

Weak La Niña signal still present

The monsoon season or the wet season has been very active for the past 3 months since mid-December last year resulting in much, if not, all of the country receiving much needed rainfall. This was a great relief for the country especially when much of the country was experiencing drought-like situations due to rainfall deficiencies. However, due to the extended dryness experienced across the country last year, the recent rains may not be sufficient enough to fully replenish the soil as well as water bores and tanks for normal life to continue. On top of that, there is a 60% chance that the country may head back into El Niño phase which tends to bring below normal rainfall or drier than normal conditions to the country. However, the model forecast, at this time of the year cannot be relied upon so we will continue to monitor the situation and provide the necessary advise.

Even as La Niña is weakening, it will continue to influence the rainfall of certain parts of the country. La Niña usually, but not always, brings much wetter conditions especially to the southern and south-eastern parts of PNG and the mainland highlands but more drier conditions to the New Guinea Islands including AROP and parts of Momase.

In the short to medium term, we expect to see more wetter conditions for the country, due to the active monsoon season compounded by the prevailing weak La Niña condition. However, after April, much of the country will be receiving average to below average rainfall with higher rainfall deficiencies in parts of the New Guinea Islands and AROB.

Sea Surface Temperature (SST) Anomaly (BOM)

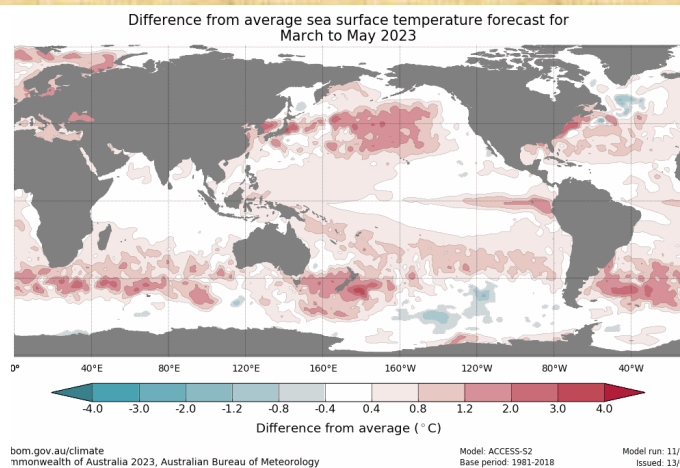


Figure 1: SST anomaly for MAM 2023

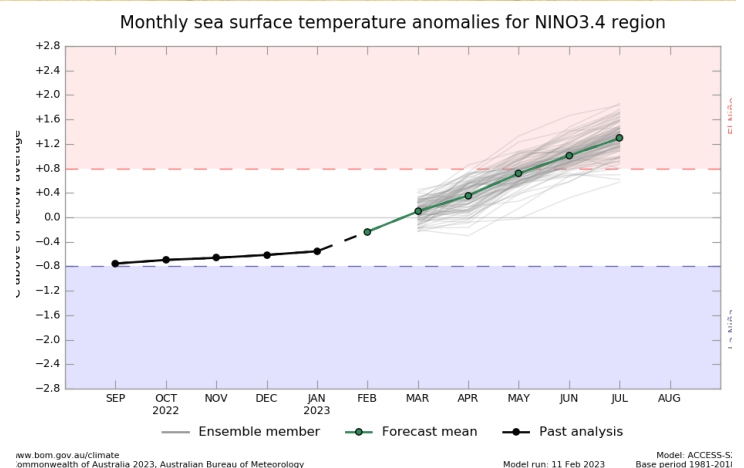


Figure 2: Monthly SST anomaly for NINO3.4 region

Figure 1 and 2 above shows the forecasted sea surface temperature (SST) anomalies for the Pacific Ocean for the periods Mar-May 2023 and Monthly SST anomaly for NINO3.4 region respectively. Warm SST anomalies continue across Papua New Guinea and Australia extending all the way across the South Pacific to the South American coast.

El Niño in the Pacific is related to the east-west movement of warm water (SST) in the Tropics. When warm SST anomalies are closer to Australia, PNG receives above normal rainfall (La Niña) and when cooler SST anomalies are present closer to Australia, PNG receives below normal rainfall (El Niño). In a neutral (Non-ENSO) year, PNG receives normal rainfall.

PNG Satellite Rainfall Monitoring & Drought Early Warning System

Background

Provided below are products from the Australian Bureau of Meteorology under the Space-based weather and climate extremes monitoring demonstration project (SEMDP) and the Drought Early Warning system products from CREWS-PNG project.

Figure A shows the space-based rainfall estimate for the 3 month total ending January 2023 with Figure B showing the 3-month Standardized Precipitation Index (SPI) ending also January 2023 whilst Figure C shows the 3-month drought indicator for February 2023.

Due to the monsoon season, much of the country has been receiving much needed rain. Despite this, a large parts of the country, it is still not enough for the country to fully recover out of the drought-like situation that drastically affected the country since September this year.

Standardized Precipitation Index (SPI)

The SPI is an index commonly employed as a proxy to characterize drought. It compares how different the observed rainfall is to the climatology for that period by measuring the number of standard deviations it is away from the mean. Typically, values below -1.5 are considered 'severely dry' and those below -2 are considered 'extremely dry', whilst values above $+2$ are indicative of 'extremely wet' conditions.

Having this in mind, it is fair to say that East and West Sepik, East and West New Britain, New Ireland including AROB are in drought like situation due to deficient rainfall.

extreme drought like situation.

Drought Early Warning System (DEWS)

The traffic-light drought maps provide a quick snapshot of agrometeorological drought in PNG. For the interpretation of the color codes, see below:

- **Non-drought** - No rainfall deficit, healthy vegetation and above avg rainfall forecasted.
- **Drought watch** - Rainfall deficit or stressed vegetation or increase chance of below avg rainfall forecasted.
- **Drought alert** - Rainfall deficit or Rainfall deficit or stressed vegetation and increased chance of below avg rainfall forecasted.
- **Drought critical** - Rainfall deficit and stressed vegetation and increased chance of below avg rainfall forecasted.

From Figure C, It is clear that Northern Bougainville and parts of New Ireland are in drought critical situation. The rest of the country are in non-drought or drought watch situation.

3-month total rainfall ending January 2023

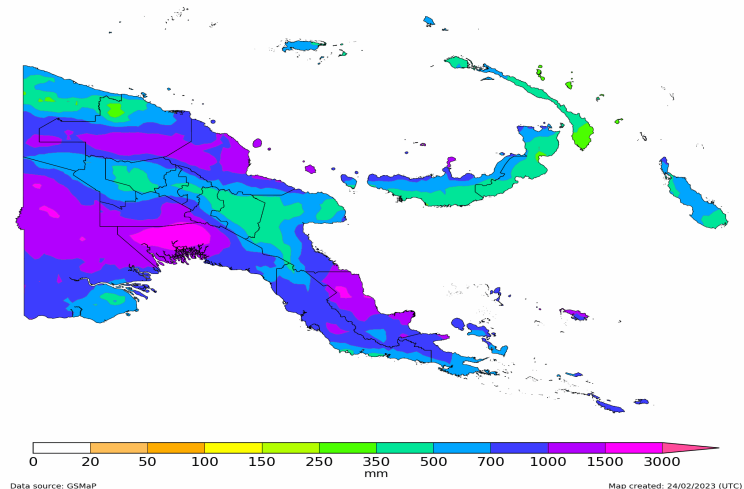


Figure A

3-month SPI for January 2023

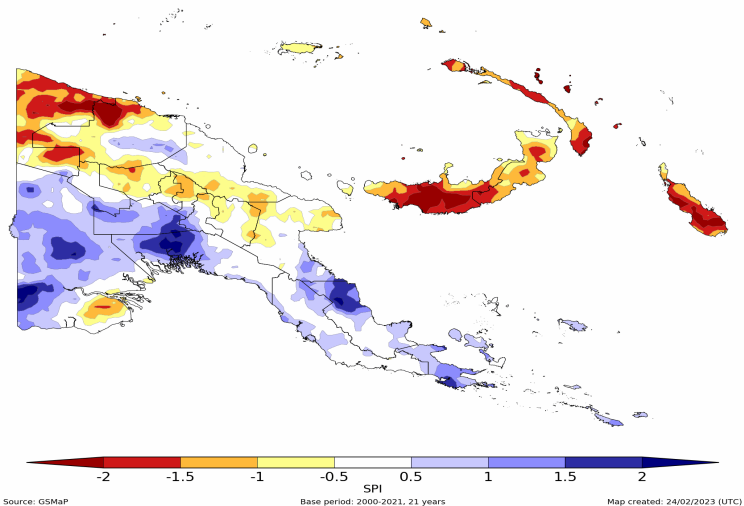


Figure B

3-month drought indicator for Feb 2023

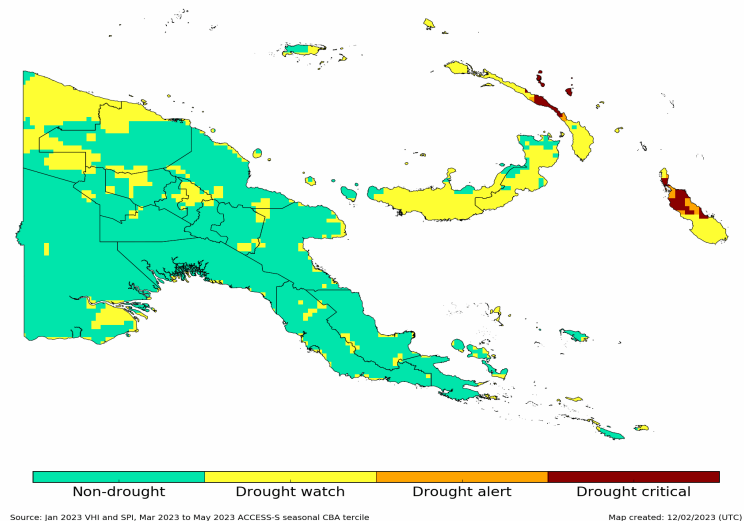


Figure C

Country Situation

The monthly rainfall for the country is as shown in Table 1 below.

The highest rainfall for the month of January was recorded at Kiunga, Western Province (383.4mm) and the lowest rainfall amount recorded was at Wewak (116.2 mm). Other station’s report were not available at the time of this write up.

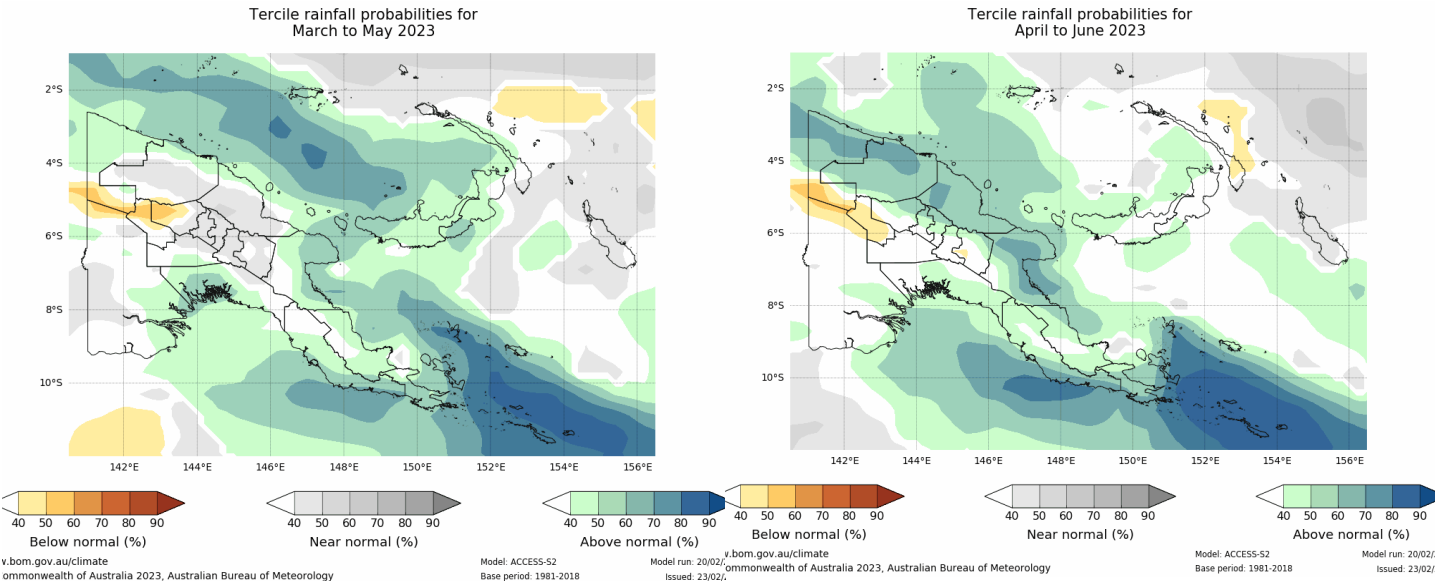
Interestingly, Kiunga in the Western Province has been receiving extremely high rainfall for the last 3 months, more so than the other centers.

Station	Nov22	Dec22	Jan23
Madang	-	-	-
Momote	141.2	407.6	163.0
Kavieng	-	-	-
Nadzab	-	-	-
Gurney	-	-	-
Goroka	-	-	-
Kiunga	370.2	382.6	383.4
Port Moresby	-	109.0	-
Wewak	145.2	149.0	116.2
Vanimo	151.4	241.8	186.6

Note:

The tercile rainfall probability forecast for MAM and AMJ 2023 from ACCESS-S2 model is as depicted in the figure below.

Rainfall Outlook (Mar-Apr-May & Apr-May-Jun 2023)



Rainfall forecast for MAM 2023

Rainfall forecast for AMJ 2023



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PNG DROUGHT RISK MONITOR

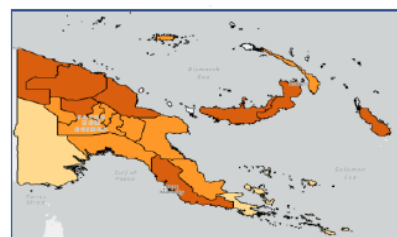
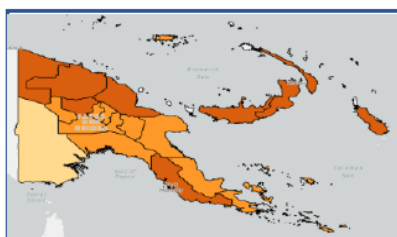
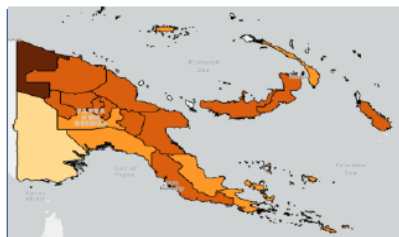
Drought Risk Status for February 2023

An indication of past drought risk based on drought hazard, exposure and vulnerability.

Nov 2022

Dec 2022

Jan 2023



● **Provinces in Severe this month**

● **Provinces in Extreme this month**

- ◆ No provinces in extreme or critical drought this month.
- ◆ Provinces in severe drought are East Sepik, West Sepik, Madang, Hela, Central, East New Britain, West New Britain and Bougainville (AROP).
- ◆ Other provinces are showing mild to moderate drought risk status.
- ◆ Due to continuous and consistent rainfall for the past 3 months, Western Province has been now decreased from high risk to a mild risk level.