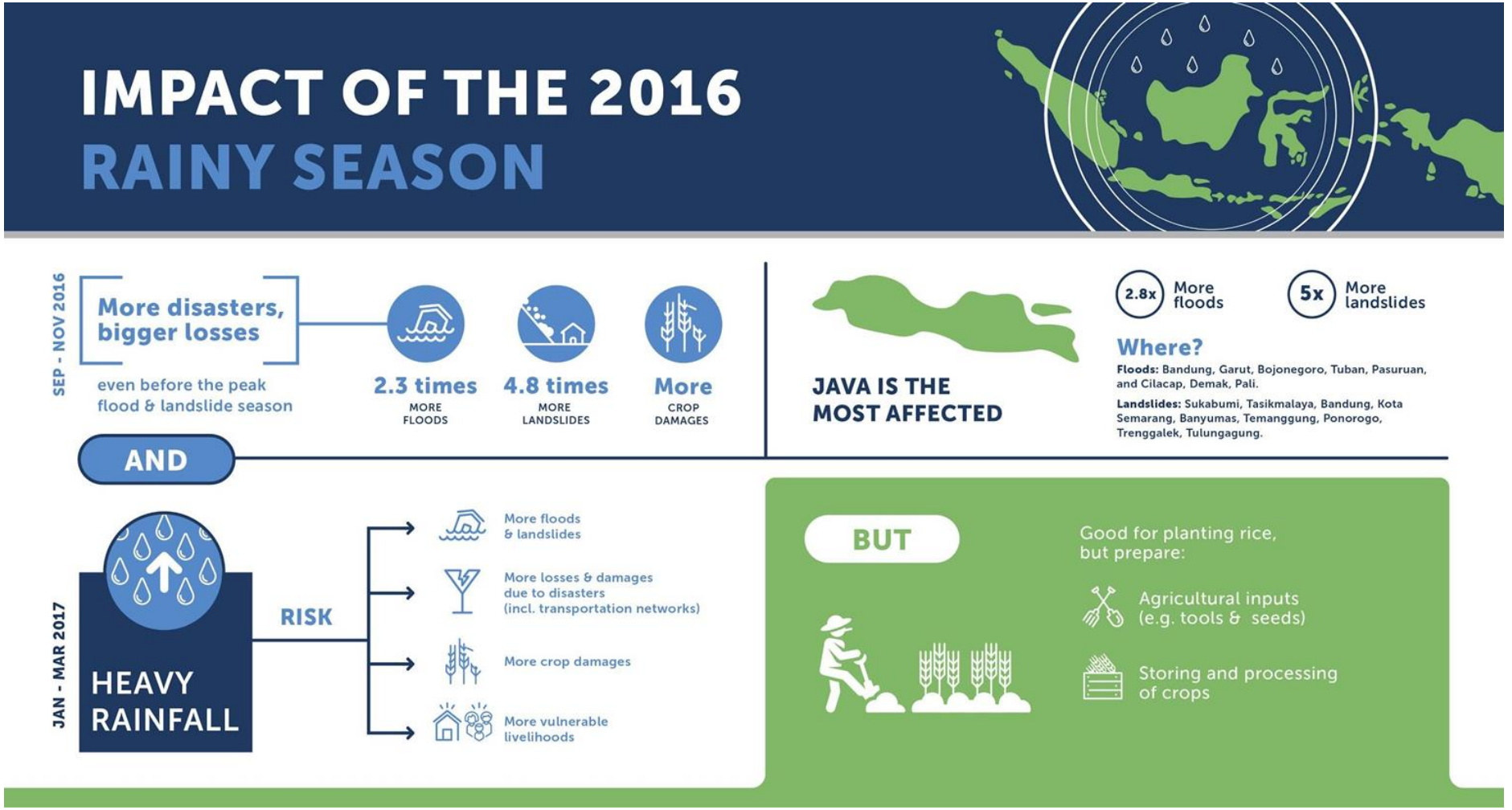
Food Security Monitoring Bulletin

INDONESIA

Special focus: Rainy season

Volume 5, December 2016

Summary


IMPACT OF THE 2016
RAINY SEASON
SEP - NOV 2016
More disasters, bigger losses
even before the peak flood & landslide season
2.3 times
MORE FLOODS
4.8 times
MORE LANDSLIDES
More
CROP DAMAGES
AND
JAN - MAR 2017
HEAVY RAINFALL
RISK
More floods & landslides
More losses & damages due to disasters (incl. transportation networks)
More crop damages
More vulnerable livelihoods
JAVA IS THE MOST AFFECTED
2.8x More floods
5x More landslides
Where?
Floods: Bandung, Garut, Bojonegoro, Tuban, Pasuruan, and Cilacap, Demak, Pali.
Landslides: Sukabumi, Tasikmalaya, Bandung, Kota Semarang, Banyumas, Temanggung, Ponorogo, Trenggalek, Tulungagung.
BUT
Good for planting rice, but prepare:
Agricultural inputs (e.g. tools & seeds)
Storing and processing of crops

Key messages

Summary

The above-normal rains continued across Indonesia through November and brought more floods, landslides and consequently bigger losses, more infrastructure and crop damages. Weather conditions were however favourable for paddy planting.

The weather outlook for January, February and March shows above-normal rains in the eastern parts of the country and below-normal in western Indonesia. Despite the below-normal conditions, the rainy season is predicted to peak in the December-January-February period and the actual amount of rains received is expected to be high for most of Indonesia.

The peak rainy season is typically also the peak "flood and landslide season", therefore more disasters and damages (e.g. crop, infrastructure, casualties) need to be anticipated. On the other hand, the main season's paddy area planted is expected to be higher due to the early start of the 2016 rainy season that created good conditions for planting.

Recommendations

- Continue monitoring weather patterns and related disasters, its impact on food production, livelihoods, and nutritional and health status in at risk and affected communities
- Intensify floods and landslides preparedness efforts
- Share weather information and early warnings for floods and landslides for communities at risk
- Provide services for communities at risk:
    - Improve irrigation system for management of excess water
    - Prepare appropriate agricultural inputs for planting
    - Prepare for crop processing and storing
    - Improve management of sanitation facilities

Introduction

This is the fifth of a series of monitoring bulletins on the impact of weather extremes on food security in Indonesia. The previous four bulletins are available online
http://bmkg.go.id/iklim/buletin-iklim.bmkg
https://www.wfp.org/content/indonesia-food-security-monitoring-2015

In the first section of this issue, current weather in Indonesia in November is examined. The next section then examines impact of the extreme weather on disaster occurrence and associated damages between September and November 2016, and trend of highly pathogenic avian influenza poultry outbreaks this year.

The following section presents the weather outlook for the next 3 months- January- March 2017. Finally, planting potential for rice and maize until the end of the rainy season is presented.

What's inside

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List of maps and analyses

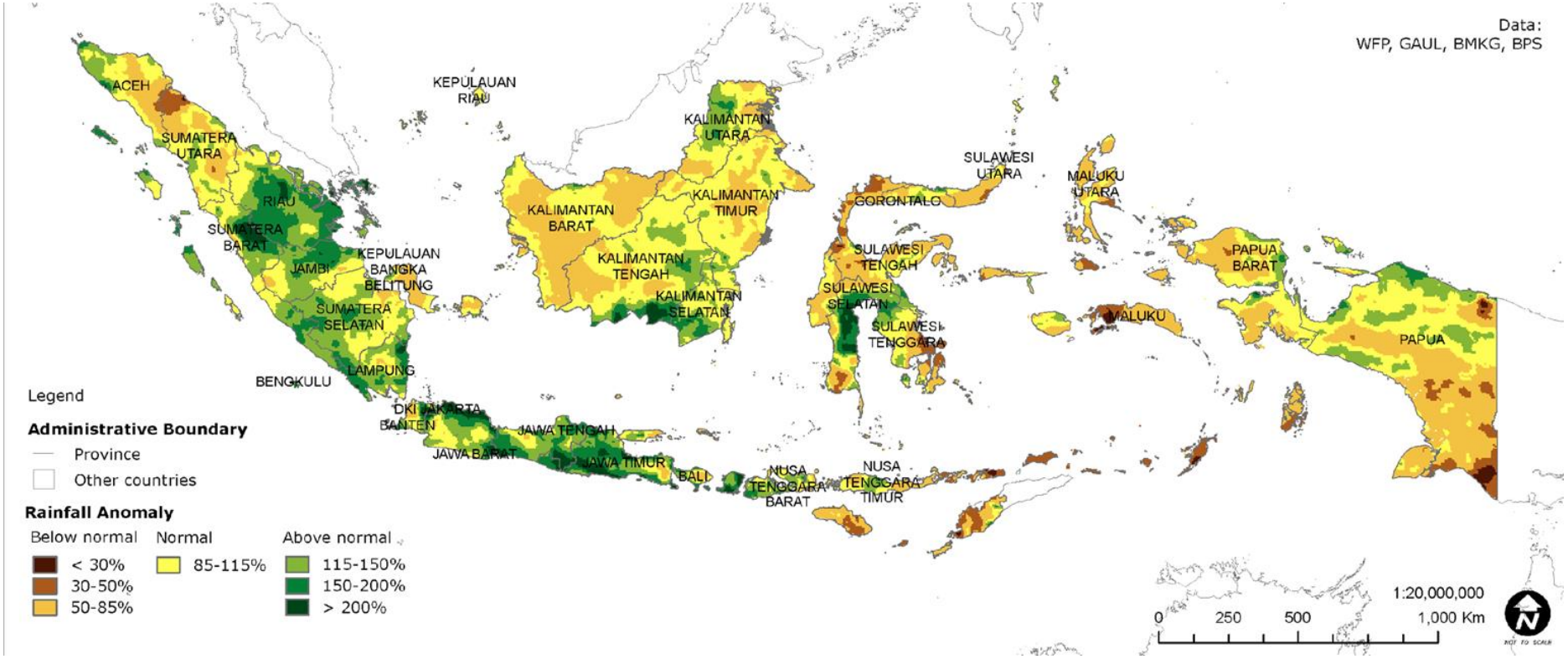
Part 1

Current weather in Indonesia

Abnormally high rainfall continued throughout November across Java and Sumatra.

Most of Java, central and southern parts of Sumatra, southern Kalimantan, Nusa Tenggara Barat, and South Sulawesi received double the normal rainfall. Since May 2016, rainfall in most of these areas was unusually high, even during the normal dry season.

RAINFALL ANOMALY | Percent of Average, November 2016



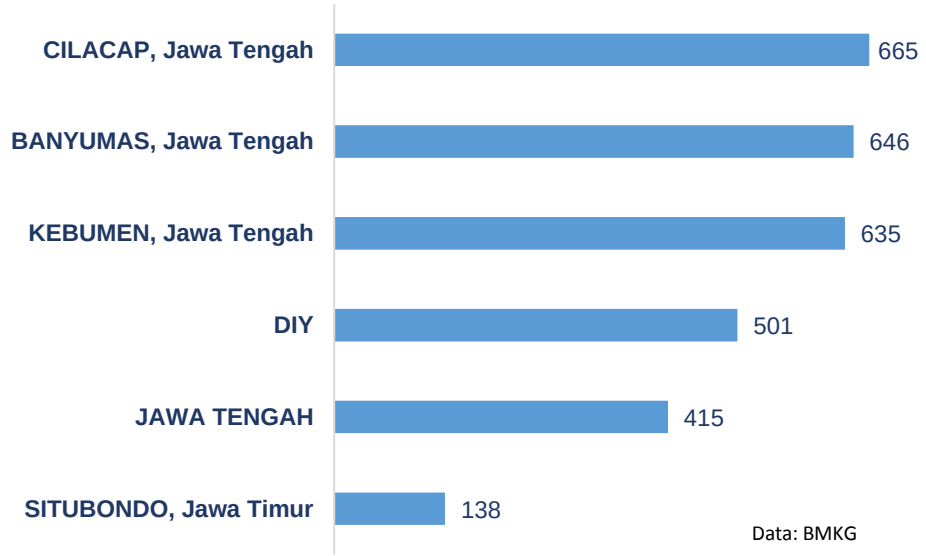
Translating monthly rainfall anomaly to amount of rains received

In many areas precipitation in November doubled compared to the long-term average, bringing extremely wet conditions. Jawa Barat, Jawa Tengah, Jawa Timur, Sumatera Barat, Bengkulu and Daerah Istimewa Yogyakarta (DIY) received the most rainfall- more than 500 mm monthly precipitation.
Some areas however remained drier than normal. The driest areas, with less than 50 mm, were in Nusa Tenggara Timur (NTT), Sulawesi Tenggara, Sulawesi Tengah, Maluku, and Papua. Overall, the monthly precipitation varied greatly in November, from 9 to 864 mm at district level.

Apart from the abnormally high rains, the rainy season started earlier than normal this year.

By November, the rainy season has started in around 74 percent of Indonesia, and in 87 percent of these areas, it started 1 to 2 months earlier. The rainy season is expected to peak in the December, January, February period in most of Indonesia.
The negative Indian Ocean Dipole, warm Sea Surface Temperature around central and southern coasts, tropical cyclones, and Madden-Julian Oscillation have contributed to the abnormally high rains and the early start of the rainy season. Effect of La Niña is not very significant due to the its weak intensity.

Amount of actual rainfall received in November in mm, after 150% anomaly (mm)



Part 2

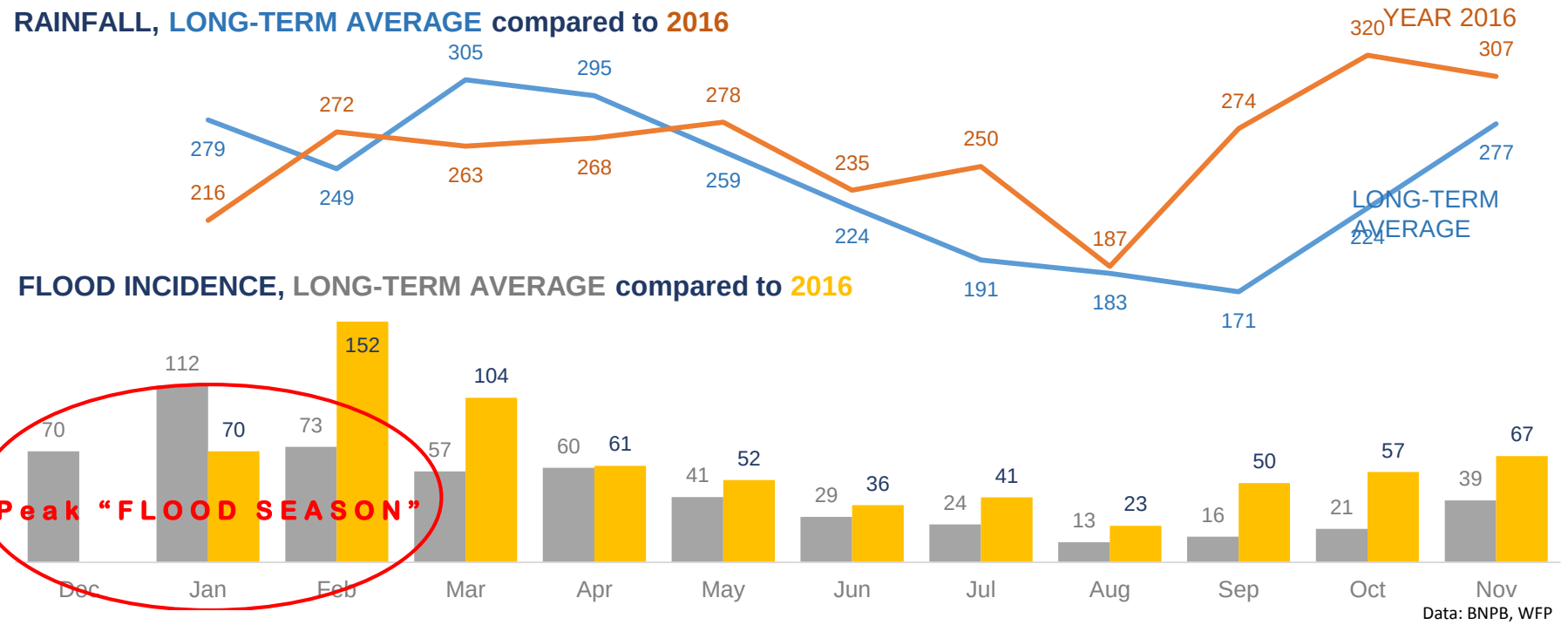
Impact of the rainy season

Unusually many floods continued to affect Indonesia in November.

Between September and November, Indonesia experienced 2.3 times more floods compared to the 10-year average. Since February, the number of floods in 2016 consistently exceeded the 10-year average, in line with the abnormally high rains this year. Normally, floods are common during the peak rainy season, from December to February.

More floods are anticipated in the coming months, raising concerns for the livelihood security and coping capacity of the already affected households.

Comparing rainfall and floods in 2016 and long-term average



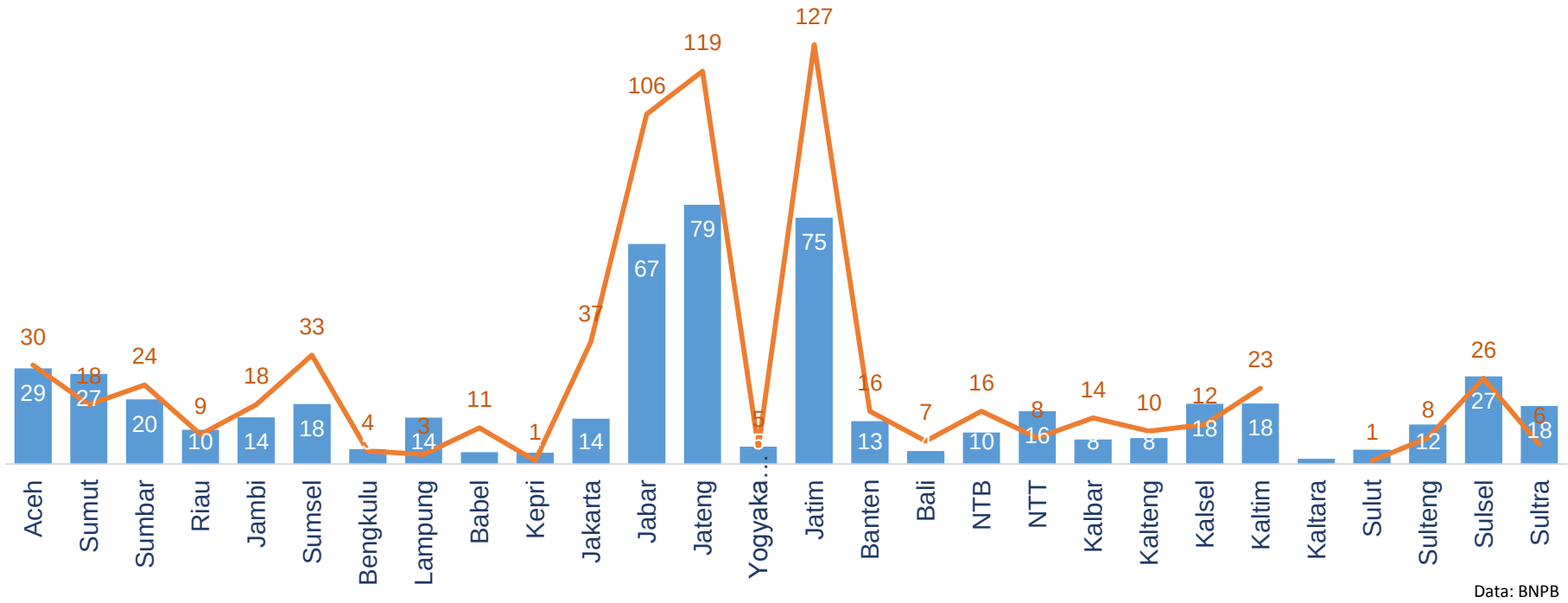
Data: BNPB, WFP

Java is the most affected.

Jawa Barat, Jawa Timur and Jawa Tengah remain to be the most affected provinces. From September to November, the provinces experienced around 2.8 times more floods this year, compared to the 10-year average. The most affected districts were Bandung, Bogor, Garut in Jawa Barat; Bojonegoro, Tuban, Pasuruan in Jawa Timur and Cilacap, Demak, Pati in Jawa Tengah.

Floods by provinces

LONG-TERM AVERAGE compared to 2016 (until 30 November)



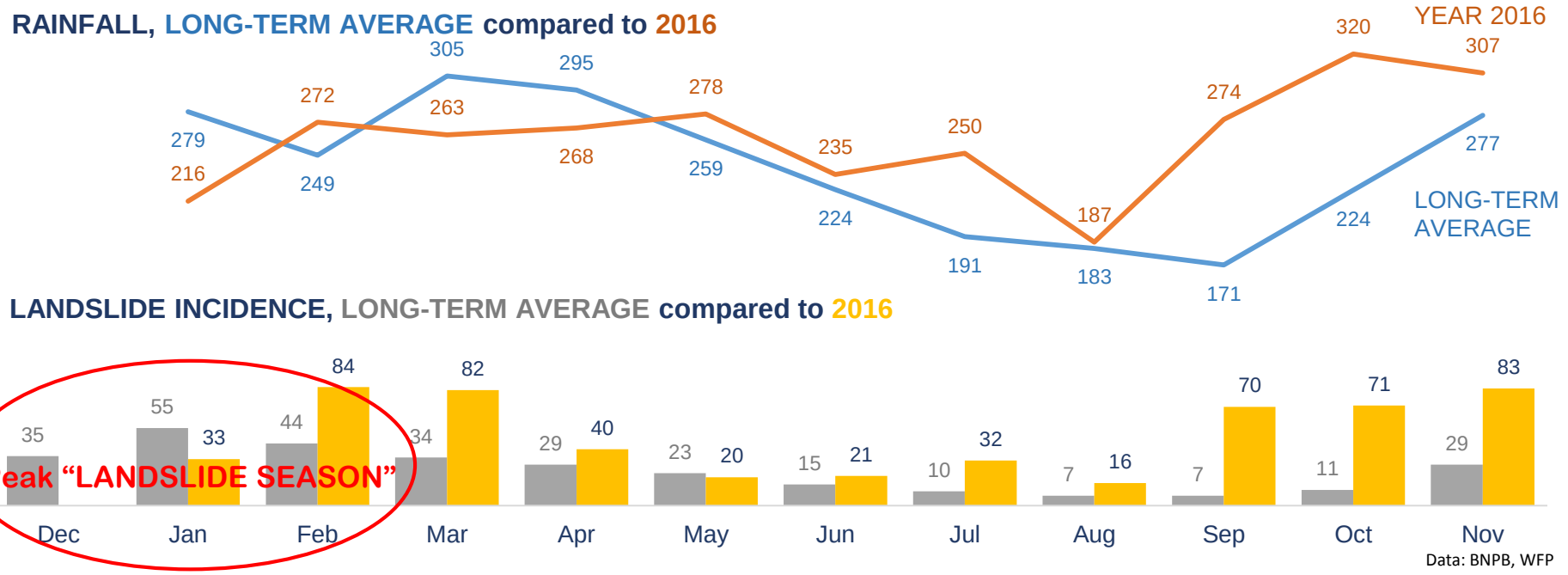
Data: BNPB

Even before the peak "landslide season", the number of landslides in September and November is significantly higher than during the normal peak "landslide season".

Number of landslides continued to be exceptionally high in November. Between September and November, 4.8 times more landslides occurred across Indonesia compared to the 10-year average. Similar to floods, more landslides happened this year since February than in the last 10 years, following the abnormally heavy rains this year.

Typically, most landslides are triggered during the peak rainy season, in December, January and February. Preparedness efforts should be strengthened to anticipate more floods in the coming months- the peak 'landslide season'- to minimize losses and damages.

Comparing rainfall and landslides in 2016 and long-term average



Data: BNPB, WFP

Most landslides occurred in Jawa Barat, Jawa Tengah and Jawa Timur.

Until November 2016, Jawa Barat experienced 78 landslides, Jawa Tengah 241 and Jawa Timur 88- double the normal compared to the 10-year average. The number of landslides in Jawa Barat, Tengah and Timur is significantly higher than in other provinces, where normally less than 10 landslides occur in a year per province.
In the last three months (September to November), the number of landslides across Jawa was exceptionally high- 2.3 times higher in Jawa Barat, 7.6 for Jawa Tengah and 5.3 for Jawa Timur. The most affected districts were Sukabumi, Tasikmalaya, Bandung in Jawa Barat; Kota Semarang, Banyumas, Temanggung in Jawa Tengah, and Ponorogo, Trenggalek, Tulungagung in Jawa Timur.

Number of landslides in Jawa Barat, Jawa Tengah and Jawa Timur in 2016 compared to the long-term average

	Jawa Barat		Jawa Tengah		Jawa Timur	
	Average	2016	Average	2016	Average	2016
September	2	15	3	35	2	12
October	4	7	4	38	3	17
November	10	14	8	41	3	17

Data: BNPB

The high number of floods and landslides between September and November led to significant losses and damages.

ON NATIONAL LEVEL

	People			Infrastructure		
	Dead & Dissapeared	Injured	Displaced	Educational Facilities	Health Facilities	Houses Damaged
Floods	63	11	81,674	799	3	4,900
Landslides	43	28	3,510	6	-	699

IN JAVA SPECIFICALLY

	People	Infrastructure
	Casualties	Damaged Infrastructure
Floods	61	4,825
Landslides	30	613

Crop damages increase during periods with high rainfall.

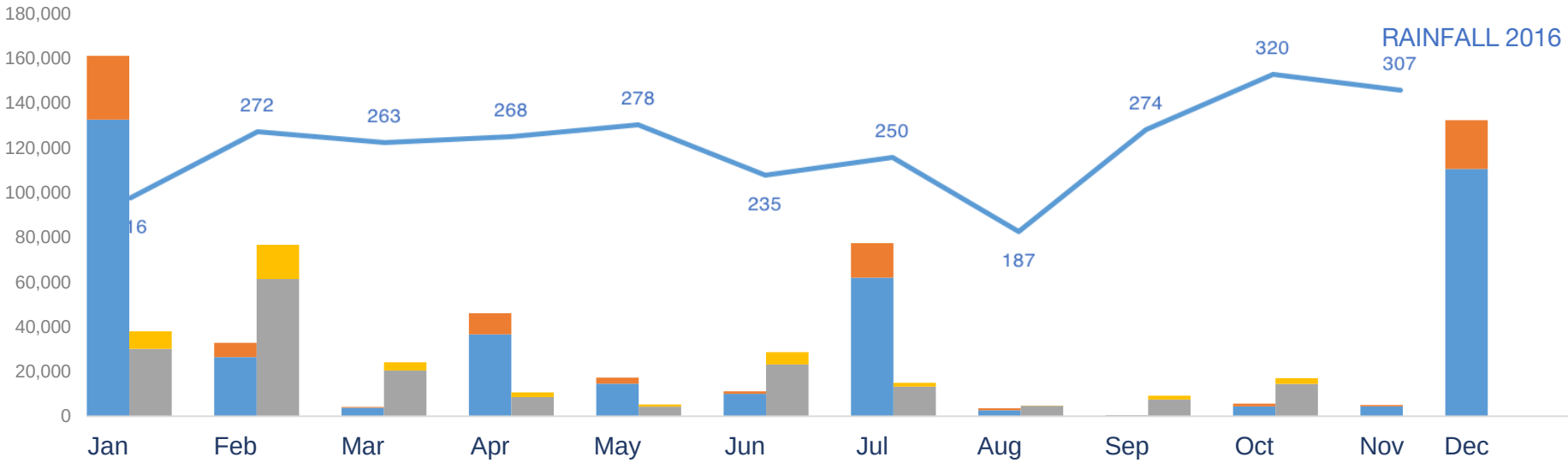
Paddy

Until October 2016, 229.687 ha of paddy fields were damaged by floods (187.962 ha partial damage and 41.725 ha complete damage). The area damaged by floods is relatively small compared to the area planted in the same time period, with 1.5% of partial damages and 0.3% of total damages.

Most of these damages occurred in January, February and March, in line with the intensity of rainfall. While damages this year are lower than damages in a normal year- 2013, government and farmers should increase early warning and preparedness to anticipate floods in the coming months and minimize damages.

Paddy fields damaged due to floods (ha)

2013: partial damage and complete damage vs 2016: partial damage and complete damage



Data: Ministry of Agriculture, WFP

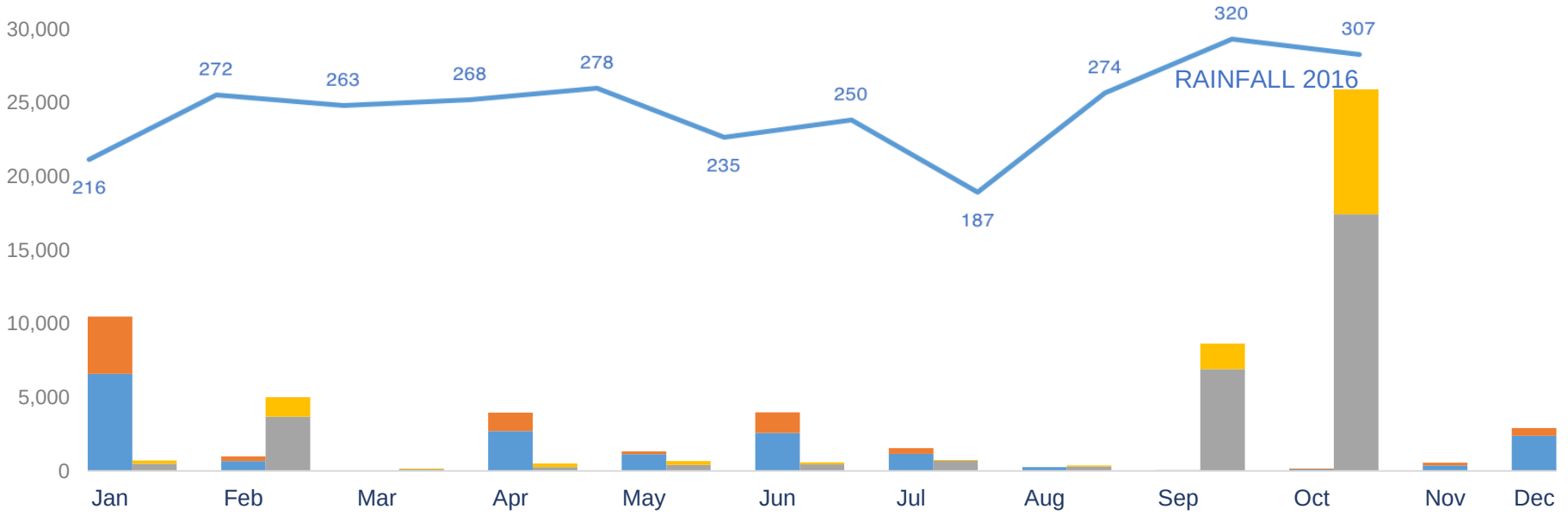
Maize

Until October this year, around 43.300 ha of maize fields were damaged by floods (30.750 ha were partially damaged and 12.590 ha completely damaged). As with paddy damages, total area damaged by floods is relatively small compared to the total area planted for the same area, comprising around 1.2 percent.

This year, most of the maize damages caused by floods, which were unusually high compared to a normal year- 2013, occurred in late 2016. This was likely due to the high rainfall levels in late 2016.

Maize fields damaged due to floods (ha)

2013: partial damage and complete damage vs 2016: partial damage and complete damage



Data: Ministry of Agriculture, WFP

Trends in highly pathogenic avian influenza poultry outbreaks in Indonesia

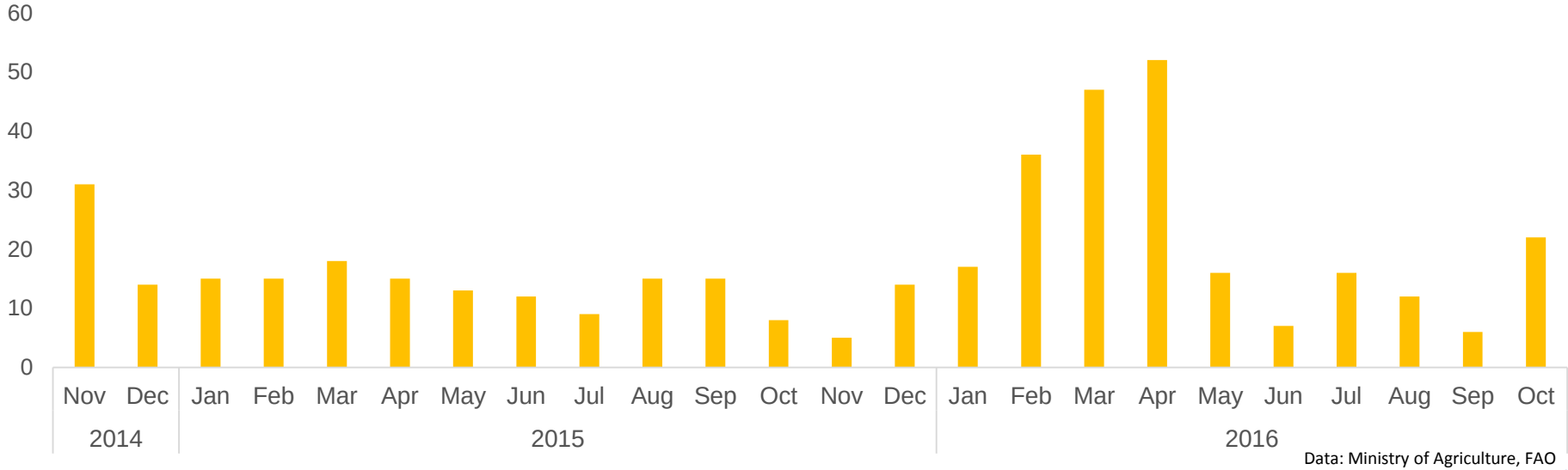
Highly pathogenic avian influenza (HPAI) outbreaks over the years have shown a seasonal pattern, with a higher number of outbreaks being reported between December and April which could be related to increased rainfall and humidity.

This year, with increased rainfall from July onwards, saw a higher than normal number of reported HPAI outbreaks during the period July- October 2016, especially from Java. HPAI endemic areas need to prepare for a further increase in poultry HPAI outbreaks following the expected increased seasonal rainfall pattern over the coming months.

Outbreaks of HPAI in poultry in Indonesia are reported either through paper reports or nowadays more often through SMS reports from the field.

Most HPAI cases are reported from areas of high poultry population density such as Java and Sumatra Islands where HPAI is an endemic disease.

HPAI poultry outbreaks in Indonesia, November 2014- October 2016



Data: Ministry of Agriculture, FAO

Part 3

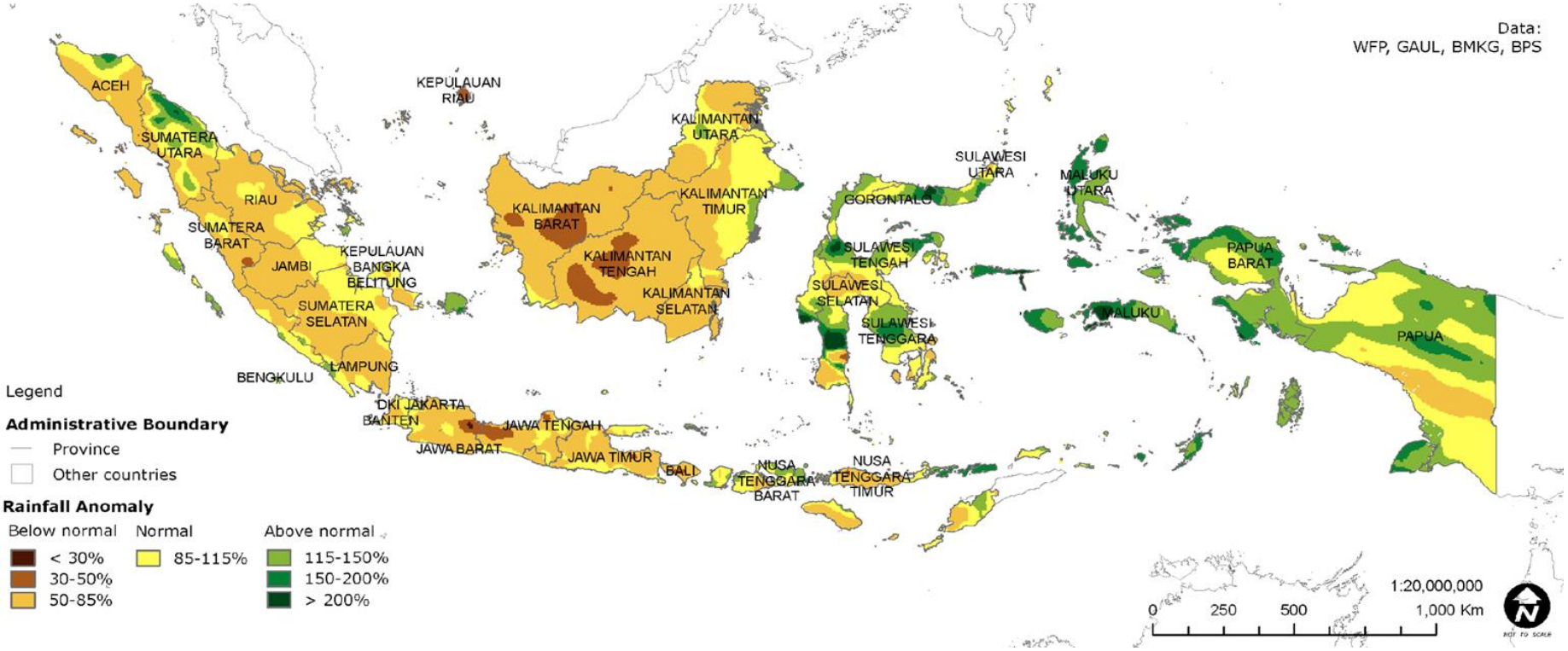
Weather outlook and potential impact of weather in January-March 2017

Below-normal rains are expected in western Indonesia and above-normal in eastern parts of the country.

Weather forecast for **January** shows:

- Below-normal rains across Java, Kalimantan, central and southern Sumatra and parts of NTT. Despite the below-normal conditions, the amount of rains received is expected to be high, especially for Java, most of Kalimantan and southern parts of Sumatra, where monthly rainfall may vary between 300- 400 mm.
- Above-normal conditions are predicted for Maluku, most of Sulawesi and northern part of Papua, with monthly rainfall ranging from 200 to 400 mm.

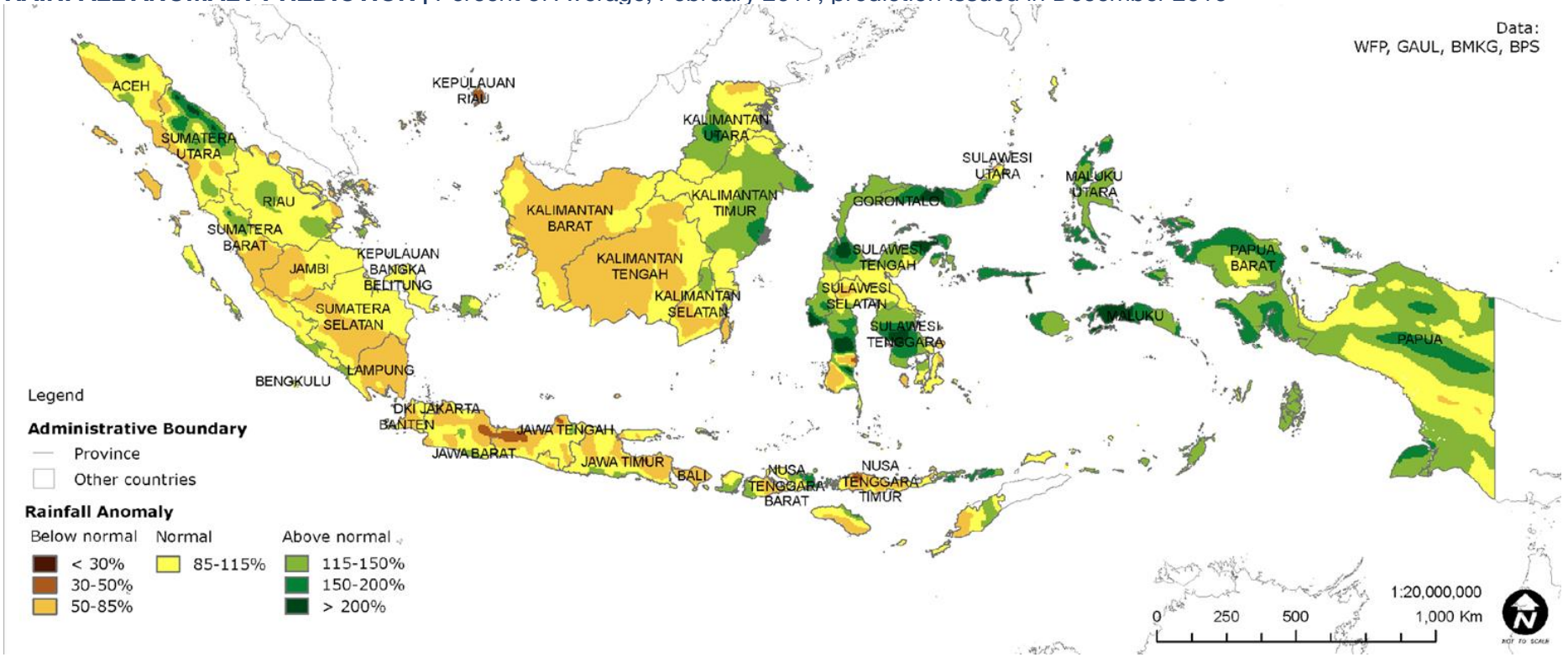
RAINFALL ANOMALY PREDICTION | Percent of Average, January 2017, prediction issued in December 2016



In **February**, similar conditions are predicted:

- Below-normal rains across Java, Kalimantan, central and southern Sumatra and parts of NTT. The monthly rainfall is expected to vary between 100- 300 in Kalimantan and Sumatra, while Java should receive around 300-400 mm of rains.
- Above-normal conditions are predicted for Maluku, most of Sulawesi, Papua, eastern parts of Kalimantan and northern Sumatra. Despite the above-normal rains, northern Sumatra and western Kalimantan may receive only around 100 mm monthly rainfall.

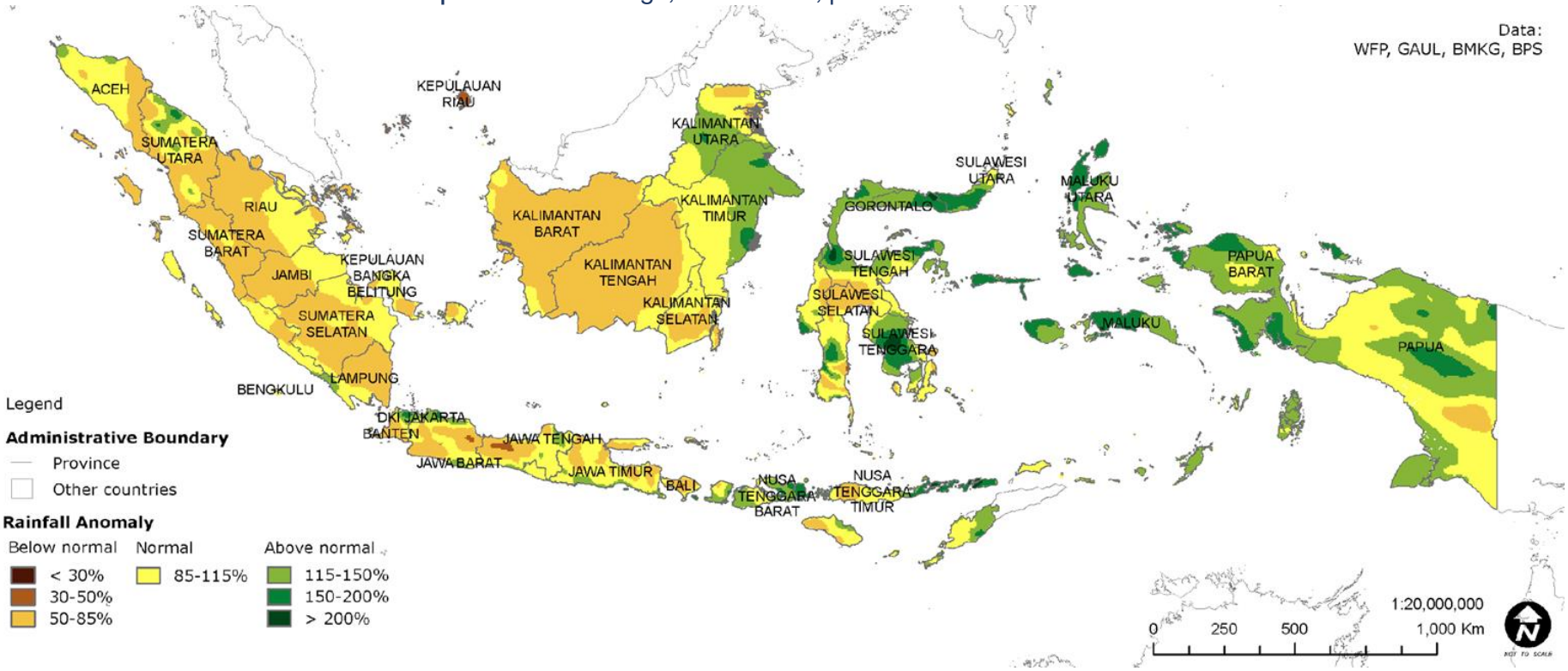
RAINFALL ANOMALY PREDICTION | Percent of Average, February 2017, prediction issued in December 2016



In **March**:

- Above-normal conditions are expected to remain across Maluku, most of Papua, eastern Kalimantan and Sulawesi except for Sulawesi Selatan. Above-normal rains are predicted to spread to NTB and parts of NTT. The forecast shows monthly rains will vary between 100 to 400 mm.
- Rainfall in Sumatra, Java and central and western Kalimantan, will remain below-normal. Nevertheless, precipitation levels are expected to be high, especially across central Java, central Kalimantan and northern Sumatra, reaching around 300 to 400 mm of monthly rains.

RAINFALL ANOMALY PREDICTION | Percent of Average, March 2017, prediction issued in December 2016



Continued favorable conditions for planting

In total, at national level, based on the estimates from the Ministry of Agriculture, around 4.4 million hectares of paddy and 1.7 million hectares of maize can be planted between January and March. Jawa Barat, Jawa Tengah and Jawa Timur have the largest potential area for paddy planting, with more than 500,000 hectares of land available in the January-March period. The largest potential area for maize planting, with more than 200,000 hectares is in Jawa Barat, Jawa Timur and Sulawesi Selatan.
Due to the early start of the rainy season, larger planted area in the main planting season (October 2016- March 2017) is expected.

The table shows provinces with more than 10,000 hectares of potential planting area for paddy and maize for the period January- March 2017 (Ha)

PROVINSI	PADDY					MAIZE				
	JAN I-II	JAN III-FEB I	FEB II-III	MAR I-II	TOTAL	JAN I-II	JAN III-FEB I	FEB II-III	MAR I-II	TOTAL
ACEH	70,996	-	-	91,782	**162,778**	815	0	55,073	6,982	**62,870**
SUMATERA UTARA	70,313	5,333	-	158,538	**234,184**	6,995	0	0	3,219	**10,214**
SUMATERA BARAT	-	2,624	-	118,278	**120,902**					
RIAU	9,150	-	-	7,534	**16,684**					
JAMBI	93	10,678	-	30,292	**41,063**					
SUMATERA SELATAN	-	-	-	221,783	**221,783**	0	0	0	20,497	**20,497**
BENGKULU	-	-	-	61,012	**61,012**	0	0	0	16,376	**16,376**
LAMPUNG	-	-	-	303,659	**303,659**					
JAWA BARAT	-	-	-	564,250	**564,250**	0	0	0	312,388	**312,388**
JAWA TENGAH	297,294	-	-	340,881	**638,175**	15,907	0	0	174,718	**190,625**
YOGYAKARTA	-	-	-	35,870	**35,870**	0	0	0	18,548	**18,548**
JAWA TIMUR	359,772	121,203	68,922	188,461	**738,358**	24,131	63,806	33,857	147,708	**269,502**
BANTEN	-	-	-	138,047	**138,047**	0	0	0	62,435	**62,435**
BALI	-	-	-	45,650	**45,650**	0	0	0	30,776	**30,776**
NUSA TENGGARA BARAT	-	-	-	77,243	**77,243**	0	0	0	125,570	**125,570**
NUSA TENGGARA TIMUR	-	-	-	54,592	**54,592**	0	0	0	45,183	**45,183**
KALIMANTAN BARAT	-	-	-	49,606	**49,606**	0	0	0	33,072	**33,072**
KALIMANTAN TENGAH	-	-	-	103,351	**103,351**	0	0	0	50,170	**50,170**
KALIMANTAN SELATAN	-	-	-	124,112	**124,112**	0	0	0	80,207	**80,207**
KALIMANTAN TIMUR	-	-	-	31,818	**31,818**	0	0	0	20,657	**20,657**
KALIMANTAN UTARA	-	-	-	14,559	**14,559**					
SULAWESI UTARA	-	-	-	40,124	**40,124**	0	0	0	22,483	**22,483**
SULAWESI TENGAH	-	21,005	-	67,211	**88,216**	0	5,228	0	35,937	**41,165**
SULAWESI SELATAN	-	-	9,825	357,734	**367,559**	0	0	6,550	213,749	**220,299**
SULAWESI TENGGARA	-	-	-	62,964	**62,964**	0	0	0	32,497	**32,497**
GORONTALO	-	55	148	21,242	**21,445**	0	0	0	10,498	**10,498**
SULAWESI BARAT	-	-	-	39,520	**39,520**	0	0	0	22,382	**22,382**
INDONESIA	**807,618**	**161,597**	**80,449**	**3,383,550**	**4,433,214**	**49,119**	**69,781**	**95,480**	**1,522,761**	**1,737,141**

Data: Ministry of Agriculture

Methodology

The maps in this bulletin are largely based on satellite data which is the processed and used to create various indicators relating to weather extremes and rainfall deviations.

Rainfall anomaly is a measure of lack or excess rainfall in a period compared to the average. Rainfall anomaly for November 2016 is derived from BMKG observation data. Rainfall anomaly forecast for January-February-March 2017 uses BMKG prediction data.

Planting potential estimated for the January-February-March 2017 period is provided by the Ministry of Agriculture.

Assessment of flood and landslide events and their impact is a trend analysis and comparison to the current situation to long-term average using data from National Disaster Management Agency (BNPB).

Crop damaged for paddy and maize for January to October 2016 is provided by Ministry of Agriculture. The data on crop damages consists of 2 categories: partially damaged (if the total damage less than 85% of areas), totally damaged (if the total damaged more than 85% of areas).

Contributors

This bulletin is produced by a technical working group led by the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG) and consisting of the Ministry of Agriculture (Food Security Agency, Food Crops Department, Indonesian Agency for Agricultural Research and Development, Information and Data Center, Horticulture Department), the National Institute of Aeronautics and Space (LAPAN), National Disaster Management Authority (BNPB) and the Central Bureau of Statistics (BPS).

The bulletin is directed by Professor Rizaldi Boer of the Bogor Agricultural University (IPB). The World Food Programme (WFP) and Food and Agriculture Organization of the United Nations (FAO) provide technical support, including the generation of maps and data analysis.

All content within this bulletin is based upon the most current available data. Weather conditions are a dynamic situation, hence the current realities may differ from what is depicted in this document.

Picture for the cover is by Edal Anton Lefterov.

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This bulletin is made possible through financial support from the Government of Germany.