT / MUNICIPAL BOUNDARY
- PROVINCE BOUNDARY

1,2,3.....= NUMBER OF ZPI

- MARCH 2007
- APRIL 2007
- MAY 2007
- JUNE 2007
- JULY 2007
- AUGUST 2007





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BMG NEED IN THE NEXT FUTURE (REQUESTED)

- 1. Develop the forecast currently formula to get more fit and accurate forecast.**
- 2. Develop forecast formula base on decade (10 days / decadal forecast) , it is very importance to mitigation of related climate hazards and early warning system due to weather / climate extreme.**
- 3. Develop high resolution forecast ($0.25^{\circ} \times 0.25^{\circ}$ lat-long for limited area) to indicate disaster causes by heavy rainfall (which often causes land - fall) and gusty - wind (which causes broken building and tree), generally it happened at local scale because its impact from towering Cumulonimbus.**

THANK YOU