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INDONESIA

A joint collaboration by:

Seasonal Monitoring Bulletin

January – March (Q1) 2023

BMKG · BNPB · BADAN PUSAT STATISTIK · Kementerian PPN/Bappenas · BADAN PANGAN NASIONAL · BRIN BADAN RISET DAN INOVASI NASIONAL · WFP

Table of Content

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Key Messages

Climate Situation – Q1 2023: Between January and March 2023, most regions in Indonesia experienced normal rainfall patterns when compared to the thirty-year long-term average. However, certain areas in Sumatera, Kalimantan, Maluku, the northern part of Sulawesi, and Papua received above-normal rainfall. Conversely, below-average rainfall was observed in Banten, Jawa Barat, Jawa Tengah, Sulawesi Tengah, Sulawesi Tenggara, and northern Papua, resulting in drier conditions than the long-term average.

Impact of Disasters – Q1 2023: The National Disaster Management Agency (BNPB) reported 747 recorded disasters in Indonesia, representing a 34% decrease compared to the same period in 2022. Most of these disasters were caused by hydrometeorological hazards, such as floods, extreme weather, and landslides. Jawa had the highest number of disasters, accounting for almost fifty percent of all incidents.

Status of Food Security and Nutrition: According to the National Food Agency (NFA), more than half of all provinces in Indonesia were considered food secure in February 2022. Nineteen provinces were found to be stable, while 15 provinces were under watch for possible deterioration of the food security and nutrition situation. These include areas in Jawa, Kalimantan, Sulawesi, Maluku, and Papua.

Rice Production: Statistics Indonesia (BPS) reported that rice production from January to April 2023 reached 13.8 million tonnes, showing an increase in harvested areas by 2.13% and rice production by 0.56% compared to the same period last year. The highest rice production was in Jawa Timur, Jawa Tengah, and Jawa Barat with a combined total of 7.5 million tonnes.

Climate Forecast on Agriculture: The National Research and Innovation Agency (BRIN) predicted that there is higher risk of drought in the main rice producing provinces, with 45% of paddy cultivation areas expected to receive less rainfall from May to July 2023.

Climate Outlook – May to July 2023: The triple-dip La Niña phenomenon, which persisted for three consecutive years since 2020, has finally ended. However, according to the Meteorological, Climatological, and Geophysical Agency (BMKG) and several other global climate agencies, the ENSO index is expected to gradually shift towards an El Niño phase in the second semester of 2023. BMKG also predicts that most provinces in Indonesia will experience an earlier onset of the dry season.

Media Reports

January – March 2023

La Niña fades, but El Niño could happen this year

(02/03/2023) KOMPAS.COM – The La Niña weather phenomenon which lasted three years in a row and bringing wetter weather in Indonesia has finally come to an end. However, El Nino, which will bring drier weather, is expected this year. According to WMO estimates, a period of El Nino Southern Oscillation (ENSO) conditions with a probability of 90 percent will occur during March-May. The probability of ENSO neutral conditions continuing beyond May has decreased slightly but remains high with an 80 percent probability in April-June and 60 percent in May-July [1].

Chili farmers reveal there was a harvest failure due to extreme weather

(06/03/2023) KOMPAS.COM – Chili farmers who are members of the Champion Chili association say that up to 20 percent of chili crop failures were caused by extreme weather. "In every extreme weather there is always a failure rate of 20 percent or more. It's the same this year as well. It can be predicted that December-February is the period where extreme rainfall mostly affect chili production," said the Head of Chili Champion Tunof Mondroadmojo at the Keramat Jati Main Market [2].

President asks farmers to accelerate rice planting

(11/03/2023) ANTARANEWS.COM – President Joko Widodo (Jokowi) has asked Indonesian farmers to accelerate the rice planting period after the main harvest season to maximize the use of rainwater and to avoid drought. In addition, Agriculture Minister Syahrul Yasin Limpo said that he was ready to follow President Widodo's directive to accelerate rice planting after the main harvest season by coordinating with regional heads. While the total area under rice fields is 7.4 million hectares, the President is targeting that farmers accelerate planting on an area of up to 10 million hectares. [3].

BPBD NTT asks residents to be aware of potential drought

(31/03/2023) ANTARANEWS.COM - "Based on the predictions of the Kupang Meteorology, Climatology and Geophysics Agency, the start of the dry season in East Nusa Tenggara will begin in April 2023 and will last for a long time. The potential of drought in NTT is very high," said the Chief Executive of the NTT BPBD, Ambros Kodo in Kupang [4].

SEASONAL MONITORING

CHANGES IN RAINFALL
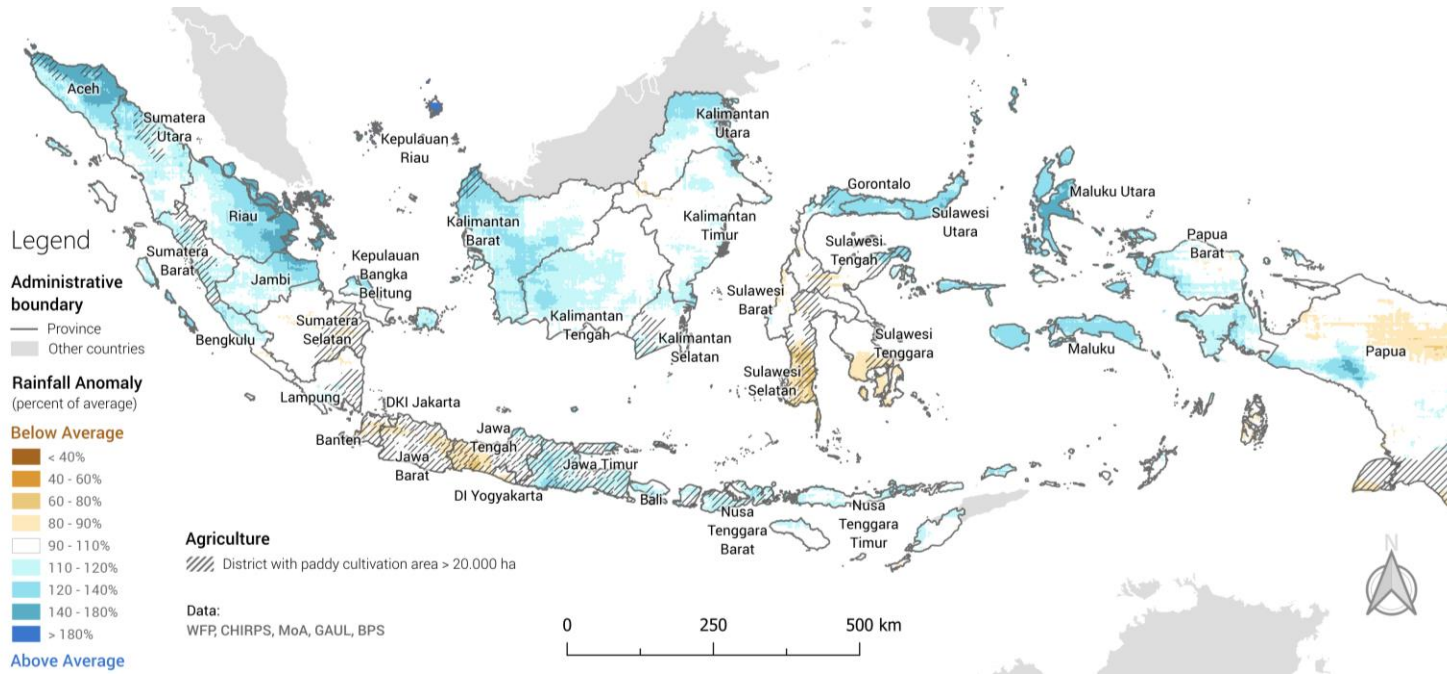
VEGETATION MONITORING

TEMPERATURE MONITORING

DROUGHT MONITORING

DISASTER MONITORING

Changes in Rainfall: January – March 2023 (Q1)

*The accumulation of rainfall in comparison to 30 years of data average (1991-2020)*

In the first quarter of 2023, rainfall patterns in Indonesia were mostly within the normal range compared to the average rainfall recorded over the past 30 years, except during the third weeks of January and March.

Normal rainfall patterns were observed in Sumatera Selatan, Lampung, Yogyakarta, Nusa Tenggara Timur, Sulawesi Barat, Sulawesi Tengah, central Kalimantan and southern Papua. These conditions are favourable for agricultural activities that depend on consistent rainfall patterns.

Above-average rainfall was observed in Sumatera, Kalimantan, Maluku, northern Sulawesi, Maluku, and Papua. While excessive rainfall may have positive impacts on agricultural activities. i.e., by helping to increase crop yields, they could also lead to floods and landslides, so it is important to monitor these patterns.

On the contrary, below-average rainfall was observed in Banten, Jawa Barat, Jawa Tengah, Sulawesi Tengah, Sulawesi Tenggara, and northern Papua. These conditions may have negative impacts on agricultural activities where less rainfall could lead to meteorological droughts and water scarcity.
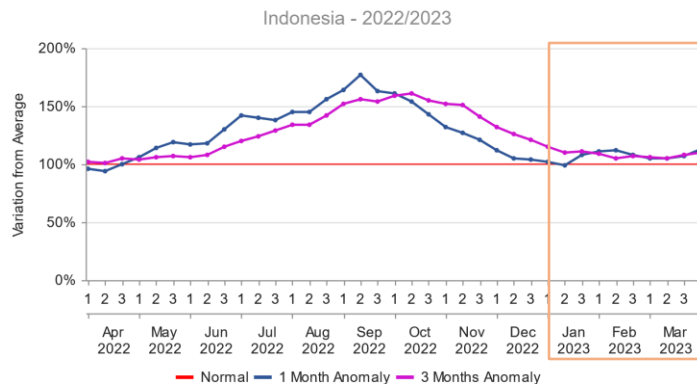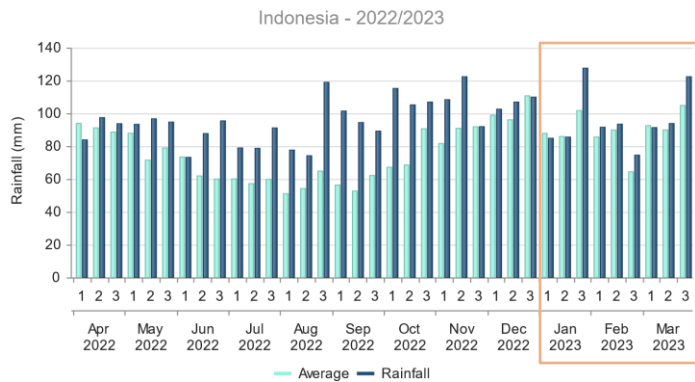
Rainfall data source: https://data.chc.ucsb.edu/products/CHIRPS-2.0/
Charts: https://dataviz.vam.wfp.org/seasonal_explorer/rainfall_vegetation/visualizations
Interactive map: https://ariaesta.users.earthengine.app/view/temperatureanomaly010323

Vegetation Monitoring: January – March 2023 (Q1)

Overall vegetation conditions in comparison to 20 years of data average (2001-2020)

Legend

Administrative boundary
— Province
▢ Other countries

Vegetation Anomaly (percent of average)
Below Average
- < 50%
- 50 - 70%
- 70 - 80%
- 80 - 90%
- 90 - 110%
- 110 - 120%
- 120 - 130%
- 130 - 150%
- > 150%
Above Average

Agriculture
▨ District with paddy cultivation area > 20.000 ha

Data:
WFP, USGS MODIS (MOD13Q1), GAUL, BPS, MoA

0   250   500 km
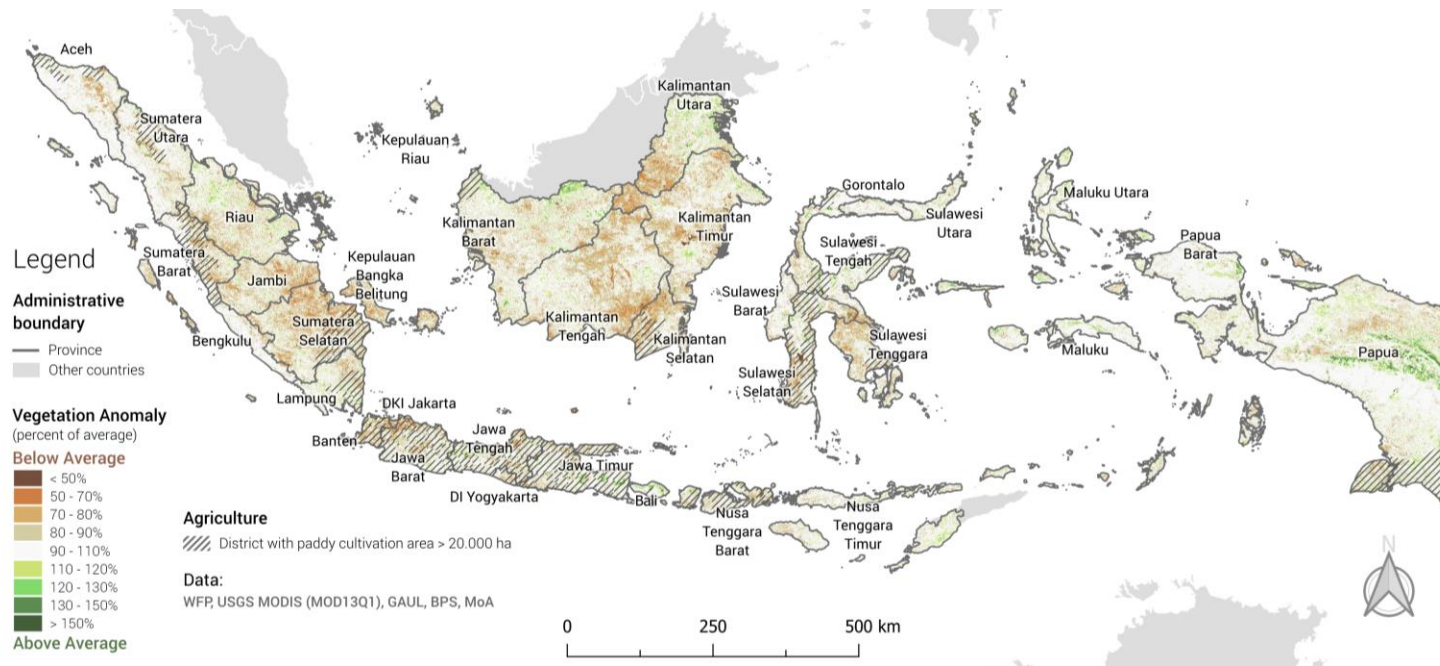
The Vegetation Index (VI) compares the vegetation conditions in the first quarter of 2023 to the long-term average (2001-2020). VI variations are displayed in a range of values and visualised as a vegetation anomaly (above average, normal or below average) in the map.

While normal variation values may indicate consistent vegetation growth, a below-average VI is an indicator of lower vegetation density and plant health due to environmental stressors, such as climatic hazards or land use and land cover change.

A normal variation was mainly observed in some regions of Papua, Maluku, and Nusa Tenggara. These variations indicate a healthy vegetation.

Below-average VI was mainly observed in Sumatera, Jawa, Kalimantan, and Sulawesi. Notably, the areas of Jambi, Sumatera Selatan, Lampung, Banten, Kalimantan Tengah, Kalimantan Selatan, Kalimantan Timur, Kalimantan Utara, Sulawesi Selatan, and Sulawesi Tenggara were particularly affected. Below average VI in those regions are linked with less rainfall received during the first quarter of the year which led to drought that negatively affected vegetation growth.
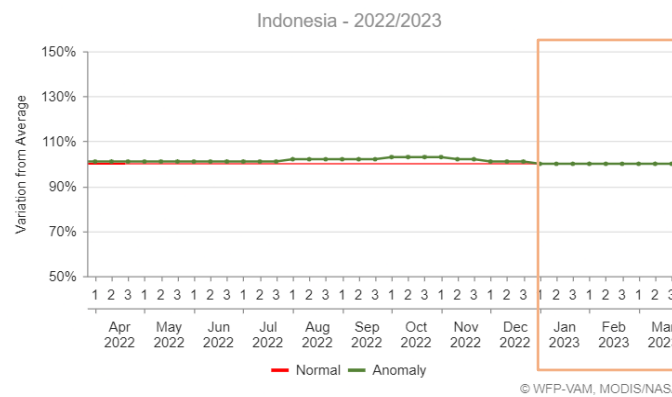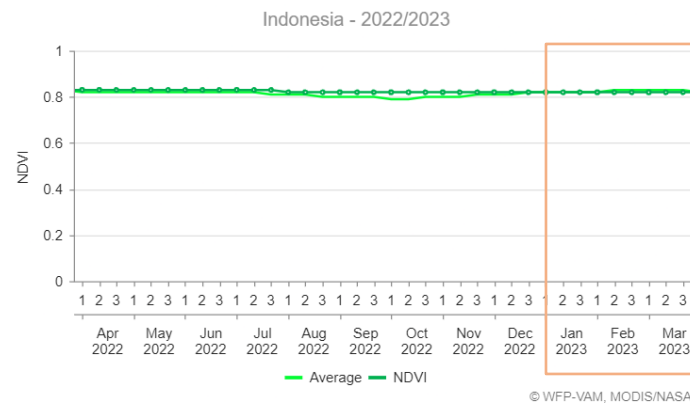
Indonesia - 2022/2023

Indonesia - 2022/2023

NDVI data source: https://lpdaac.usgs.gov/products/mod13q1v061/
Charts: https://dataviz.vam.wfp.org/seasonal_explorer/rainfall_vegetation/visualizations
Interactive map: https://ariaesta.users.earthengine.app/view/vegetationanomaly010323

Temperature Monitoring: January – March 2023 (Q1)

Surface temperature difference in comparison to 20 years of data average (2001-2020)
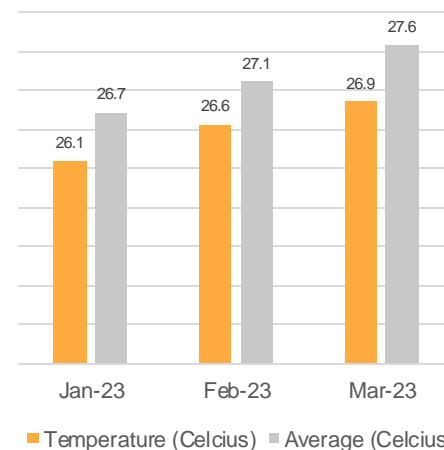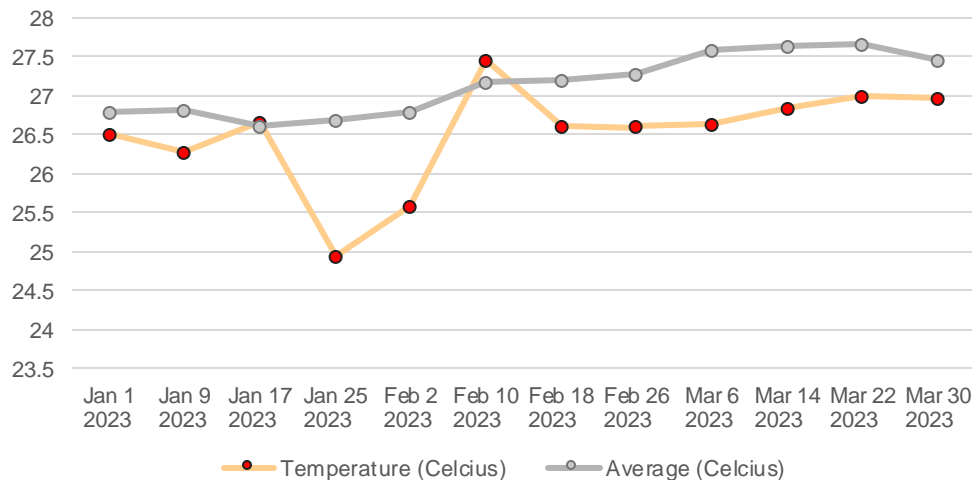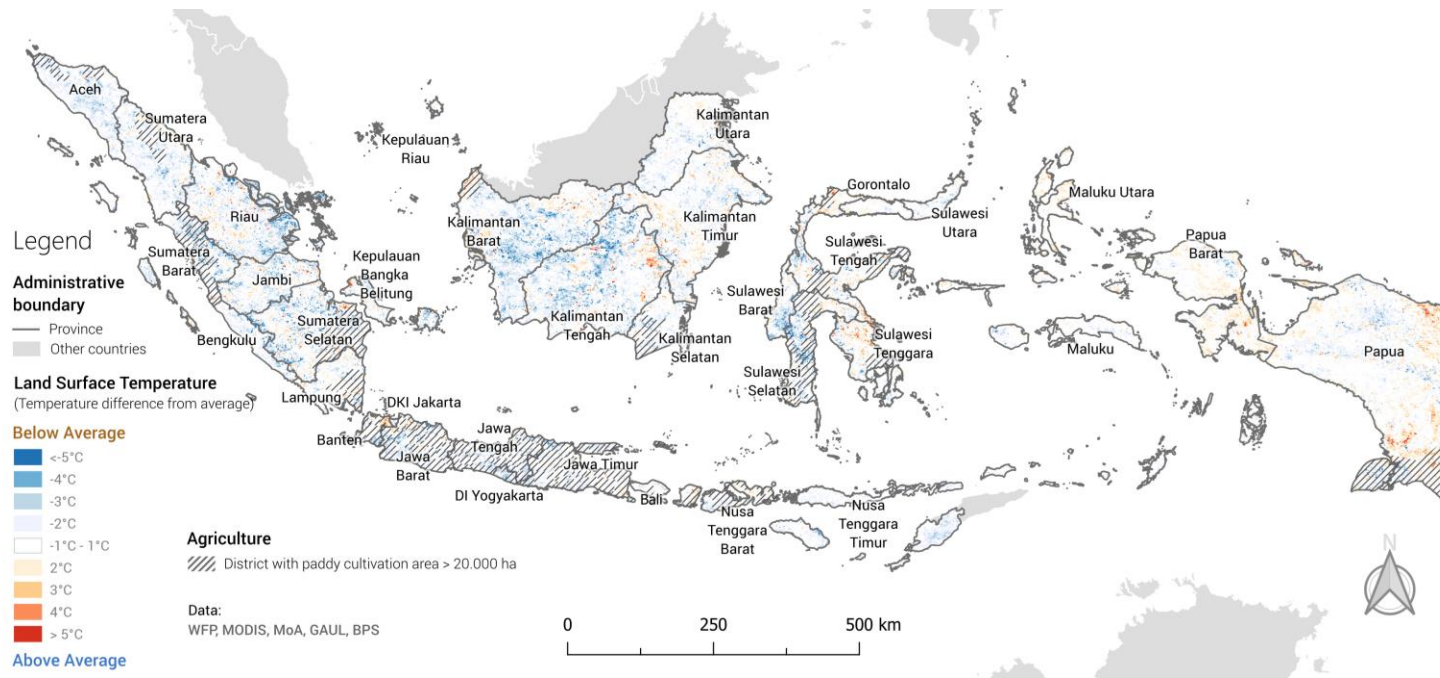
During the first quarter of 2023, the surface temperature in Indonesia was generally cooler than the long-term average for the same period, albeit with a fluctuation between the fourth week of January and second week of February.

The changes in surface temperature can impact agriculture production, affecting water availability, soil moisture and crop growth.

There was a temperature drop in the last week of January when the recorded surface temperature was a degree cooler than the long-term average data. This was possibly influenced by excessive rainfall during the last 10 days of January. Despite these fluctuations, the surface temperature of the current year compared to the long-term average is relatively consistent throughout the three-month period reported.

Overall, the surface temperature was observed to be cooler in the island of Sumatera, Kalimantan, western Sulawesi, and northern Papua. On the other hand, the surface temperature was found to be hotter in Riau, DKI Jakarta, Banten, Maluku, western Sulawesi, as well as eastern and southern Papua.

Surface temperature data source: https://lpdaac.usgs.gov/products/mod11a2v061/
Interactive map: https://ariaesta.users.earthengine.app/view/temperatureanomaly010323

Drought Monitoring: January – March 2023 (Q1)

Number of consecutive days since the last rainfall (above 1mm per day)

Legend

Administrative boundary
— Province
▢ Other countries

Meteorological Drought Occurences
Based on number of days without rain
January - March 2023
▢ Moderate Drought (11 - 20 days)
▢ Long Drought (21 - 30 days)
▢ Very Long Drought (31 - 60 days)
▢ Extreme Drought (≥ 61 days)

Agriculture
▨ District with paddy cultivation area > 20.000 ha

Data:
WFP, IMERG, GAUL, BPS

0   250   500 km

■ Average days without rain   ■ Average longest days without rain   ■ Maximum days without rain

Rainfall data source: https://gpm1.gesdisc.eosdis.nasa.gov/data/GPM_L3/GPM_3IMERGDL.06/
Current drought situation: https://prism.wfp.or.id/app/?hazardLayerIds=dslr

Meteorological drought was observed in several regions during the first quarter of 2023.

The occurrence of drought indicates the prolonged absence of rainfall, particularly in the affected areas of Bali, Nusa Tenggara Timur, and Nusa Tenggara Barat, which are known to be drought-prone regions.

Bali and Nusa Tenggara have the highest average number of days without rain compared to other islands where meteorological drought lasted about 2-3 weeks. This may have impacted water availability and agricultural activities which rely heavily on rainfall.

On the other hand, Kalimantan has the lowest average number of days without rain. This implies that the island may have been less affected by water scarcity as it still received rainfall.

In terms of the longest consecutive days without rain, some areas in Jawa, Sulawesi, Maluku and Papua experienced the most extended periods of drought, followed by Bali, Nusa Tenggara and Sumatera, where short drought periods occurred in the provinces of Aceh, Sumatera Utara, and Riau.

Disaster Monitoring: January – March 2023 (Q1)

Number of reported disasters by the National Disaster Management Agency

Legend

Administrative boundary

— Province

▨ Other countries

Number of disasters

< 5 | 5 - 10 | 11 - 20 | 21 - 40 | > 40
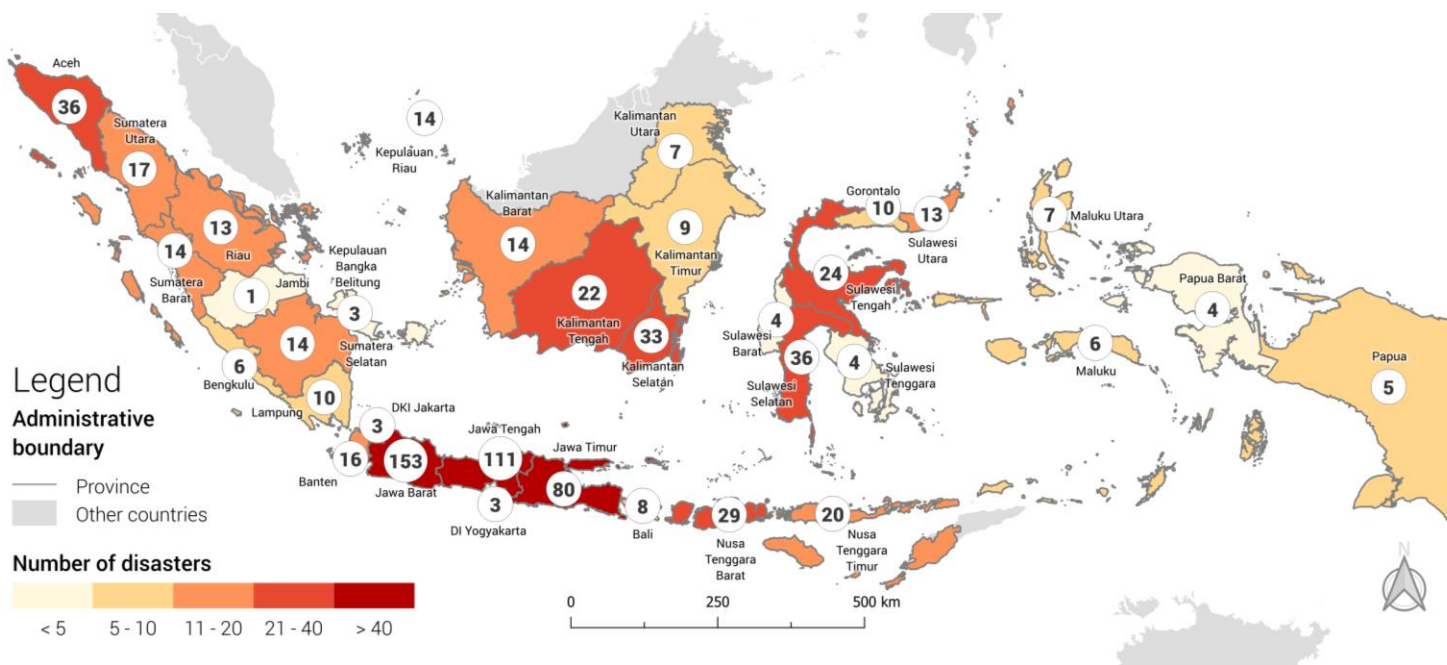
	Flood	Extreme Weather	Landslide	Land & Forest Fire	Tidal Wave & Abrasion	Earthquake	Drought	TOTAL DISASTERS
2023 Jan-Mar	331	226	130	41	10	9	0	747
2022 Jan-Mar	452	405	208	56	8	8	0	1,137
	-26.7% ▼	-44.2% ▼	-37.5% ▼	-26.7% ▼	+25% ▲	+12.5% ▲	-	-34.3% ▼

According to BNPB, the National Disaster Management Agency, 747 disasters were reported between January and March 2023. This represents a significant decrease of 34.3% compared to the same period in 2022, when 1,137 disasters were reported.

Most of these disasters were attributed to hydrometeorological hazards, such as floods, extreme weather, and landslides. The provinces of Jawa Barat, Jawa Tengah, and Jawa Timur were the most affected, with a total of 344 occurrences.

Despite a decrease of around 13% in the number of people impacted compared to the previous year, the disasters still claimed 115 lives, with 6 people reported missing, and 112 people physically injured. Furthermore, an estimated 1.89 million people were affected and consequently dislocated during the first quarter of 2023, which represents an increase of 13.4% compared to the same period last year when 1.67 million people were impacted and displaced.

Meanwhile, damages to houses and public facilities were about half as much compared to the same period last year, decreasing from 21,000 to 9,200.

FOOD SECURITY AND NUTRITION
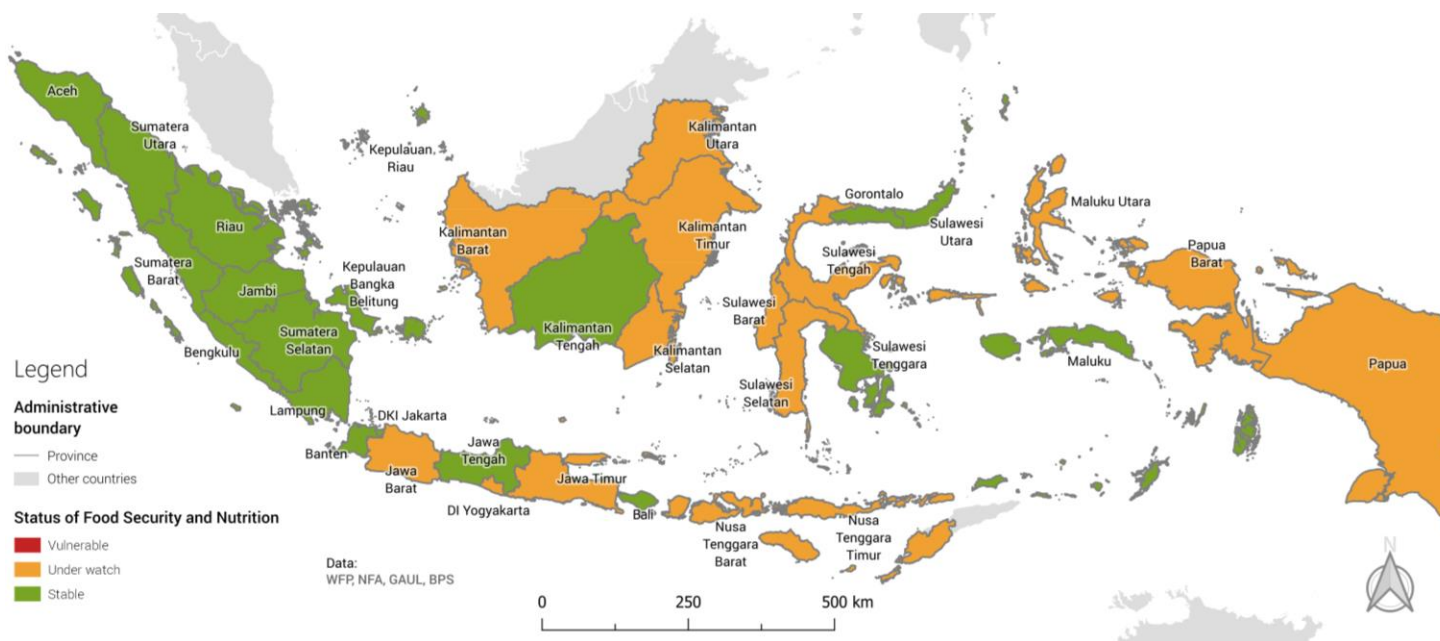
Status of Food Security and Nutrition: February 2023

SKPG: Composite Food Security Index Map

Legend

Administrative boundary
— Province
◻ Other countries

Status of Food Security and Nutrition
🟥 Vulnerable
🟧 Under watch
🟩 Stable

Data:
WFP, NFA, GAUL, BPS

0   250   500 km

The National Food Agency (NFA), through the Food and Nutrition Surveillance System (SKPG), monitors the food security and nutrition status of provinces on a monthly basis by using a combination of food security and nutrition indicators (related to food availability, access, and utilization) to construct the composite Food Security Index for each province.

Based on the latest analysis of the SKPG, as illustrated in the map, in February 2023, 19 provinces were categorised as 'stable', while the other 15 provinces were categorised as 'under watch'. None of the provinces were categorized as 'vulnerable'.

Overall, food access remained stable in all provinces; however, food availability remained "under watch" in 25 of 34 provinces since harvest failure in February 2023 was slightly higher in comparison with the average statistics from the last five years. Three provinces, Jawa Barat, Jawa Timur, and Sulawesi Selatan, were categorised as 'vulnerable' in terms of food availability.

Food utilization is considered stable in Sumatera and Jawa. However, it is 'under watch' in Sulawesi Tengah, Papua and Kalimantan (except in Kalimantan Tengah). On the other hand, Papua Barat, Sulawesi Barat, and Nusa Tenggara Timur are considered 'vulnerable' in terms of food utilization.

Food Availability / Food Access / Food Utilization

Region	Food Availability			Food Access	Food Utilization		
Sumatera	3	7		10	10		
Jawa		4	2	6	5	1	
Bali & Nusa Tenggara		3		3	1	1	1
Kalimantan	1	4		5	1	4	
Sulawesi	1	4	1	6	4	1	1
Maluku & Papua	1	3		4	1	2	1

Statistics by number of provinces, regions are groups for the purpose of the analysis.

Paddy Crop Monitoring: April 2023

Harvested paddy area and rice production
Statistics in Jan – Apr 2023 are estimated

2021 — *2022* — *2023*

Paddy Harvest Area — Paddy Production 2021 — Paddy Production 2022 — Paddy Production 2023
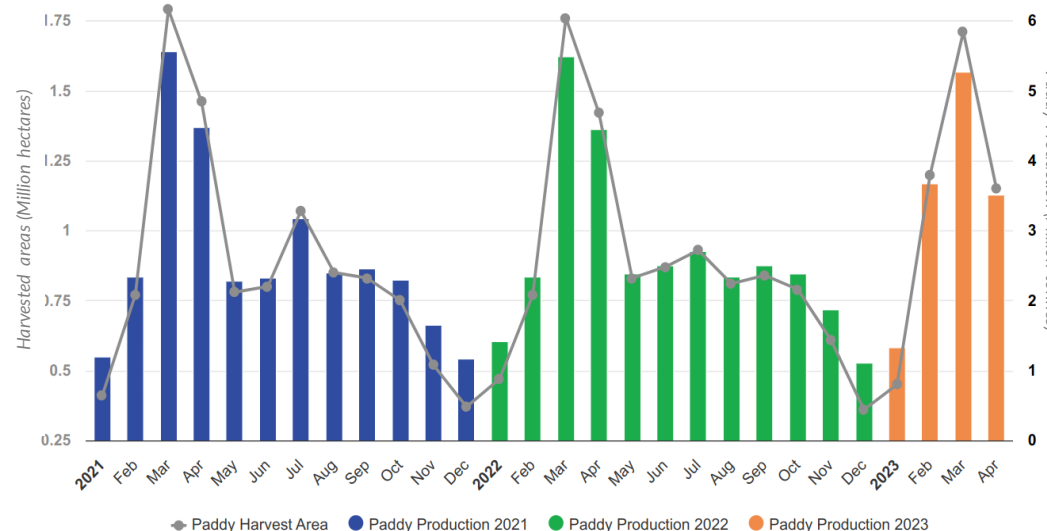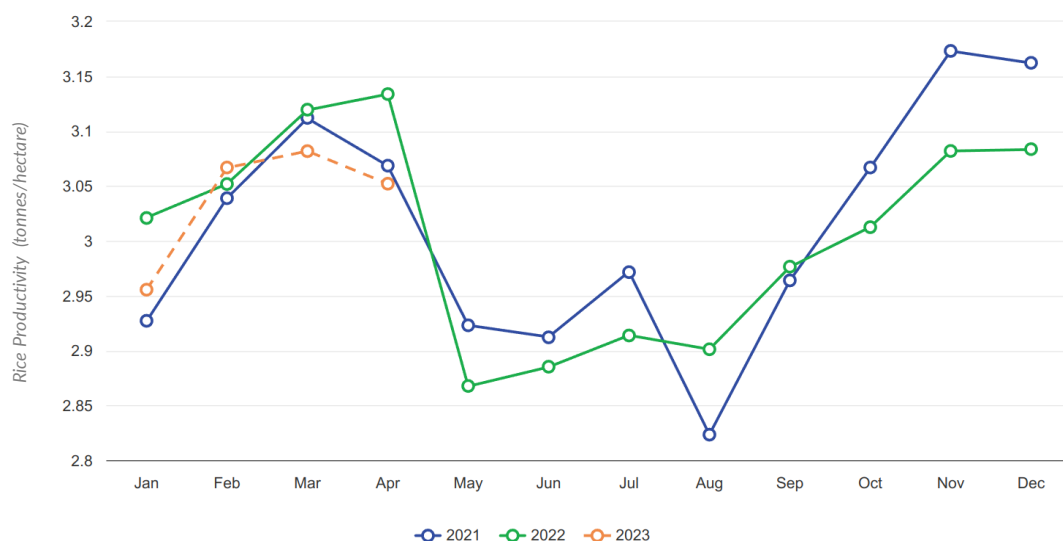
Jan – Apr 2023

HARVESTED PADDY AREAS

4.51 M ha
(+2.13%)*

RICE PRODUCTION

13.79 M tonnes
(+0.56%)*

Percentage compared to Jan-Apr 2022

Changes in top rice-producing provinces

Difference between Jan- Apr 2021 and Jan – Apr 2022

According to the latest figures from Statistics Indonesia, from January to April 2023, an estimated 4.5 million hectares of paddy area were harvested. This marks a 2.13% increase, equivalent to 93,971 hectares, compared to the same period in 2022. Additionally, rice production is estimated to reach 13.7 million tonnes, representing an increase of 0.56% or 77,386 tonnes compared to the first four months of 2022.

The chart located in the bottom right illustrates the changes in production between 2022 and 2023 during the period of January to April. Among the top-three main rice producing provinces, Jawa Barat had the highest increase with 4.3%, followed by Jawa Timur with a 2.9% increase. Meanwhile, rice production in Jawa Tengah remains stable.

Highest rice production occurred in Jawa Timur with 2.7 million tonnes, followed by Jawa Tengah and Jawa Barat, with 2.5 million tonnes and 2.2 million tonnes respectively.

In contrast, Sumatera Selatan recorded the highest decline in rice production (-7.5%), while Sulawesi Selatan and Lampung followed with -5.1% and -3% respectively.
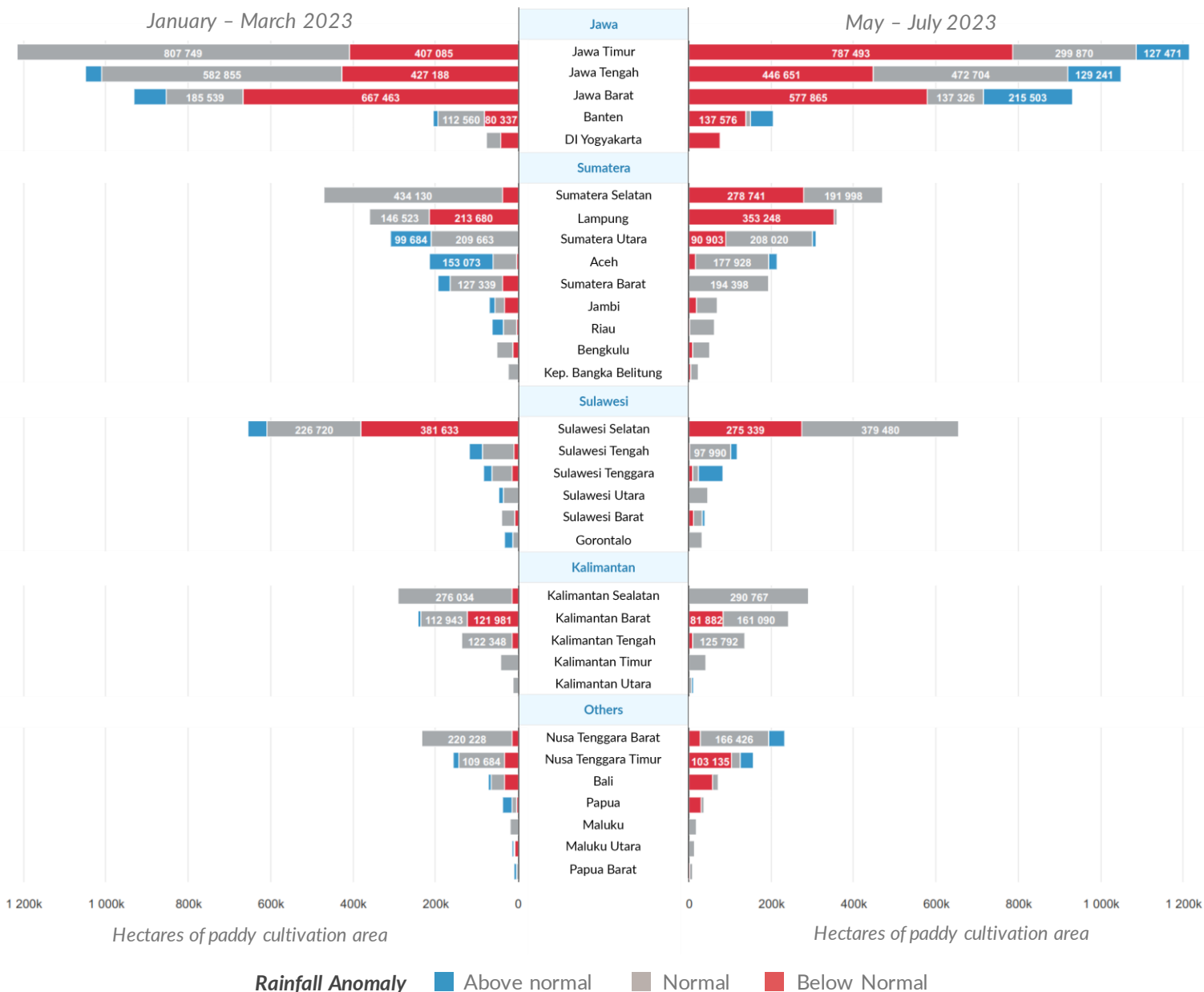
Agricultural Monitoring and Forecast

Rainfall in Paddy Cultivation Areas

January – March 2023 | Jawa | May – July 2023

January – March 2023		May – July 2023

Jawa

Province	Jan–Mar	May–Jul
Jawa Timur	807 749 / 407 085	787 493 / 299 870 / 127 471
Jawa Tengah	582 855 / 427 188	446 651 / 472 704 / 129 241
Jawa Barat	185 539 / 667 463	577 865 / 137 326 / 215 503
Banten	112 560 / 80 337	137 576
DI Yogyakarta		

Sumatera

Province	Jan–Mar	May–Jul
Sumatera Selatan	434 130	278 741 / 191 998
Lampung	146 523 / 213 680	353 248
Sumatera Utara	99 684 / 209 663	90 903 / 208 020
Aceh	153 073	177 928
Sumatera Barat	127 339	194 398
Jambi		
Riau		
Bengkulu		
Kep. Bangka Belitung		

Sulawesi

Province	Jan–Mar	May–Jul
Sulawesi Selatan	226 720 / 381 633	275 339 / 379 480
Sulawesi Tengah		97 990
Sulawesi Tenggara		
Sulawesi Utara		
Sulawesi Barat		
Gorontalo		

Kalimantan

Province	Jan–Mar	May–Jul
Kalimantan Sealatan	276 034	290 767
Kalimantan Barat	112 943 / 121 981	81 882 / 161 090
Kalimantan Tengah	122 348	125 792
Kalimantan Timur		
Kalimantan Utara		

Others

Province	Jan–Mar	May–Jul
Nusa Tenggara Barat	220 228	166 426
Nusa Tenggara Timur	109 684	103 135
Bali		
Papua		
Maluku		
Maluku Utara		
Papua Barat		

Hectares of paddy cultivation area (1 200k – 1 000k – 800k – 600k – 400k – 200k – 0)

Hectares of paddy cultivation area (0 – 200k – 400k – 600k – 800k – 1 000k – 1 200k)

Rainfall Anomaly ■ Above normal ■ Normal ■ Below Normal

The Center for Climate and Atmospheric Research (PRIMA) of the National Research and Innovation Agency (BRIN) conducts regular rainfall analysis within paddy cultivation areas for the past and upcoming three months.

The left chart depicts the rainfall performance on paddy cultivation areas from January to March and the its forecast for May to July.
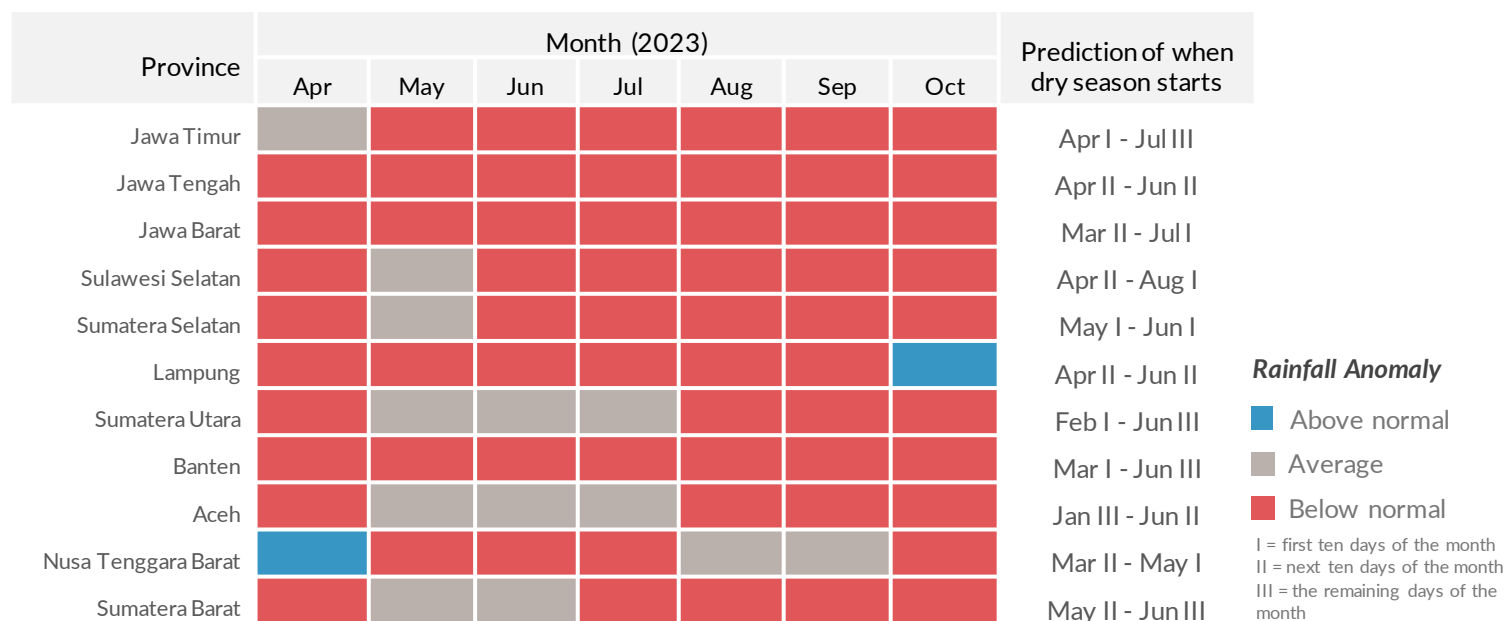
According to the agency's monitoring, from January to March, the rainfall in 56% of paddy cultivation areas was within the normal range. However, there is an increased likelihood of drought, as 45% of paddy cultivation areas are expected to experience less rainfall from May to July 2023.

BRIN predicts that the top three rice-producing provinces in Java, namely Jawa Timur, Jawa Tengah, and Jawa Barat, are expected to experience below-normal rainfall. There is also an indication that Sumatera Selatan, Sumatera Utara, Lampung, Banten, Nusa Tenggara Timur, and Sulawesi Selatan will experience less rainfall.

The risk of drought between May and July could potentially affect over three million hectares of paddy cultivation which could affect rice production.
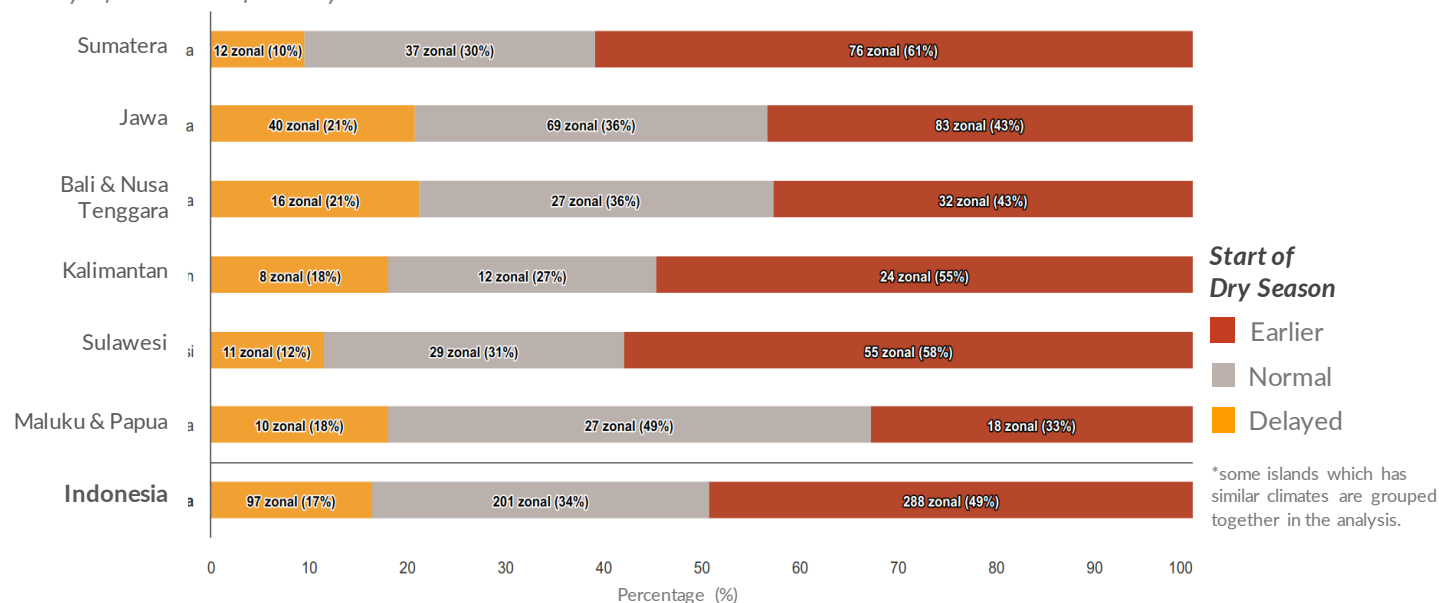
Prediction : Start of the Dry Season

Rainfall in Main Rice Producing Provinces

Province	Month (2023)							Prediction of when dry season starts
	Apr	May	Jun	Jul	Aug	Sep	Oct	
Jawa Timur								Apr I - Jul III
Jawa Tengah								Apr II - Jun II
Jawa Barat								Mar II - Jul I
Sulawesi Selatan								Apr II - Aug I
Sumatera Selatan								May I - Jun I
Lampung								Apr II - Jun II
Sumatera Utara								Feb I - Jun III
Banten								Mar I - Jun III
Aceh								Jan III - Jun II
Nusa Tenggara Barat								Mar II - May I
Sumatera Barat								May II - Jun III

Rainfall Anomaly

- Above normal
- Average
- Below normal

I = first ten days of the month
II = next ten days of the month
III = the remaining days of the month

Probability of the start of the dry season*

Sumatera	12 zonal (10%)	37 zonal (30%)	76 zonal (61%)
Jawa	40 zonal (21%)	69 zonal (36%)	83 zonal (43%)
Bali & Nusa Tenggara	16 zonal (21%)	27 zonal (36%)	32 zonal (43%)
Kalimantan	8 zonal (18%)	12 zonal (27%)	24 zonal (55%)
Sulawesi	11 zonal (12%)	29 zonal (31%)	55 zonal (58%)
Maluku & Papua	10 zonal (18%)	27 zonal (49%)	18 zonal (33%)
Indonesia	97 zonal (17%)	201 zonal (34%)	288 zonal (49%)

Start of Dry Season

- Earlier
- Normal
- Delayed

*some islands which has similar climates are grouped together in the analysis.

Percentage (%)

The Meteorological, Climatological, and Geophysical Agency (BMKG) predicts that the start of the dry season will vary, with the earliest start in March and the latest start in July, for the top 10 rice producing provinces. The chart on the top shows that below normal rainfall is expected from April to October. This prediction is consistent with the climate pattern in Indonesia, which experiences a dry season from April to September.

The lower chart illustrates BMKG's analysis of the probability of the start of the dry season for different climate zones. It indicates whether the dry season will start earlier, start at the normal time, or be delayed. The analysis predicts that 49% of climate zones will have an earlier start to the dry season, while 34% are expected to have a normal start, and 17% are predicted to experience a delayed start.

The earlier start of the dry season with below-normal rainfall between April and October may pose a risk of drought and water scarcity, and could lead to lower rice productivity.
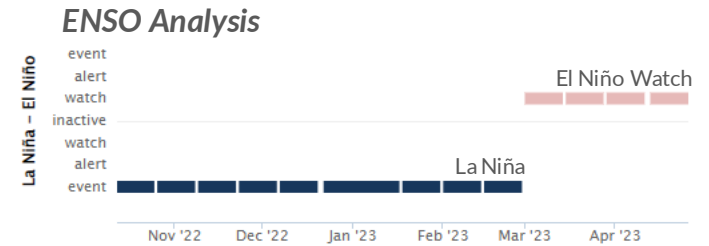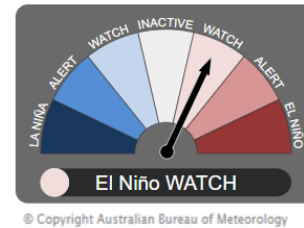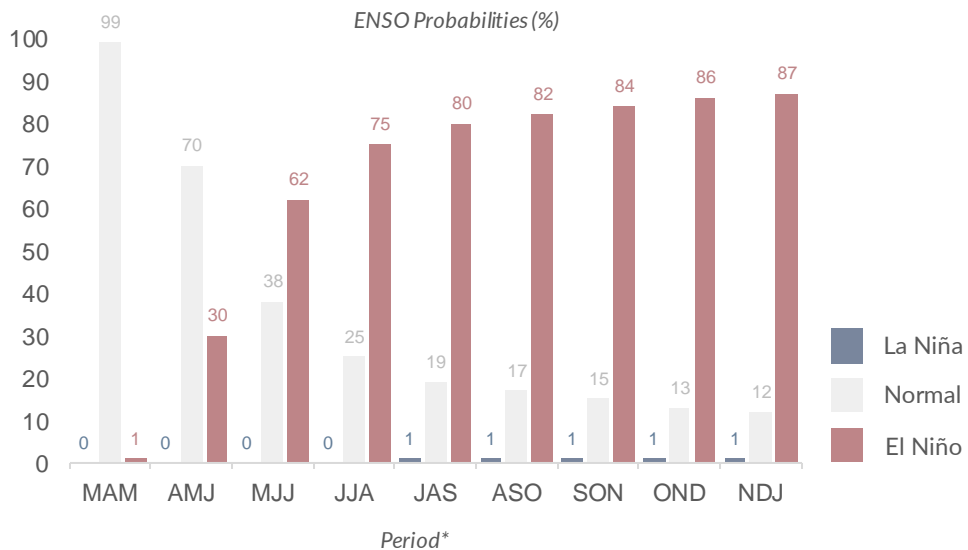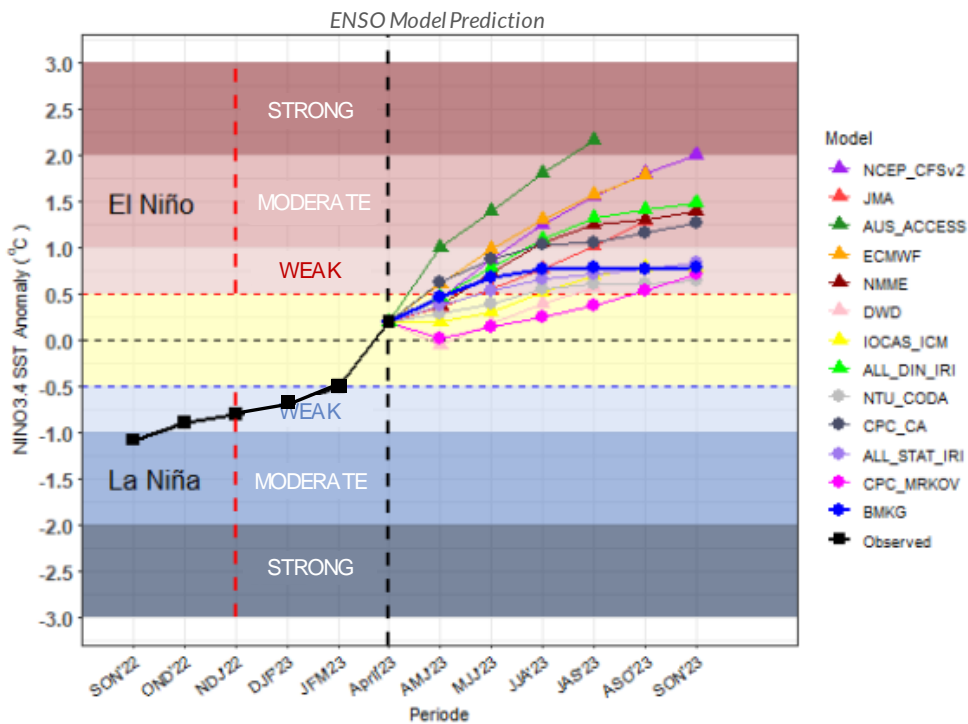
CLIMATE FORECAST

ENSO OUTLOOK

BMKG RAINFALL FORECAST

CLIMATE OUTLOOK

GOVERNMENT RECOMMENDATIONS

ENSO Outlook: April 2023

ENSO index indicates a neutral-state with a sign of transition to El Niño

ENSO Model Prediction

ENSO Probabilities (%)

ENSO Analysis

The El Niño–Southern Oscillation (ENSO) is a climate phenomenon that affects sea surface temperature and air pressure in the Pacific Ocean. ENSO anomalies could result in La Niña or El Niño which cause changes in weather patterns. In Indonesia, El Niño causes drier and warmer conditions as there is less rainfall, which can lead to drought. In contrast, La Niña typically results in increased rainfall, potentially leading to the more frequent occurrence of extreme rainfall and floods.

ENSO anomalies have become more frequent over the last 40 years, with events now happening every 2-3 years compared to once every 5 years before 1980.

The triple-dip La Niña phenomenon, which has persisted for three consecutive years since 2020, has finally come to an end. Based on the latest oceanic observations, the ENSO index reported by BMKG showed a positive value of +0. 2 in April 2023. This indicates a neutral-state ENSO, but there are indications of a transition towards a weak El Niño. BMKG and several other climate agencies worldwide predict that the ENSO index will gradually shift to El Niño around the second semester of 2023.

It is important to note that El Niño can have an impact on the amount and distribution of rainfall in certain areas. The International Research Institute for Climate and Society (IRI) models indicates a 62% chance of El Niño starting in May-July. Furthermore, the IRI model predicts that El Niño may persist with increasing probability until the end of the 2023.

*MAM: March April June, AMJ: April May June, MJJ: May June July, and so forth.
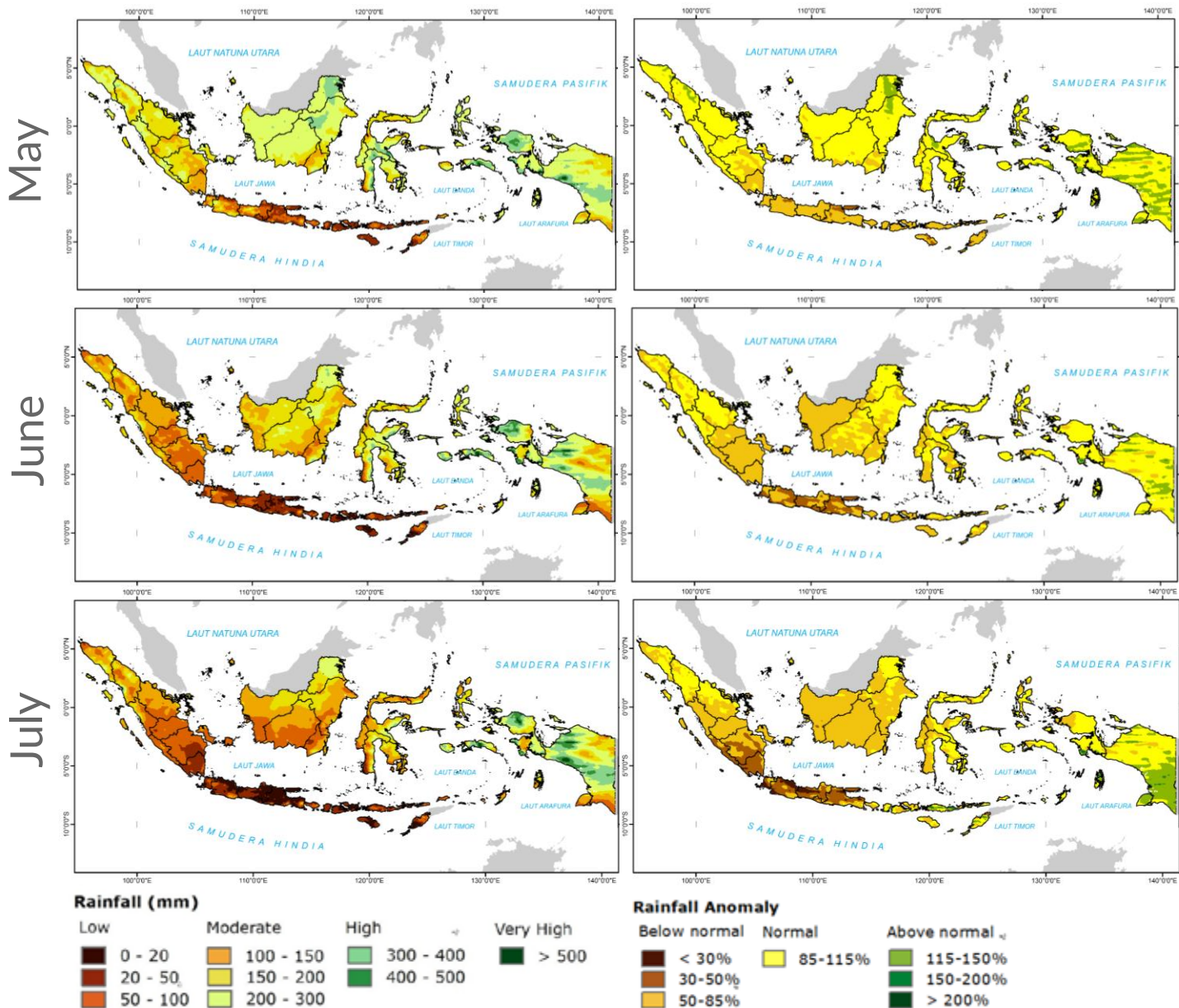
BMKG ENSO Analysis: https://cdn.bmkg.go.id/web/12.-Dinamika-Atmosfer-Dasarian-III-April-2023.pdf
Historical ENSO Outlook: http://www.bom.gov.au/climate/enso/outlook/#tabs=ENSO-Outlook
ENSO Probabilities: https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/?enso_tab=enso-quicklook

BMKG Rainfall Forecast: May – July 2023

Monthly rainfall accumulation and anomaly forecasts

May

June

July

Rainfall (mm)

Low	Moderate	High	Very High
0 - 20	100 - 150	300 - 400	> 500
20 - 50	150 - 200	400 - 500	
50 - 100	200 - 300		

Rainfall Anomaly

Below normal	Normal	Above normal
< 30%	85-115%	115-150%
30-50%		150-200%
50-85%		> 200%

According to BMKG's forecasts, Indonesia is expected to experience low to moderate rainfall between May and July 2023. As of March 2023, moderate rainfall was observed in 59% of the country. High and very high rainfall was recorded in 38% of the territory, while the remaining areas experienced a low rainfall.

In **May**, it is predicted that most areas will experience moderate rainfall. Most of the rainfall is within the normal condition. However, below normal rainfall is predicted in Jawa, Bali, Nusa Tenggara, and southern Sumatera.

In **June**, low to moderate rainfall is expected in Sumatera, Jawa, Nusa Tenggara and some parts of Kalimantan and Sulawesi. Below normal rainfall is expected across Jawa, Jambi, Bengkulu, Sumatera Selatan, Kalimantan Barat, Kalimantan Tengah, Kalimantan Selatan, and Nusa Tenggara.

In **July**, most areas are expected to receive low rainfall, particularly in Sumatera, Kalimantan and Jawa. Some areas, such as Lampung, Sumatera Selatan, Jawa Timur, and Nusa Tenggara, may even experience less rainfall. Additionally, below normal rainfall is anticipated across regions, especially in Jawa, Kalimantan, southern Sumatera, and western Sulawesi.

Climate Outlook: May – July 2023

Seasonal rainfall anomaly forecast
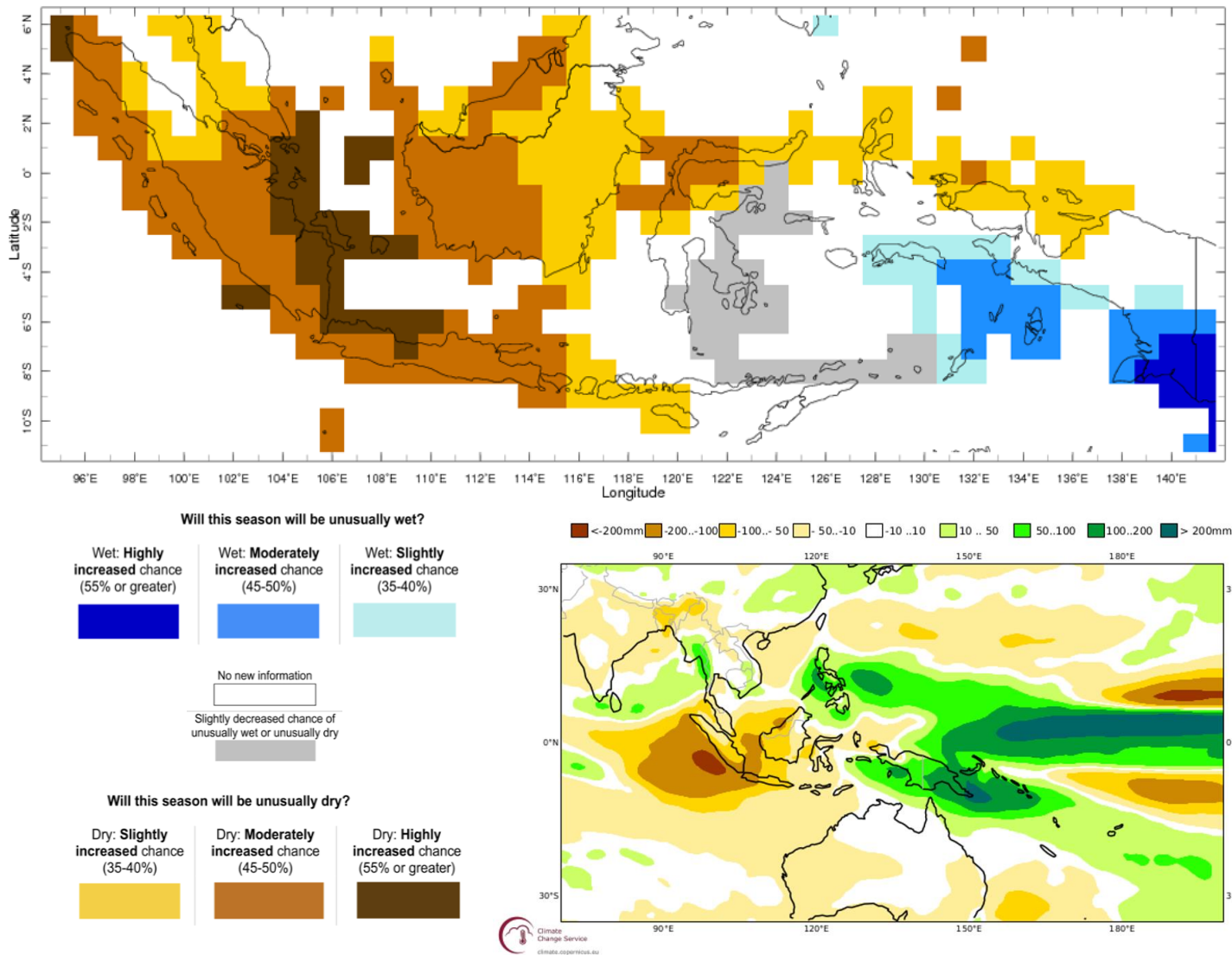
The three-month rainfall forecast from IRI Columbia University (top) indicates a moderate to high probability of below normal rainfall for the period of May to July 2023 in most areas of Indonesia.

Dry conditions are expected in some areas of Riau, Jambi, Lampung, Banten, DKI Jakarta, Jawa Barat and Jawa Tengah. There is also a moderate chance of dry conditions across Sumatera, Jawa, western Kalimantan and northern Sulawesi. Additionally, there is a slight chance of less rainfall in Bali, Nusa Tenggara Barat, Maluku, eastern Kalimantan, and northern Papua.

On the contrary, the forecast also shows a high chance of increasing rainfall in southern Papua.

The seasonal forecast for the same time period from ECMWF (bottom) also shows similar predictions, where the green, white, and brown colours indicate wet, normal, and dry conditions, respectively.

These forecasts show the probability of accumulated rainfall over the next three months. They do not indicate the likelihood of individual heavy rainfall events and should not be used to forecast local conditions or floods.

IRI: http://iridl.ldeo.columbia.edu/maproom/IFRC/FIC/prcp_fcst.html?bbox=bb%3A94.584%3A-11.255%3A141.811%3A6.308%3Abb
ECMWF: https://climate.copernicus.eu/charts/packages/c3s_seasonal/products/c3s_seasonal_spatial_mm_rain_3m?area=area12&base_time=2023040110000&type=ensm&valid_time=202305010000

Government Recommendations

In anticipation of the dry season and potential drought

BMKG recommends that in anticipation of the 2023 dry season, the technical ministries, local government and related institutions as well as the community should be prepared for the potential impacts of the dry season, particularly in areas experiencing below-normal rainfall. There will be a higher risk of water scarcity in areas affected by long meteorological droughts.

To mitigate these risks, local governments can optimize water storage to fill lakes, reservoirs, retention ponds, and other artificial water storage in the community through rainwater harvesting activities.

BRIN recommends that in preparation for the dry season, it is important to continue monitoring and accessing climate information from authorized government agencies such as BMKG and maintain communication and coordination between stakeholders, such as BMKG, BRIN, the Ministry of Agriculture, Universities, and provincial/district offices, to prepare for the negative impacts of reduced rainfall on agricultural land.

Preparedness activities can include the normalization of drainage canals in case of potential floods. Crop diversification using commodities that consume less water can also help mitigate the impact of drought. It is crucial to implement an adaptive cropping schedule and prepare alternative water sources to anticipate the potential impacts of drought.

NFA emphasized the crucial role of climate information in assessing the status of food security and nutrition in Indonesia. Climate information, when combined with food security data, can be a useful tool for local governments to develop policies to ensure food availability and affordability for communities. Disruptions in food availability and accessibility can impact food utilization, resulting in food insecurity in affected areas.

BPS highlighted the importance of continuous monitoring to evaluate potential harvest yields and detect crop failures at both provincial and district levels. Furthermore, BPS stressed that the government and stakeholders should take proactive measures to address the impact of climate change on rice production. It is important to be aware of the impact of climate change on the potential decline in rice production in 2023.

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