



Seasonal Monitor

Asia and the Pacific, November-December 2023



Photo by Wahyu Kuncoro - WFP

I. Highlights

HAZARDS

- Bangladesh and Fiji were hit by **cyclones** in November. About 10,000 people were displaced in Bangladesh and 230,000 were affected in Fiji.
- Heavy rains caused **floods** in India, Indonesia, the Philippines, Sri Lanka, and Solomon Islands. In Sri Lanka, heavy rains and landslides affected 34,800 people while in the Philippines, 105,704 hectares of cropland were inundated.
- **Earthquakes** hit Nepal (Karnali; 6.4 magnitude) and the Philippines (Mindanao, 6.8 magnitude and Hinatuan, 7.4). In Nepal 250,000 were affected and 62,000 houses destroyed and in Hinatuan, 528,000 people were affected and 2,279 houses were damaged.
- Indonesia is experiencing **drought** conditions in Bali, Riau Islands, and Central Sulawesi.

NOVEMBER WEATHER AND CROP PERFORMANCE

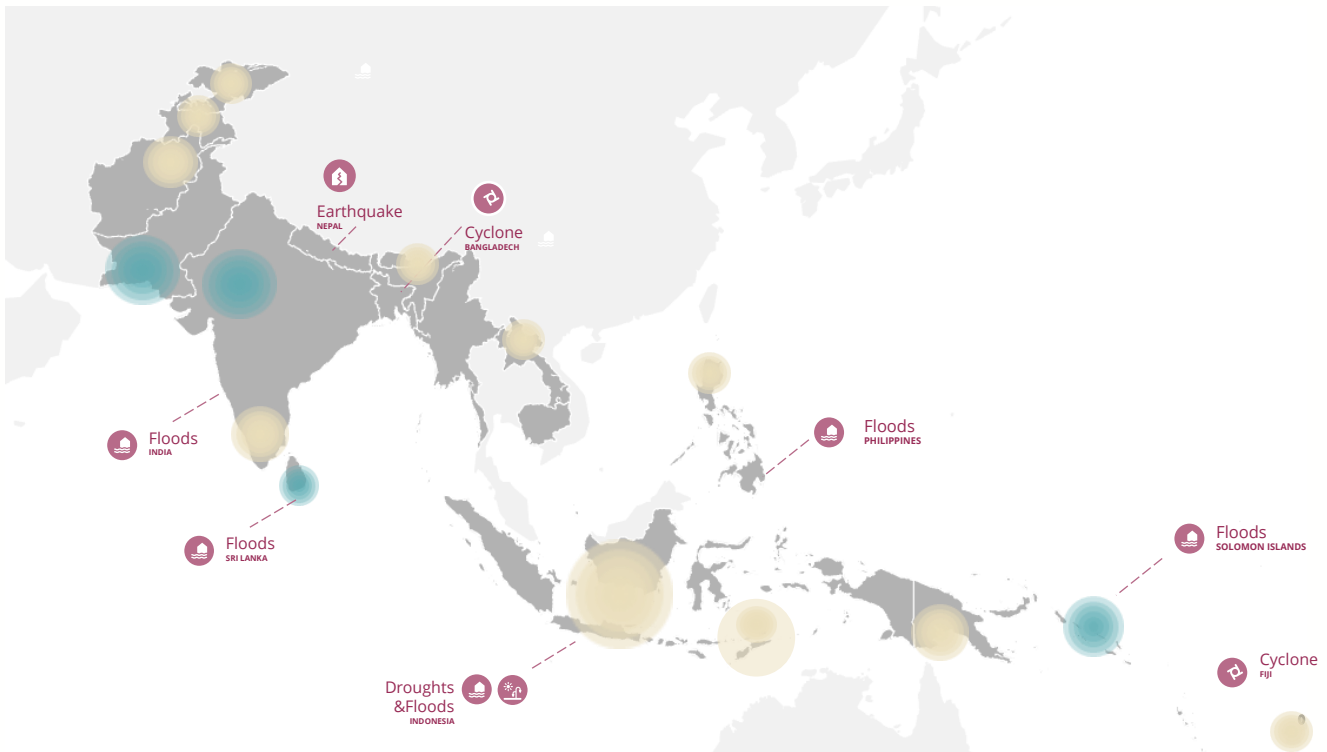
- The ongoing El Niño is developing into a strong event while the intensity of the ongoing positive Indian Ocean Dipole (IOD) increased to a strong level, enhancing the drying influences of El Niño in the Pacific.
- Influenced by El Niño, drier than average conditions affected South and Southeast Asia and western countries of the Pacific region during September to November 2023.
- Total rainfall during last month was significantly below average in all Central Asia countries, Cambodia, Lao PDR, Myanmar, the Philippines and, especially, Fiji. The accumulative 2023 water deficit is highest in Afghanistan, Kyrgyz Republic, Tajikistan, Bangladesh, Bhutan and Nepal.
- In Central Asia, winter wheat planting and development continues under favourable conditions despite delays due to below-average precipitation.
- In northern Southeast Asia, wet-season rice was harvested under favourable conditions in most of the region except for rice crops in Nepal where yields could be affected by rainfall deficits and high input costs.
- In Southern Southeast Asia, the harvest of dry season rice is almost completed, and planting of wet season rice continues under favourable conditions, without significant impact of dry conditions on rice development in Indonesia.

OUTLOOK

- El Niño will likely maintain its strength into early 2024 and remain active but weaken until May 2024 (88 percent).¹³
- The positive Indian Ocean Dipole (IOD) event will likely remain positive through at least December.
- Above average tropical cyclone activity influenced by El Niño, is expected in the Pacific Island region during the TC season (Nov-Apr), with the peak expected between Jan-Mar.
- Drier conditions are expected in the Philippines, southern islands of Indonesia, Timor-Leste and southern Pacific Islands (Fiji, Vanuatu, Tonga, etc.)
- Wetter conditions are forecast in Central Asia and most parts of South and SE Asia, north of Indonesia and northern Pacific islands (Solomon Islands, Kiribati, etc.). A high risk of flooding is forecast in Afghanistan in Q2-2024.
- Air temperature during December 2023-February 2024 is expected to be higher than average in most of the region intensifying the impact of water deficits.
- 2023 cereal output is expected above average. The increase in planting is offsetting the lower yields in some countries due to erratic monsoon rains.
- In Central Asia, above-average precipitation forecast for early 2024 is expected to favour wheat production despite current and short-term forecast dry conditions in most of the zone.
- 2023 crop production is estimated below average in Bhutan for maize and rice, in Lao PDR, Sri Lanka, and Cambodia for maize, and in Kyrgyz Republic for wheat.



I. Climate-related concerns



NOVEMBER 2023 RAINFALL PERFORMANCE

There was light to moderate heavy rainfall in western and central parts of India, central Lao PDR, northern and southwestern Pakistan, southern Sri Lanka, and the Solomon Islands.

Drier-than-average conditions continued in northern Afghanistan, Fiji, southern India, Indonesia, Kyrgyz Republic, northern Lao PDR, northern Myanmar, Papua New Guinea, northern Philippines, Samoa, Tajikistan, Timor-Leste, and Vanuatu due to the influence of El Niño.

RECENT CLIMATE AND NATURAL HAZARDS

Bangladesh – Cyclone (November 2023): Cyclone Midhili caused floods in coastal districts of the country; about 10,000 people were displaced to evacuation sites and 7 people died.¹

Fiji – Cyclone (November 2023): Cyclone Mal hit major parts of the country; about 230,000 people were affected.²

India – Floods (November 2023): Heavy rains affected 30 people in Tamil Nadu, Kerala, Meghalaya, and Sikkim, with 13 houses destroyed.³

Indonesia – Floods & Droughts (November 2023): Heavy rains and landslides affected 1,900 people and damaged 538 houses in West Kalimantan, North Sumatra, and West Java.⁴ While Bali, Riau Islands, and Central Sulawesi experienced drought conditions.⁵

Nepal – Earthquake (November 2023): The 6.4 magnitude earthquake affected 250,000 people in Karnali province, with 62,000 houses partially or completely destroyed.⁶

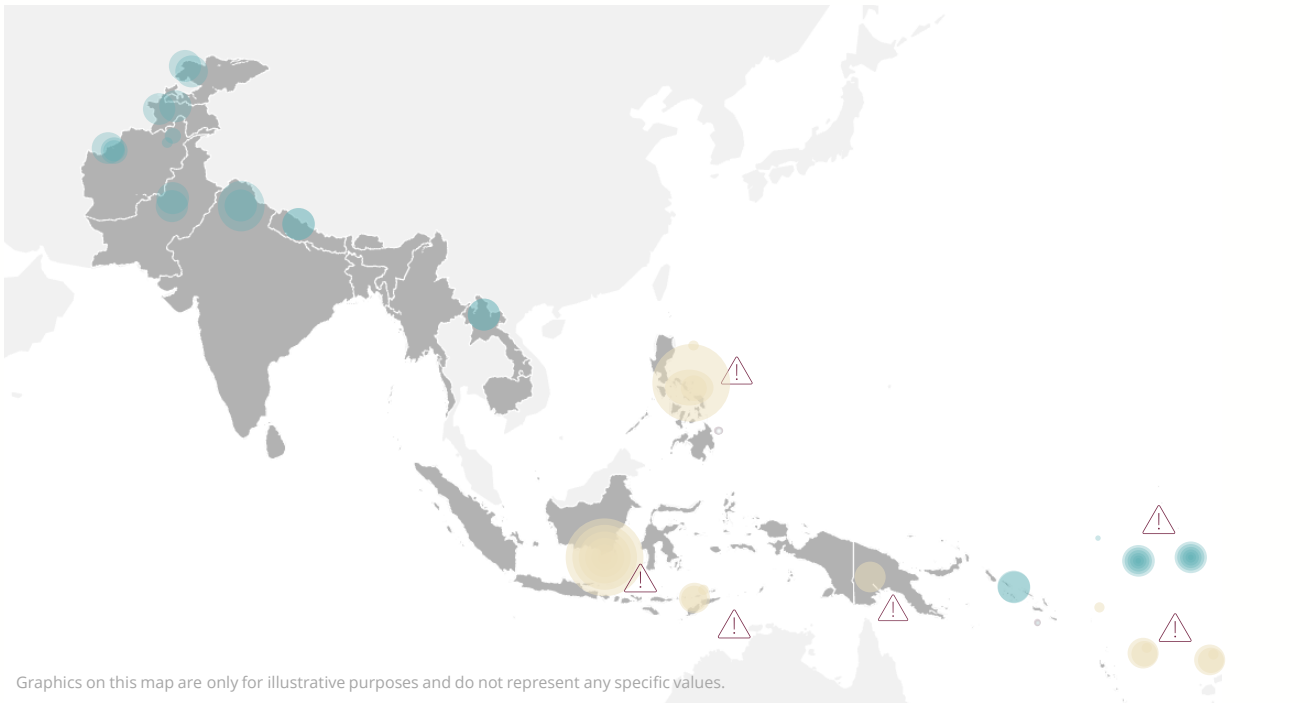
Philippines – Floods (November 2023): Heavy rains caused floods in the southern part of the country, particularly in Mindanao. More than 2,240 people were displaced across 11 evacuation centres in Davao, SOCCSKSARGEN, and northern Mindanao regions.⁷ About 105,704 hectares of cropland were inundated.⁸

Philippines – Earthquake: A 6.8 magnitude earthquake (MW) hit Mindanao in November, resulting in 9 fatalities and affecting about 15,748 people.⁹ On December 2, a 7.4 magnitude earthquake occurred off the coast of southeast Philippines (Hinatuan) with over 3000 aftershocks. A tsunami alert triggered the evacuation of 26000 people. Over half a million people were affected, three died, 48 were injured, and 2,279 houses were damaged.

Sri Lanka – Floods (November 2023): Heavy rains and landslides affected 34,8000 people in 5 districts of central Sri Lanka with 960 houses destroyed.¹⁰

Solomon Islands (November 2023): Heavy rains caused floods and landslides in Guadalcanal and Honiara provinces. Over 250 people were displaced across three evacuation centres in Guadalcanal.¹¹

II. Seasonal outlook



Graphics on this map are only for illustrative purposes and do not represent any specific values.

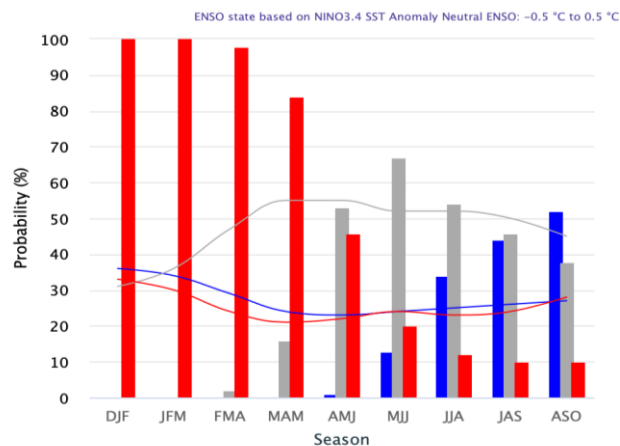
SEASONAL OUTLOOK (December 2023-February 2024)

- Higher than normal rainfall:** Light to moderate rainfall is expected in western Afghanistan, northern India, Kyrgyz Republic, northern Lao PDR, western Nepal, northern Pakistan, western Tajikistan, southern Sri Lanka, and some Pacific countries (Solomon Islands and Tuvalu).
- Lower than normal rainfall:** Drier conditions are projected in Fiji, the Philippines, major parts of Indonesia, southern Papua New Guinea, Samoa, Timor-Leste, Tonga, and Vanuatu.
- Cyclone activity:** Above-average rainfall is expected throughout the tropical cyclone season (November 2023-April 2024) due to El Niño in Kiribati and Nauru.¹²
- Warmer than normal temperature;** Warmer conditions are likely across major parts of Asia and the Pacific.
- El Niño outlook:** Based on a consensus of dynamical and statistical models, El Niño will continue in the coming months (December 2023 to February 2024) at 100 percent possibility and is likely to continue until May 2024 at 88 percent probability (Figure 1).¹³ El Niño contributes to drier conditions across South and Southeast Asia and western countries of the Pacific region during September to November 2023 and wetter conditions during January to April 2024 in Central Asia.
- High risks of flood caused by impacts of El Niño conditions: Afghanistan, Kiribati, and Nauru.
- Expected high risks of drought caused by impacts of El Niño conditions in the final quarter of 2023: major parts of Indonesia, southern Papua New Guinea, Timor-Leste, Fiji, and Samoa.¹⁴

ESTIMATED CROP PRODUCTION (2023-2024)

Agricultural prospects (rice, wheat, barley, and maize) for 2023/2024 are generally favourable in the region. The planting of 2024 winter wheat and barley crops in November 2023 was underway in Afghanistan, Kyrgyz Republic, Pakistan, and Tajikistan under drier conditions. However, a strong probability of both above average precipitation forecast for early 2024 is expected to favour wheat production despite the high risk of floods in some areas and the need for pest control due to high temperatures.¹⁵ El Niño impacts Southeast Asia with a drop in corn yields in the Philippines, a decrease in palm oil production in Indonesia, and a drop in rice yields in main producers such as Thailand, and India.¹⁶ In the region, 2023 cereal output is expected at above average level with the increased planting compensating for the reduced yield in some countries due to erratic rains.

FIGURE 1: IRI/CPC PROBABILISTIC ENSO OUTLOOK (Released in mid-December 2023)



¹⁵ Source: IRI Climate Forecasts

Zone 1

Afghanistan, Kyrgyz Republic, Pakistan, and Tajikistan

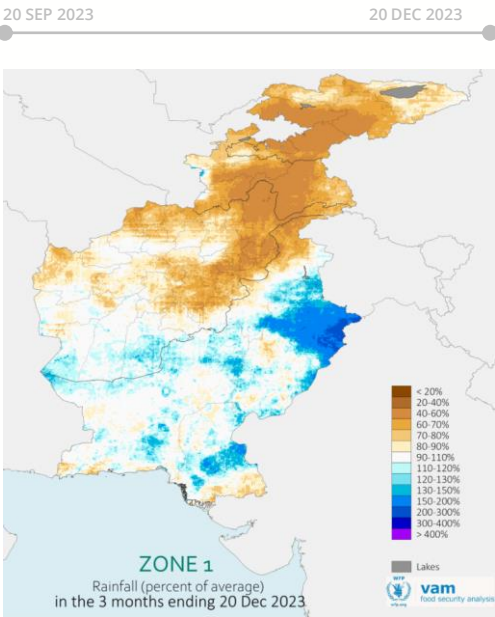
Rainfall Performance, September-November 2023

From **20 September to 20 December 2023**, below-average rainfall was observed across Kyrgyz Republic, Tajikistan and north-eastern Afghanistan. Above average rainfall was observed in some areas of Pakistan, especially in the northeast part of the country (Lahore), and in southern Afghanistan (Map 1).

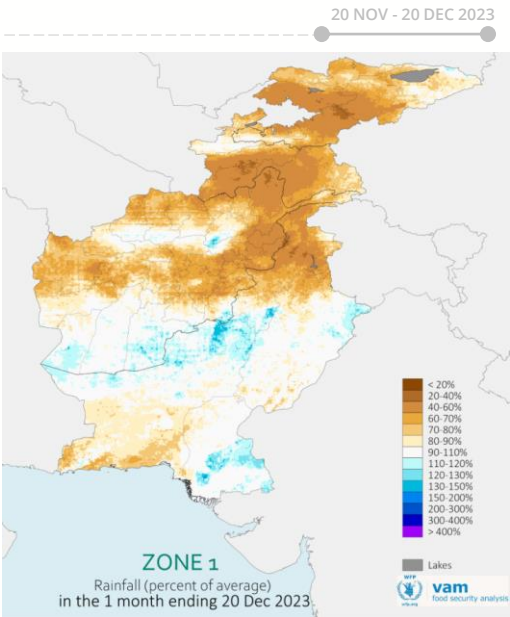
In the 30 days ending on the **20th December 2023**, drier-than-average conditions continued across Kyrgyz Republic, Tajikistan, north-central Afghanistan and the north-eastern end and southwestern end of Pakistan (Map 2).

Wetter than average conditions were experienced in some areas of the south of Afghanistan and north and south of Pakistan.

MAP 1: LAST THREE MONTHS



MAP 2: LAST MONTH

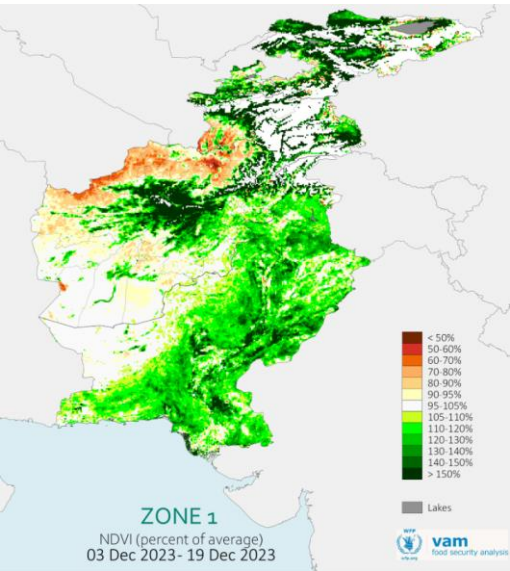


Vegetation Index

Average and above average vegetation index in most of the region.

Vegetation index in zone 1 shows average to above average levels in most of the region. Only the north of Afghanistan shows lower than average vegetation index, as well as some other areas in the center of the country and very localized points of Kyrgyz Republic and Tajikistan (Map 3).

MAP 3: NORMALIZED DIFFERENCE VEGETATION INDEX (NDVI), DECEMBER 2023



Zone 1

Afghanistan, Kyrgyz Republic, Pakistan, and Tajikistan

Crop Production

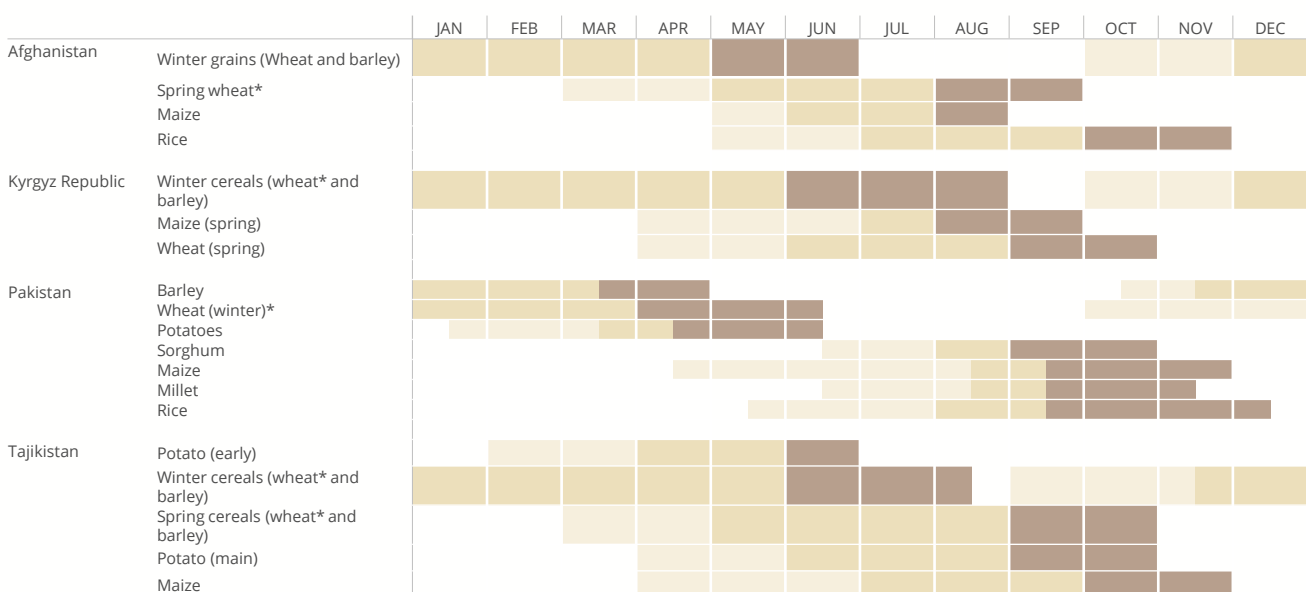
In **Afghanistan**, maize and rice harvesting finalized in November under mixed conditions, with below average yields in some areas due to water deficit. Ongoing planting of the 2024 winter wheat and barley is slower than typical year due to dry moisture conditions, particularly in northern and northeast parts of the country. Cultivated area for winter wheat is expected to be below average but to benefit from rainfall forecast for early 2024. Farmers remain constrained by imported inputs of agricultural production such as fertilizers, which is expected to negatively affect crop yields. The high risk of floods in Q2-2024 could damage some areas but would increase groundwater levels for irrigation.¹⁷

In **Kyrgyz Republic**, 2023 spring wheat harvesting finalized under poor conditions due to persistent seasonal dryness. Wheat gross harvest was 26 percent lower than 2022, and 30 percent lower for barley due to abnormally high temperatures during the growing summer season (June-August). Unusual temperatures during the spring period (March-May 2023) negatively affected the ripening stages of grain legumes and oilseed crops. Sowing of the 2024 winter wheat and barley crops was underway under drier conditions but recent rainfall improved the residual dryness. The 2023/24 output of wheat production is estimated at 520,000 tons, 7 percent lower than the 5-year average. While the 2023/24 output of barley production is expected to fall by 13 percent compared to the five-year average.¹⁸

In **Pakistan**, harvesting of main season maize finalized in November while harvesting of Kharif (summer) season rice continues, under favourable conditions. Planting of the 2024 winter wheat continued in November 2023 under irrigation water availability and adequate soil moisture in the main production areas in Punjab and Sindh provinces.¹⁹ The sown area of the wheat is forecast to an above-average level of 9 million hectares, driven by high prices and strong demand. The 2023/24 output of wheat production is estimated at 28 million tons, 10 percent higher than the 5-year average due to increasing planted areas and high yields. The 2023/24 output of rice production is expected at 13 million tons, 18 percent higher than the 5-year average.²⁰

In **Tajikistan**, sowing of the 2023/24 winter wheat and barley crops was completed in November 2023 under drier but favourable conditions. Despite drier conditions, the above average precipitation expected for 2024 will support wheat cultivation. The 2023/24 output of wheat production is estimated at 800,000 tons, 2 percent higher than the 5-year average. Import requirements of wheat in the 2023/24 marketing year are forecast at 1 million tons.²¹ Snow water equivalent and snow depths are far behind typical levels.

CROP CALENDAR



Zone 1

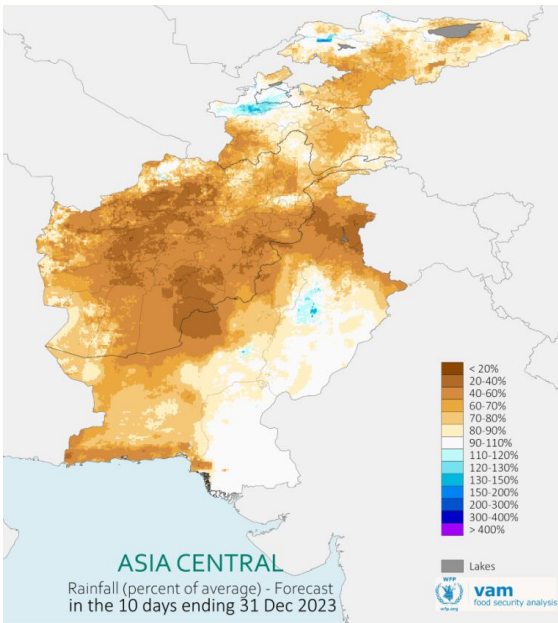
Afghanistan, Kyrgyz Republic, Pakistan, and Tajikistan

Climate Outlook, December 2023 - February 2024

Normal to above average rainfall with higher temperature conditions are expected across Zone 1 in the short term

The short-term forecast from 21 to 31 December 2023 (Map 4) predicts drier than average across most Afghanistan, northern and western Pakistan, and southern and eastern areas of Kyrgyz Republic and Tajikistan. Above average rainfall is forecast in very localized areas of western Kyrgyz Republic and Tajikistan and north-eastern Pakistan.

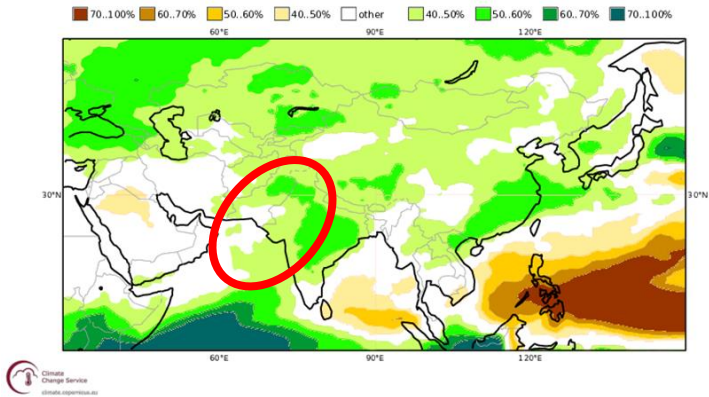
MAP 4: SHORT-TERM RAINFALL FORECAST AS A PERCENT OF AVERAGE, 21-31 DEC 2023



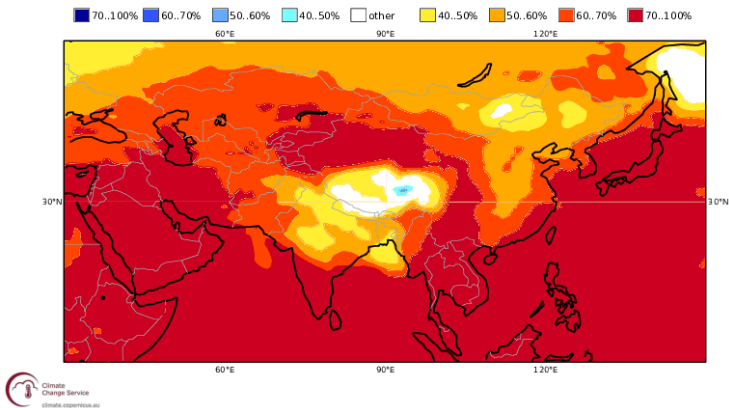
Rainfall during January - March 2024 (Map 5) is likely to be on average or slightly above average across Central Asia. A higher probability of above average rainfall is forecast for northern Kyrgyz Republic and some areas of central-east of Pakistan.

During the forecast period, air temperature (Map 6) will likely be above normal across Zone 1, with a higher probability in Kyrgyz Republic and eastern Tajikistan (>70 percent of exceeding the median temperature).

MAP 5. LONG-TERM RAINFALL FORECAST JAN-MAR 2024, PRECIPITATION > MEDIAN, %



MAP 6. LONG TERM TEMPERATURE FORECAST JAN-MAR 2024, 2m TEMPERATURE > MEDIAN, %



Map 5: C3S multi-system seasonal forecast probability (precipitation > median), nominal forecast, ECMWF/Met Office/Meteo-France/CMCC/DWD/NCEP/JMA/ECCC Dec.23-Feb. 24
Map 6: C3S multi-system seasonal forecast probability (2m temperature > median), nominal forecast, ECMWF/Met Office/Meteo-France/CMCC/DWD/NCEP/JMA/ECCC Dec.23-Feb.24

Zone 2

Bangladesh, Bhutan, Cambodia, India, Lao PDR, Myanmar, Nepal, the Philippines, and Sri Lanka

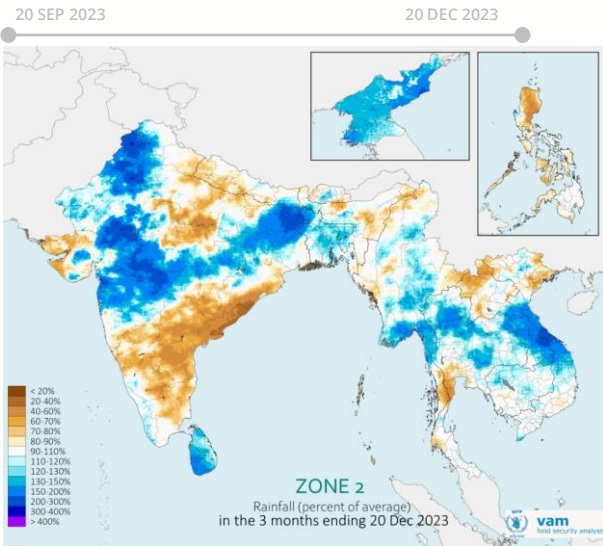
Rainfall Performance, September-November 2023

Below-average rainfall was experienced between 20 September and 20 December 2023 (Map 7) across southern India and Nepal, northern Lao PDR, some areas of northern Myanmar, and half north of the Philippines. Wetter than average conditions were observed in some parts of western, eastern and central India, Bangladesh, central Lao PDR, areas of central and southern Myanmar, Sri Lanka and DPRK.

From November 20 until December 20, precipitation was lower than average across Cambodia, Lao PDR, a great part of Myanmar and the Philippines and some areas of south-eastern India. Rainfall was above average in great part of central India, Sri Lanka, north of Myanmar and DPRK (Map 8).

Cyclones and monsoon season in South Asia have continued to cause flooding and landslides, affecting 10,000 people in Bangladesh and 34,800 people in Sri Lanka in November.^{22&23} The strong earthquake and floods in Mindanao in the Philippines affected over 15,000 people, and 105,704 hectares of cropland were inundated.^{24 &25}

MAP 7: LAST THREE MONTHS

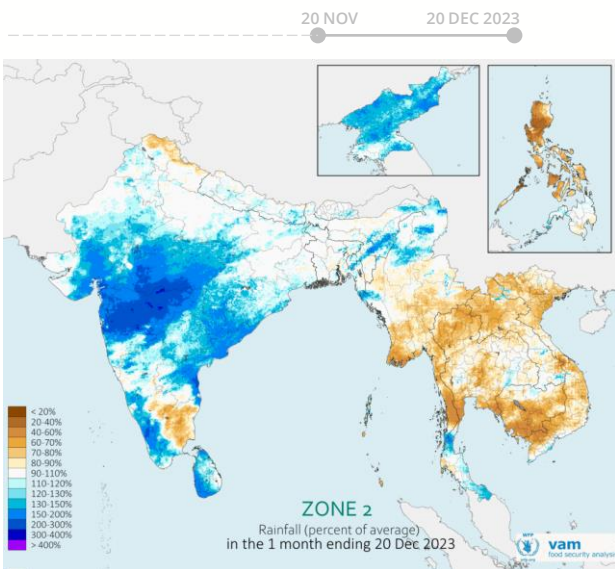


Vegetation Index

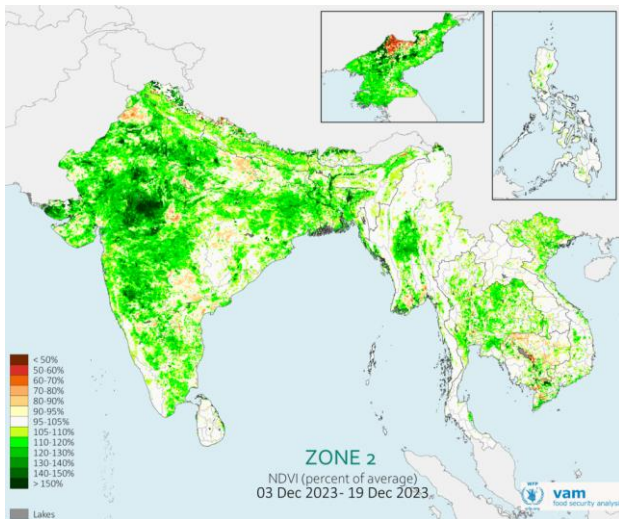
The vegetation index was at average or above average in most part of zone 2.

Below average vegetation index was observed in some central parts of India, in Cambodia and especially in the north-central part of DPRK.

MAP 8: LAST MONTH



MAP 9: NORMALIZED DIFFERENCE VEGETATION INDEX (NDVI), DECEMBER 2023



Zone 2

Bangladesh, Bhutan, Cambodia, India, Lao PDR, Myanmar, Nepal, the Philippines, and Sri Lanka

Crop Production

In **Bangladesh**, the harvesting of Aman season rice (35 percent of rice production) began in November 2023, with an estimated output above average level due to high yields despite the localized damages caused by the flooding in Chattogram division in August or the cyclone Midhili hitting the coastal districts in November. Planting of maize, wheat, and Boro season rice, which accounts for 55 percent of rice production (31.1 million tons), is just beginning under favourable conditions. Import requirements of rice in 2024 are forecast to fall by 250,000 tons.^{26, 27} The 2023/24 output of rice is estimated at 58.5 million tons.

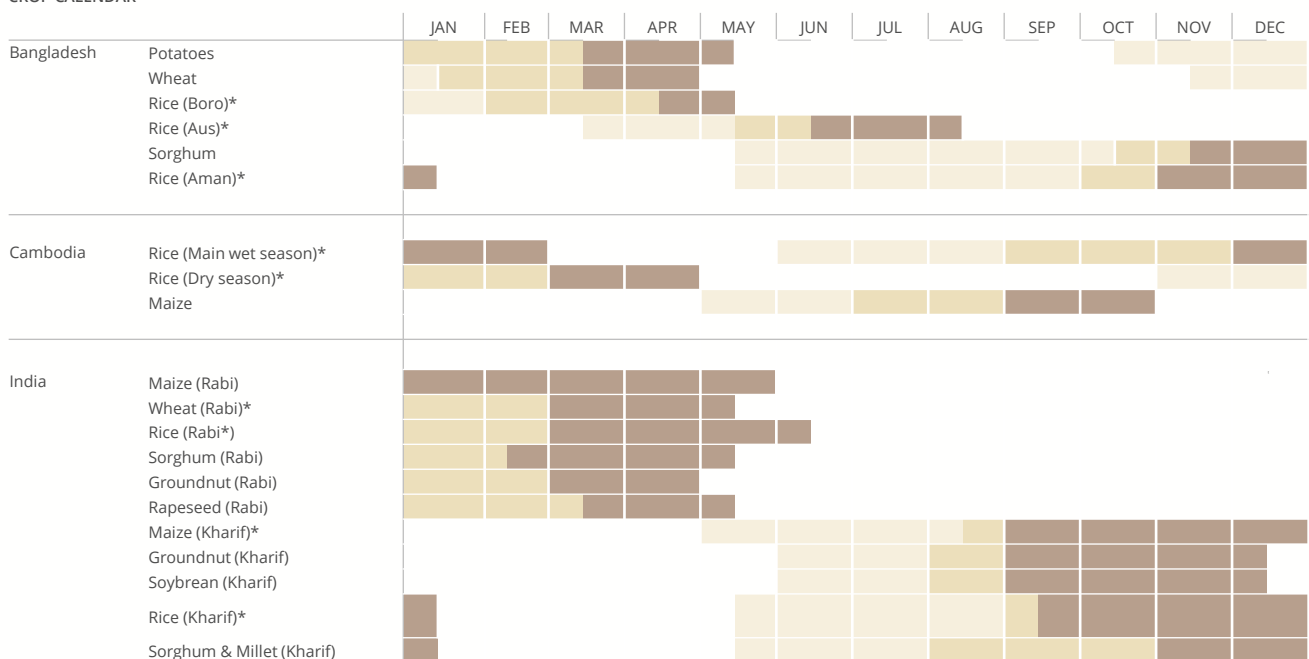
In **Bhutan**, harvesting of main season rice and maize crops in November 2023 continued under good weather conditions. The planting of 2023/24 winter season wheat and barley crops continued under drier conditions in southern and central parts of the country. The estimated 2023/24 cereal production will be 70,000 tons, 27 percent lower than the 5-year average due to a decrease in rice and maize production which will increase import requirements at 140,000 tons.²⁸

In **Cambodia**, growing of wet season rice in November continued under good weather conditions, and yield is estimated at 3.7 tons per hectare which is similar to last year. Sowing of 2023/24 dry season rice began under enough irrigation water and sunshine, and the current planted area was 23 percent of the national plan (496,000 hectares).²⁹

In **India**, the harvesting of Kharif season rice and maize crops in November 2023 continued under good weather conditions. The production of Kharif season rice and maize is estimated at 106.31 million tons and 22.48 million tons which is 4 percent and 5 percent respectively lower than last year due to limited rainfall received by the adverse impact of El Nino, but higher than the five-year average as increased planted areas.³⁰

In **Lao PDR**, harvesting of wet-season rice in November 2023 continued under good weather conditions. In lowland areas, the final harvesting area is 796 thousand hectares, and the production is expected to be 3.5 million tons due to high yield. In upland areas, the final harvesting area is 101,000 hectares, and the production is estimated at 207,050 tons with a yield of 2.05 tons per hectare.³¹

CROP CALENDAR



Zone 2

Bangladesh, Bhutan, Cambodia, India, Lao PDR, Myanmar, Nepal, the Philippines, and Sri Lanka

Crop Production

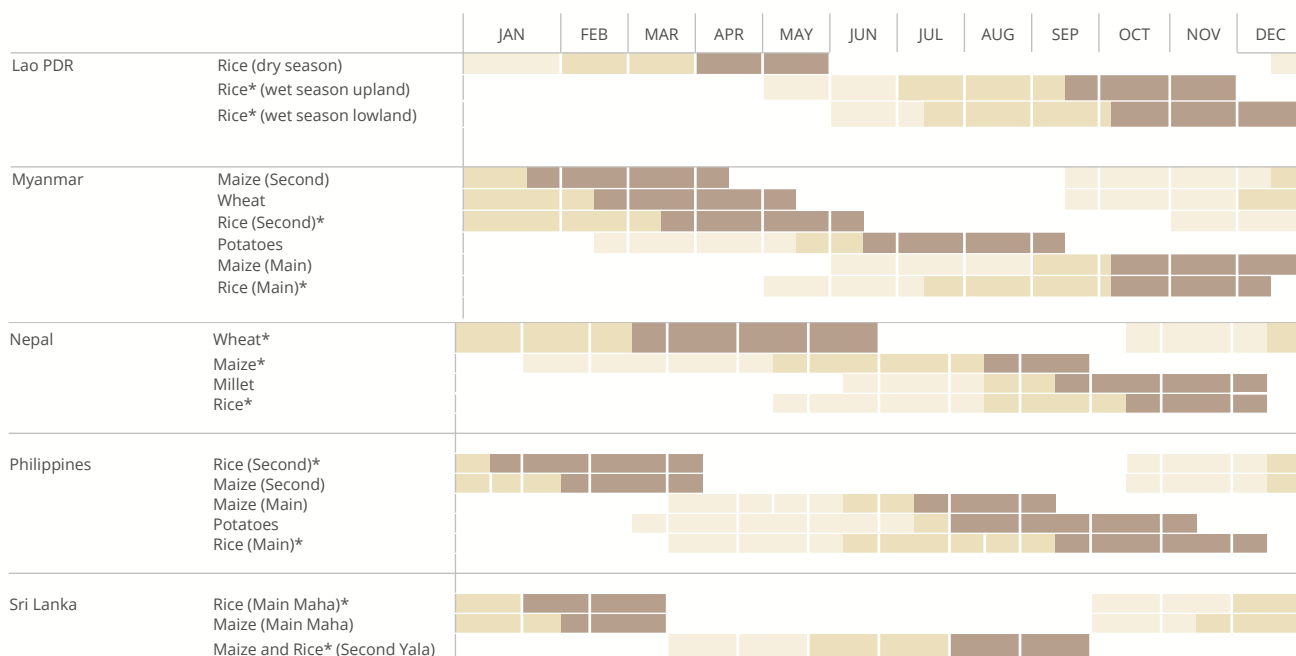
In **Myanmar**, harvesting of main-season rice and maize continued in November 2023 under good weather conditions. The 2023/24 rice production is expected to be 4 million tons with yields higher than last year, of 4.27 tons per hectare. Sowing of dry season rice began under good weather conditions due to light to moderate rainfall.³² However, the 2023/24 rice production is estimated at 12 million tons, which is 4 percent lower than the five-year average due to heavy rain in October damaged rice production in the Delta region, particularly in Bago and Yangon.³³

In **Nepal**, harvesting of main-season rice continued under good weather conditions. The 2023/24 rice yields are expected at below average levels due to insufficient rainfall received and high input costs. Winter wheat planting is ongoing under favourable weather conditions.³⁴ Import requirements of rice and wheat in 2024 are forecast to rise by 250,000 and 300,000 tons due to strong local demand.³⁵

In the **Philippines**, harvesting of main-season rice reached 80 percent of the final harvesting area in November 2023 with yield estimations generally favourable. The planting of second-season rice and maize is underway.³⁶ Heavy rains in November caused floods in Mindanao, and 105,704 hectares of cropland were inundated. The 2023/24 expected rice output is 3 percent higher than the five-year average.³⁷ However, import requirements of rice in 2023/24 are forecast at 3.5 million tons to meet the domestic demand.³⁸

In **Sri Lanka**, planting of Maha season rice and maize, accounting for 70 percent of annual rice production and mostly irrigated, continued under good weather conditions with adequate soil moisture, except in the northern part where rains were below average. Monsoon-heavy rainfall was observed in the western and southern parts in the last three months.³⁹ 2023 cereal production is expected to be 4.3 million tons, 9 percent lower than the 5-year average due to limited availability of agricultural inputs and unfavourable weather conditions.⁴⁰

CROP CALENDAR



Zone 2

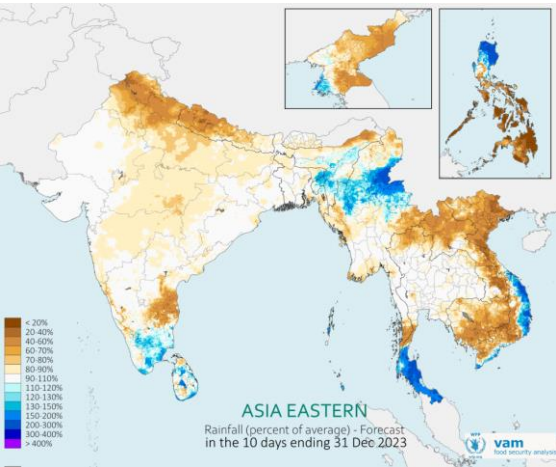
Bangladesh, Bhutan, Cambodia, India, Lao PDR, Myanmar, Nepal, the Philippines, and Sri Lanka

Climate Outlook, December 2023-February 2024

Mixed weather conditions are expected across zone 2 in the short term.

The short-term forecast for the third decade of December 2023 indicates above average rainfall expected in the north of the Philippines, north-east of Myanmar, south-east of India and areas of central and south Sri Lanka and southwest of DPRK. Drier than average conditions are expected in most of the Philippines, half-eastern DPRK, a great part of Lao PDR and Cambodia, the western part of Nepal and localized areas in India (Map 10).

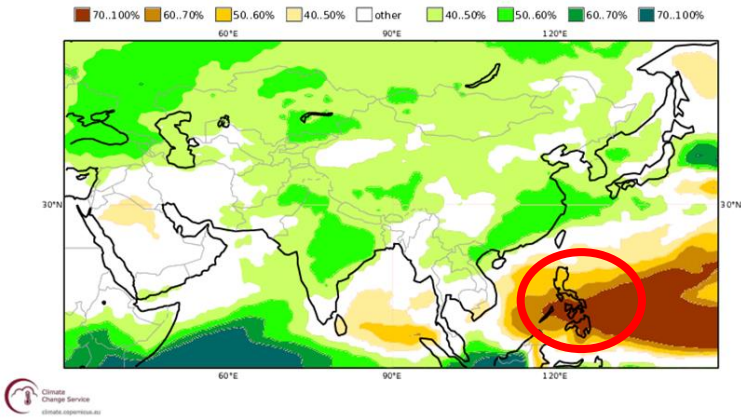
MAP 10: SHORT-TERM RAINFALL FORECAST AS A PERCENT OF AVERAGE, 21-31 DEC 2023



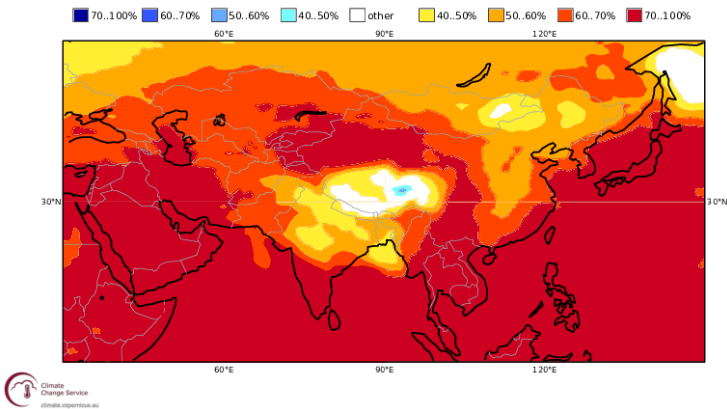
Rainfall between January and March 2024 is forecast on average or slightly above average across most of zone 2 except Sri Lanka and, especially, the Philippines, where drier than average conditions are expected. The probability of exceeding the median rainfall is higher in central India (Map 11).

Air temperature during the forecast period is likely to be above the normal conditions (>70 percent possibility of exceeding the median temperature) across major parts of Zone 2 (Map 12). The probability of exceeding air temperature is lower in the northern half of India, Nepal, Bhutan and Bangladesh; close to average temperatures are expected in northern Nepal and Bhutan.

MAP 11. LONG-TERM RAINFALL FORECAST JAN-MAR 2024, PRECIPITATION > MEDIAN, %



MAP 12. LONG TERM TEMPERATURE FORECAST JAN-MAR 2024, 2m TEMPERATURE ABOVE MEDIAN, %



Map 11: C3S multi-system seasonal forecast probability (precipitation > median), nominal forecast, ECMWF/Met Office/Meteo-France/CMCC/DWD/NCEP/JMA/ECCC Dec.23-Feb.24
Map 12: C3S multi-system seasonal forecast probability (2m temperature > median), nominal forecast, ECMWF/Met Office/Meteo-France/CMCC/DWD/NCEP/JMA/ECCC Dec.23-Feb. 24

Zone 3

Fiji, Indonesia, Kiribati, Papua New Guinea, Timor-Leste, Tuvalu, Vanuatu

Rainfall Performance, September-November 2023

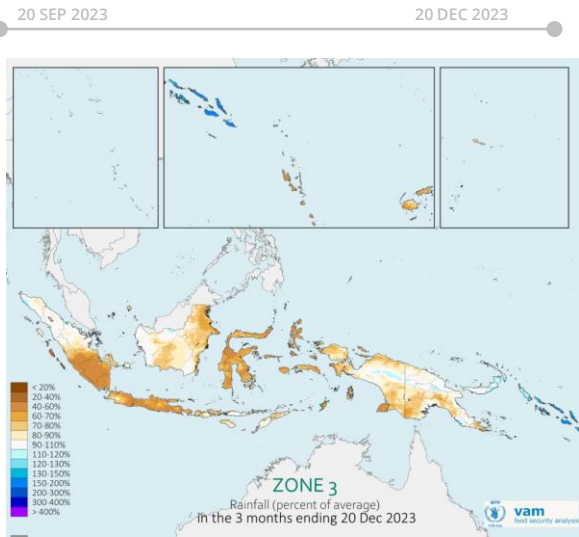
Rainfall during the last three months ending on 30 November, has been lower than the average across Fiji, most parts of Indonesia, Papua New Guinea, Samoa, Timor-Leste, and Vanuatu. On the opposite, rainfall was higher than average in the Solomon Islands (Map 13).

In the last month (**1-30 November**), rainfall was below average in some areas of Indonesia, including southern Sumatra, Java, great part of Sulawesi, Molucas, northeastern Borneo and areas of Papua, Fiji and Vanuatu. On the contrary, rainfall was higher than average in the Solomon Islands and areas of Indonesia (Map 14).

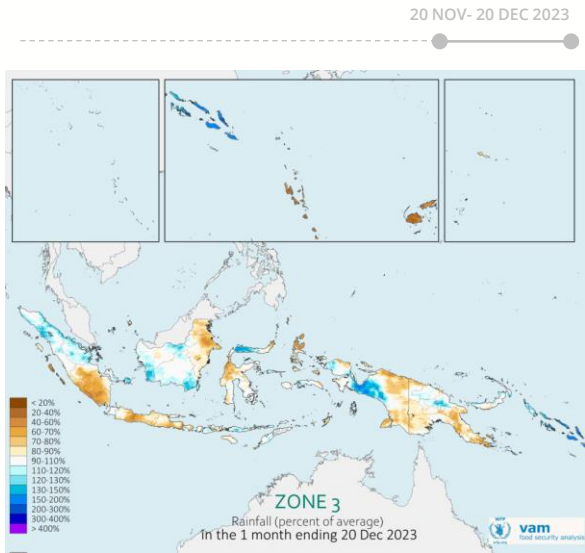
Indonesia continued to receive less rainfall than in November 2023, causing drought in Bali, Riau Islands, and Central Sulawesi. ⁴¹ Heavy rains and landslides in the western region affected approximately 1,900 people and there were also reports of damage to 538 houses.⁴²

In the **Solomon Islands**, several provinces received heavy rains in November, leading to floods and landslides particularly in Honiara and Guadalcanal provinces, over 250 people were displaced.⁴³

MAP 13: LAST THREE MONTHS



MAP 14: LAST MONTH

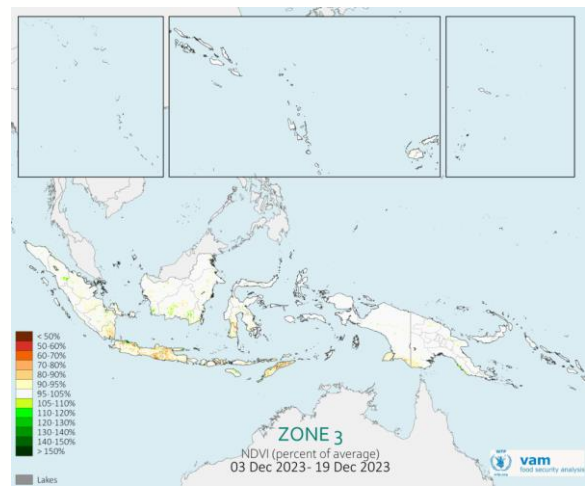


Vegetation Index

Near average vegetation index in recent weeks

Near-average vegetation conditions were observed in most parts of Zone 3. The vegetation index was slightly below average in areas of Java, southern Sulawesi, Timor and Timor-Leste. (Map 15).

MAP 15: NORMALIZED DIFFERENCE VEGETATION INDEX (NDVI), 3-19 DECEMBER 2023



Zone 3

Fiji, Indonesia, Kiribati, Papua New Guinea, Timor-Leste, Tuvalu, Vanuatu

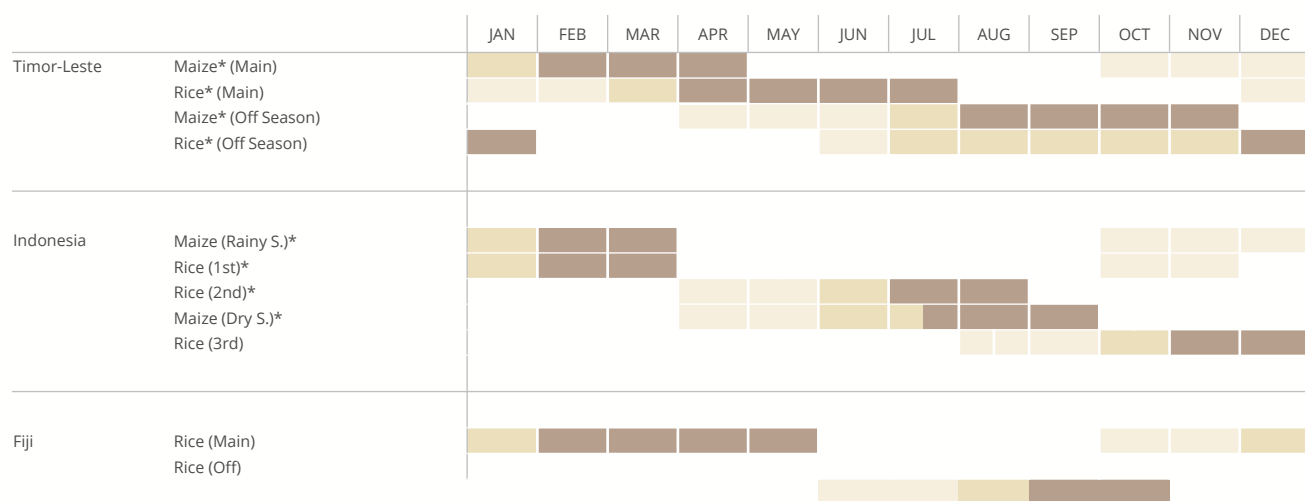
Crop Production

In **Fiji**, planting of main season rice continued under good weather conditions. However, in November, cyclone Mal caused floods and damaged croplands in Ba, Nadroga, Navosa, Serua, Namosi, and Kadava without an official report.⁴⁴ Harvesting of sugarcane is almost finished under dry weather conditions with a total harvested sugarcane production of 1.6 million tons, 15 percent higher than last year (1.4 million tons) due to increased planted areas and crop yield.⁴⁵

In **Timor-Leste**, growing off-season was in the grain-filling stage, and will start to harvest next month in some regions. The planting of main-season maize continued under drier conditions. 2023 cereal production is expected to be 167,000 tons, 8 percent higher than the five-year average due to an expansion of planted areas, driven by high prices. However, drier than average caused by the [impacts of El Niño conditions until early 2024](#) will continue negative impacts on main crop yields. Import requirements of cereal in 2024 are forecast to rise by 200,000 tons due to population growth and increasing domestic consumption; imports of rice account for 80 percent of annual imports.⁴⁶

In **Indonesia**, harvesting of dry-season rice in November continued under good conditions with a total harvested area of 3.7 million hectares which is 6.7 percent lower than last year due to the influence of floods and droughts. While the planting of wet-season rice was ongoing with delay planting in some region due to uneven rainfall and water shortage conditions. As of November, planted area is 11.5 percent lower than average. Rainfall received in early November improved water shortage in Java and some other areas.⁴⁷ Some regions still reported drought but rice development has not been significantly affected. Based on the September 2023 analysis of the Nutrition Surveillance System (SKPG), 12 out of 34 provinces were categorised in the "watch" category for possible degradation of food and nutrition security.⁴⁸

CROP CALENDAR



Zone 3

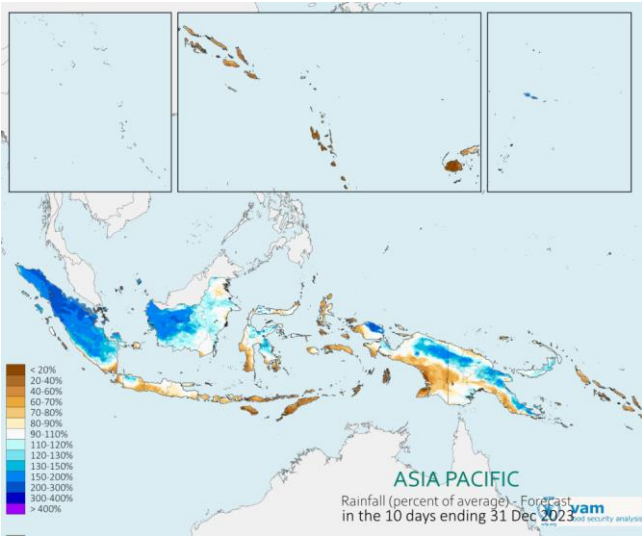
Fiji, Indonesia, Kiribati, Papua New Guinea, Timor-Leste, Tuvalu, Vanuatu

Climate Outlook, December 2023-February 2024

Drier-than-average conditions are expected across most Pacific countries

The short-term **forecast for the third decade of December** indicates above average rainfall in Sumatra island, western Borneo and north-eastern part of Celebes and Papua. Drier than average conditions are forecast for southern Indonesian islands, Timor-Leste, Fiji, Vanuatu and Solomon Islands (Map 16).

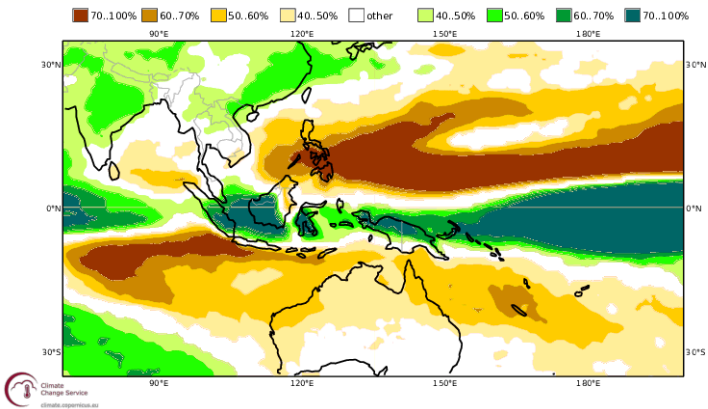
MAP 16: SHORT-TERM RAINFALL FORECAST AS A PERCENT OF AVERAGE, 21-31 DEC 2023



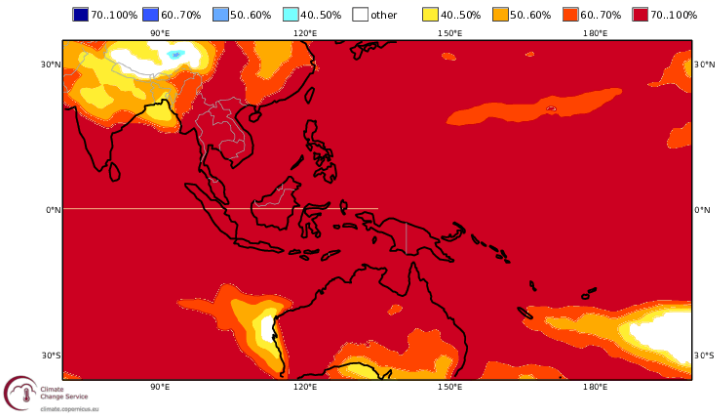
The **long-term forecast** from January to March 2024 indicates above-average rainfall for the areas of zone 3 closer to the equator, such as Sumatra, southwestern Borneo, Celebes and Papua, northern Solomon Islands, Tuvalu or Kiribati. Drier-than-average conditions are expected to remain in southern Indonesian islands (Bali, Nusas and Timor), in Timor-Leste, Fiji, Vanuatu and Tonga. (Map 17).

Air temperature during January-March 2024 is forecast higher than average (>70 percent possibility of exceeding the median temperature) across Zone 3 (Map 18).

MAP 17. LONG-TERM RAINFALL FORECAST JAN-MAR 2024, PRECIPITATION > MEDIAN, %



MAP 18. LONG-TERM TEMPERATURE FORECAST JAN-MAR 2024, 2m TEMPERATURE ABOVE MEDIAN, %



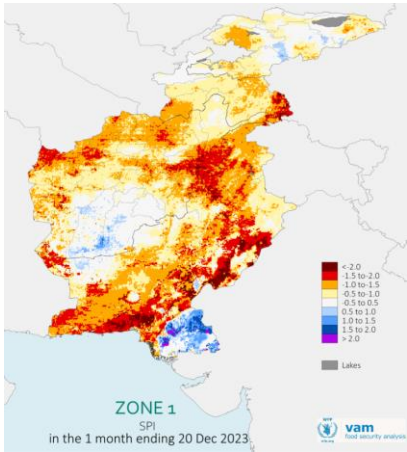
Map 17: C3S multi-system seasonal forecast probability (precipitation > median), nominal forecast, ECMWF/Met Office/Meteo-France/CMCC/DWD/NCEP/JMA/ECCC Dec. 23-Feb.24
Map 18: C3S multi-system seasonal forecast probability (2m temperature > median), nominal forecast, ECMWF/Met Office/Meteo-France/CMCC/DWD/NCEP/JMA/ECCC Dec.23-Feb.24

Annexes

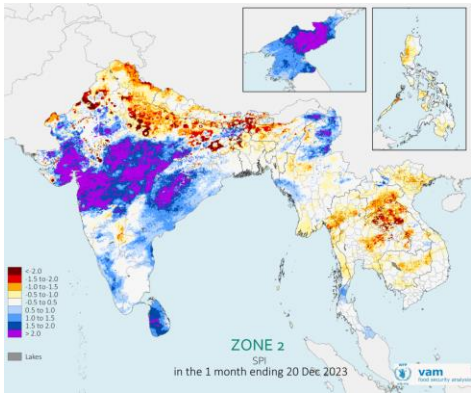
Standardized Precipitation Index, 1 - 30 Nov 2023

The maps (19, 20,21) show last month's standardized precipitation index (SPI). The SPI shows the experience of wet conditions on one or more-time scales (blues-dark purple), and dry conditions (yellow-browns) in Asia and the Pacific.

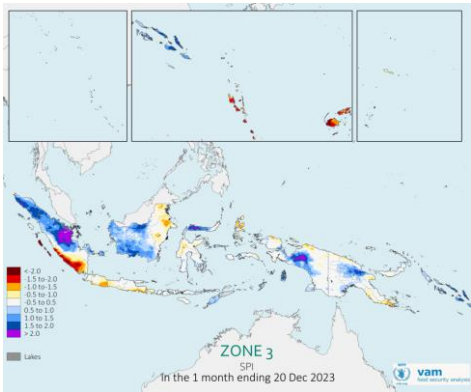
MAP 19: SPI ZONE 1 LAST MONTH



MAP 20: SPI ZONE 2 LAST MONTH



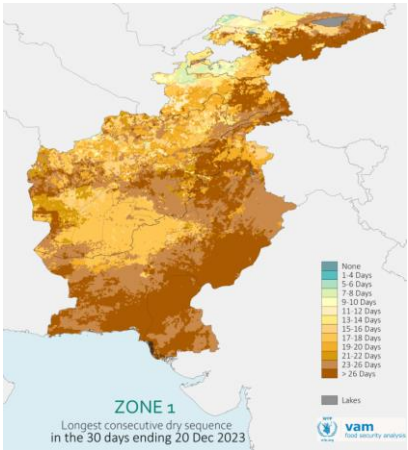
MAP 21: SPI ZONE 3 LAST MONTH



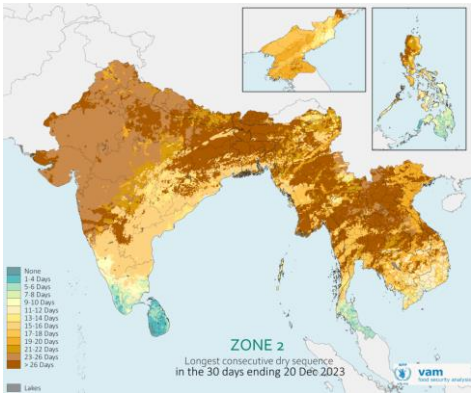
Longest Consecutive Dry Sequence, 20 Oct – 20 Nov 2023

The maps (22, 23,24) show the longest consecutive dry sequence over the past month. Areas in green have experienced shorter dry sequences, while areas in brown have experienced longer ones.

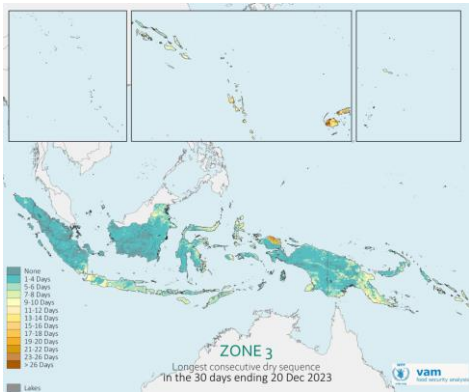
MAP 22: LONGEST CONSECUTIVE DRY SEQUENCE ZONE 1 LAST MONTH



MAP 23: LONGEST CONSECUTIVE DRY SEQUENCE ZONE 2 LAST MONTH



MAP 24: LONGEST CONSECUTIVE DRY SEQUENCE ZONE 3 LAST MONTH





Annexes

RBB Countries Rainfall Seasonal Pattern

Year	2023																														Average ¹ annual rainfall (mm)	20 Nov-20 Dec 2023 rainfall compared to average ¹ (%)	Accumulative rainfall variation by 20 December 2023 (%)			
Month	JAN			FEB			MAR			APR			MAY			JUN			JUL			AUG			SEP			OCT						NOV		
Dekad	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
(10-day rainfall period)																																				
Zone 1	Afghanistan																																264	-30%	-27%	
	Kyrgyz Republic																																431	-46%	-34%	
	Pakistan																																266	-24%	13%	
	Tajikistan																																355	-50%	-36%	
Zone 2	Bangladesh																																2,368	5%	-11%	
	Bhutan																																924	13%	-20%	
	Cambodia																																2,025	-39%	-3%	
	India																																1,144	40%	-4%	
	Lao PDR																																1,906	-25%	-8%	
	Myanmar																																2,147	-14%	-8%	
	Nepal																																1,410	11%	-13%	
	Philippines																																2,752	-23%	4%	
	Sri Lanka																																1,867	32%	41%	
Zone 3	Fiji																																2,323	-62%	-4%	
	Indonesia																																2,883	-4%	-5%	
	Timor-Leste																																1,776	0%	7%	

Data source: [WFP Dataviz Seasonal Explore](#)

¹ Long term average (1994-2013)

- **Very heavy rains, heavy rainfall period.** 10 daily rainfall > 3 times the average 10 daily contribution to annual rainfall.
- **Heavy rains; core rainfall period.** 10 daily rainfall > 2 times the average 10 daily contribution to annual rainfall.
- **Moderate rains; rainfall season.** 10 daily rainfall > 1 to 2 times the average 10 daily contribution to annual rainfall.
- **Light rains; starting/residual rainfall season.** 10 daily rainfall > 0.5 to 1 time the average 10 daily contribution to annual rainfall.
- **Dry season;** 10 daily rainfall <0.5 times the average 10 daily contribution to annual rainfall.
- Rainfall > 100 mm

RBB Cereal Production

Country	Maize			Rice			Wheat		
	Estimated output 2023/24 (metric tons)	5 years average (2018-2022) (metric tons)	% change 2023-24/average	Estimated output 2023/24 (metric tons)	5 years average (2018-2022) (metric tons)	% change 2023-24/average	Estimated output 2023/24 (metric tons)	5 years average (2018-2022) (metric tons)	% change 2023-24/average
Afghanistan	260	218	19	270	261	3	5,170	4,641	11
Bangladesh	4,700	3,918	20	58,470	56,001	4	1,100	1,066	3
Bhutan	26	40	-35	40	50	-20	NA	NA	NA
Cambodia	965	1,052	-8	6000	5785	4	NA	NA	NA
Fiji	NA	NA	NA	NA	NA	NA	NA	NA	NA
India	34,300	31,572	9	132,000	125,039	6	113,500	104,983	8
Indonesia	13,100	12,440	5	34,450	34,360	0	NA	NA	NA
Kyrgyz Republic	710	709	0	NA	NA	NA	520	560	-7
Lao PDR	470	597	-21	1,920	1,816	6	NA	NA	NA
Myanmar	2,600	2,640	-2	12,000	12,530	-4	100	99	1
Nepal	2,720	2,705	1	3,654	3,650	0	2,175	2,123	2
Pakistan	10,317	8,832	17	12,954	11,898	9	28,180	25,669	10
Philippines	8,400	8,127	3	12,600	12,248	3	NA	NA	NA
Sri Lanka	273	316	-14	3,060	3,049	0	NA	NA	NA
Tajikistan	200	193	4	NA	NA	NA	800	786	2
Timor Leste	85	81	5	82	73	12	NA	NA	NA

Data source: [USDA Country Summary](#); [FAO GIEWS Country Brief](#)

Sources

Rainfall time series for trend analysis and seasonal drought monitoring

CHIRPS (Climate Hazards Group InfraRed Precipitation with Station data) gridded rainfall dataset produced by the Climate Hazards Group at the University of California, Santa Barbara:
(<http://chg.geog.ucsb.edu/data/chirps/>)

NDVI

MODIS NDVI CMG data made available by NOAA-NASA.
(<http://reverb.earthdata.nasa.gov/>)

Seasonal Climate Forecast and ENSO Forecast

International Research Institute for Climate and Society
(<https://iri.columbia.edu/>)

Crop monitoring

GOGLAM Crop Monitor (<https://cropmonitor.org/>)

(Food) Inflation rate and currency exchange

Trading Economics (<https://tradingeconomics.com>)

Long-term precipitation and temperature forecasts

The Copernicus Climate Change Service
(https://climate.copernicus.eu/charts/packages/c3s_seasonal/)

For more detailed information on seasonal forecast, please visit [Seasonal: Rainfall and Vegetation: Visualizations - Dataviz | WFP - VAM](#)

DISCLAIMERS: All climate content within this bulletin is based upon the most current available remote sensing data. As the climate phenomena is a dynamic situation, the current realities may differ from what is depicted in this document.

Countries in the region have been classified into three zones according to their geographical location (latitude, longitude) and climate (rainfall and temperature). This classification does not correspond to any official subregions or categories

The designations employed and the presentation of material in the maps do not imply the expression of any opinion whatsoever of WFP concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.



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