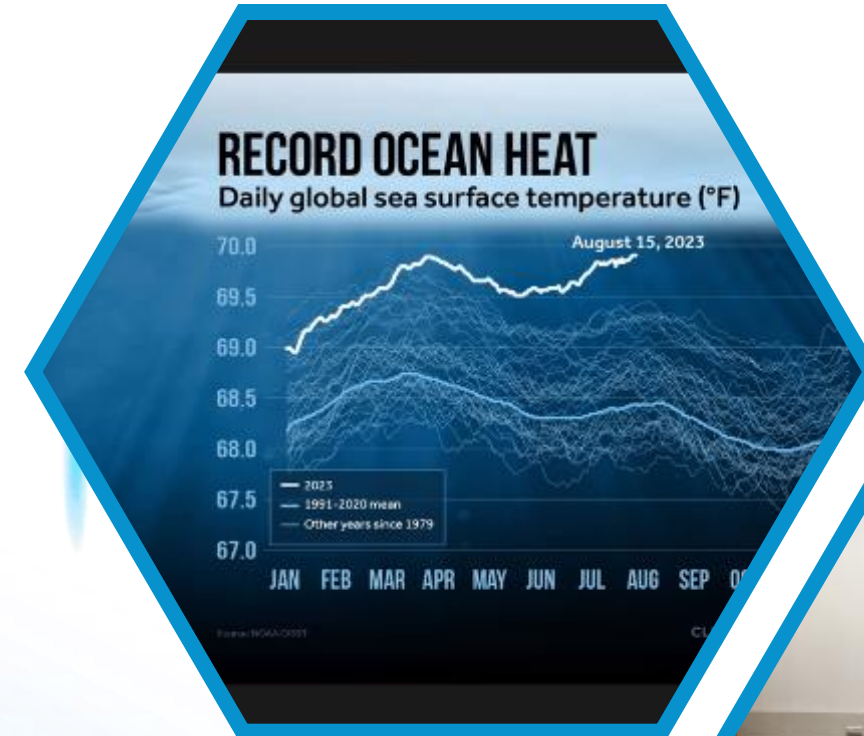


# 15TH SESSION OF THE PACIFIC ISLANDS CLIMATE OUTLOOK & STAKEHOLDER FORUM

## PICOF-15

14 - 15 OCTOBER, 2024

HYBRID  
IN-PERSON: NUKU'ALOFA, TONGA  
ONLINE: ZOOM



# MICRONESIA CLIMATE IMPACTS

**PALAU**

**CHUUK**

**KIRIBATI**

**MARSHALL**

**NAURU**

**PONHPEI**



**NIWA**  
Taihoro Nukurangi



# PALAU'S CLIMATE IMPACTS APRIL TO OCTOBER 2024

Kikuko Mochimaru

Staff Meteorologist, National Climate Officer and National Data Officer  
Palau National Weather Service Office



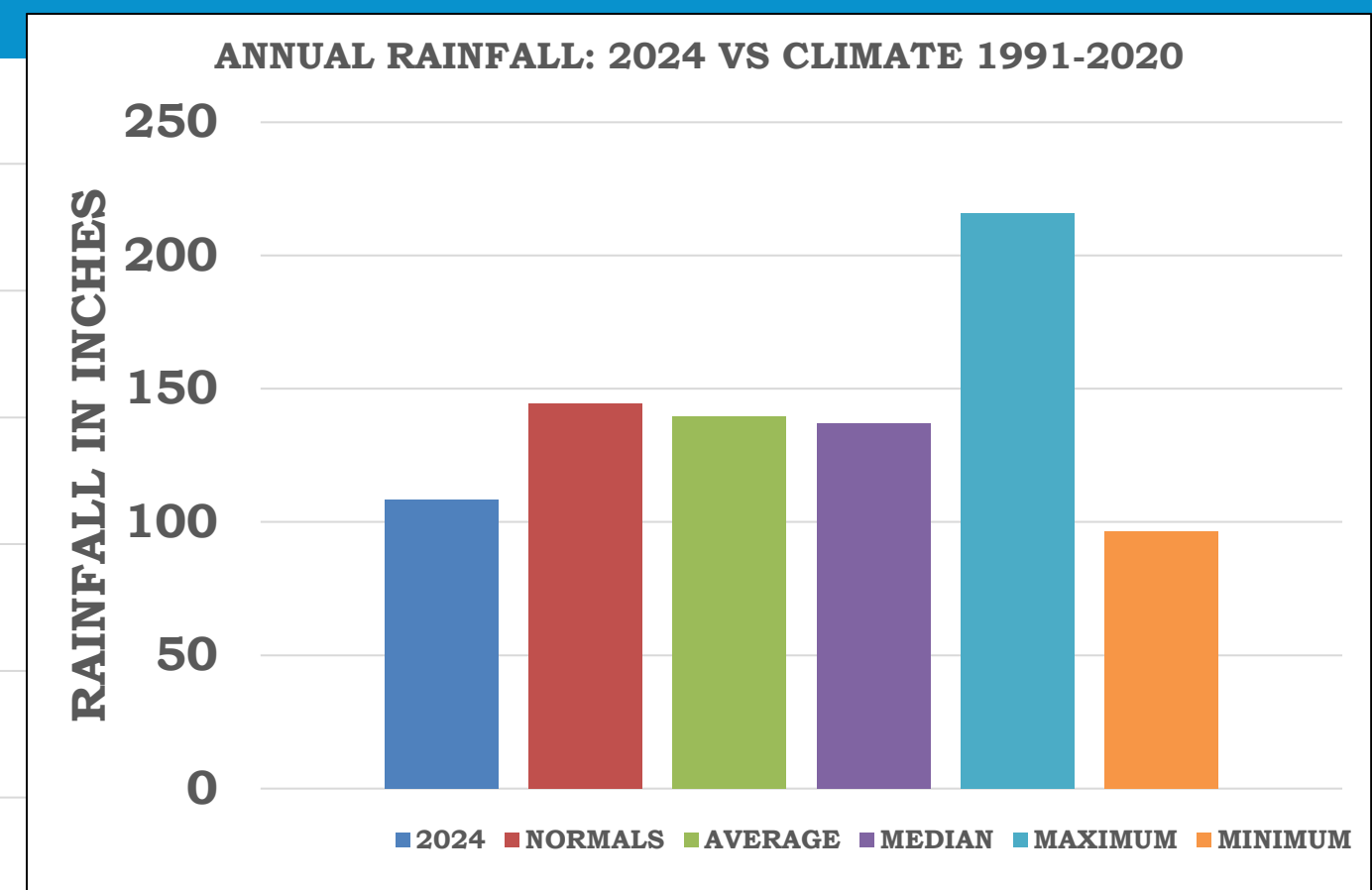
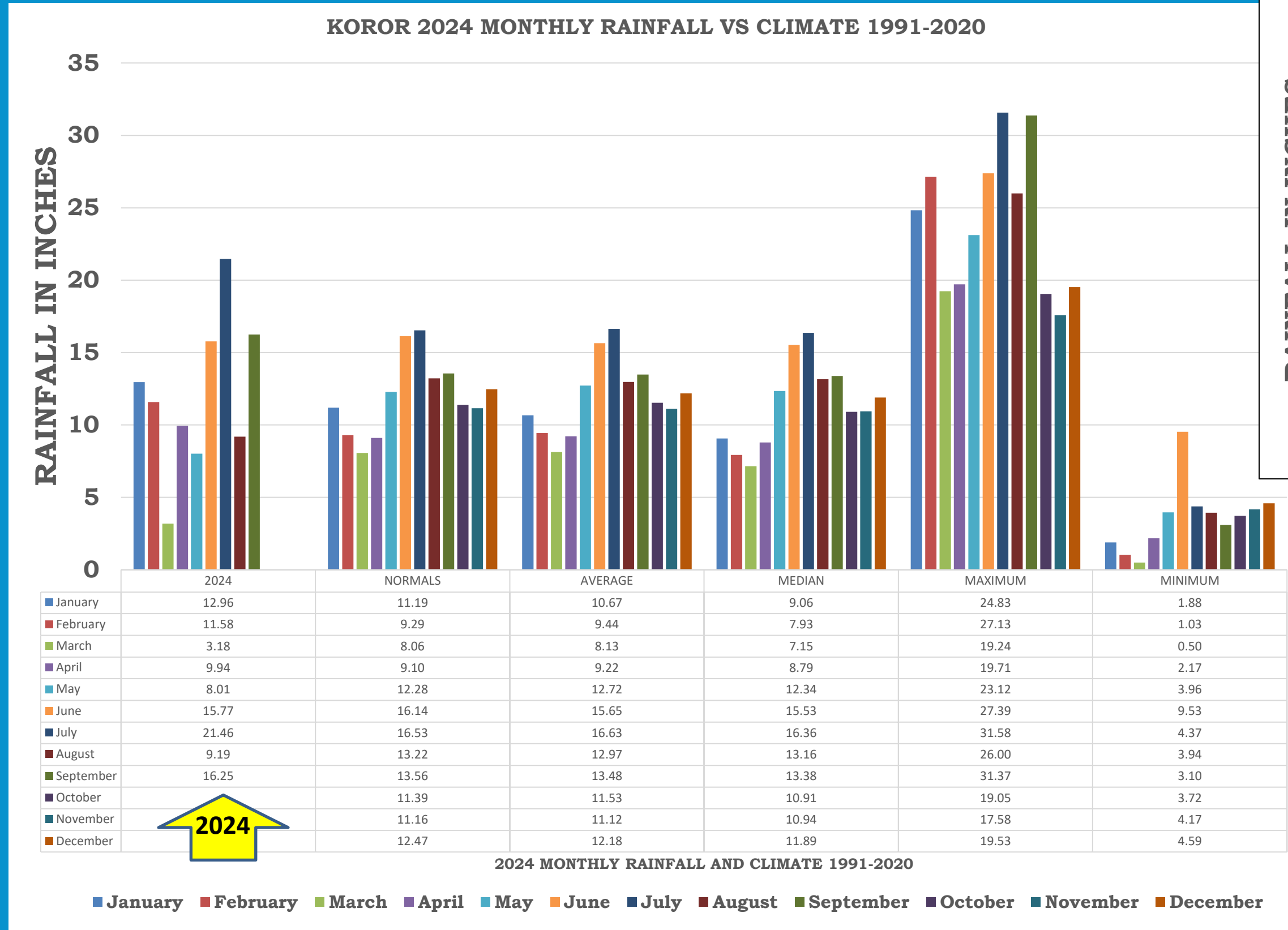
<b>APRIL</b> 9.94in(412.8mm) Above Median	<b>MAY</b> 8.01in.(203.5mm) Below Median	<b>JUNE</b> 15.77in.(400.6mm) Above Median	<b>JULY</b> 21.46in.(545.1mm) Above Median	<b>AUGUST</b> 9.19in.(233.4mm) Below Median	<b>SEPTEMBER</b> 16.25in.(412.8mm) Above Median
<b>EL NINO ROP WATER SHORTAGE WATCH STILL IN EFFECT (SINCE MAR 26, 2024)</b>	<b>EL NINO ROP SHORTAGE WATCH CANCELLATION (14<sup>TH</sup>)</b>	<b>FINAL EL NINO ADVISORY (NOAA CPC, JUNE 13<sup>TH</sup>) ENSO NEUTRAL LA NINA WATCH</b>	<b>ENSO NEUTRAL LA NINA WATCH</b>	<b>ENSO NEUTRAL LA NINA WATCH</b>	<b>ENSO NEUTRAL LA NINA WATCH</b>
<b>CONTINUATION OF A DRY TREND DUE TO EL NINO</b>	<b>WEAKER AND HOTTER TRADE WINDS</b>  <b>HIGHEST TEMPS IN THE 90s (AIRAI)</b>	<b>WEAK AND HOTTER TRADES</b>  <b>HIGHEST TEMPS IN THE 90s (AIRAI)</b>	<b>MOSTLY LIGHT TO MODERATE WESTERLIES</b>  <b>HIGHEST TEMPS IN THE 90s (AIRAI)</b>	<b>FAIR WEATHER, LIGHT AND VARIABLE TRADE WINDS</b>  <b>HIGHEST TEMPS IN THE 90s (AIRAI)</b>	<b>FAIR WEATHER, LIGHT AND VARIABLE TRADE WINDS</b>  <b>STRONG WEST TO SOUTHWEST WINDS AND GUSTS.</b>  <b>HIGHEST TEMPS IN THE 90s (AIRAI)</b>
<b>DECREASE IN RAINFALL FIRST HALF OF MONTH, ABOVE MEDIAN BY END OF THE MONTH</b>  <b>HAZE</b>	<b>DECREASE IN RAINFALL FIRST HALF OF MONTH</b>	<b>INCREASE IN RAINFALL</b>	<b>HIGHEST RAINFALL MONTH</b>  <b>LANDSLIDE BETWEEN AIMELIIK AND NGATPANG</b>	<b>DECLINE IN RAINFALL</b>	<b>SEVERAL DAYS OF SHOWERS, LOCALLY HEAVY RAINFALL, AND THUNDERSTORMS</b>  <b>DAMAGE TO POWERLINE AND HARDWARE NGERMID AND AIMELLIK</b>  <b>LAND SLIDE IN NGERMLENGUI</b>
<b>ACTIVE ITCZ TROUGHS CIRCULATIONS</b>	<b>ACTIVE ITCZ TROUGHS CIRCULATIONS CONVERGENT FLOW BEHIND TC 01W</b>	<b>ACTIVE ITCZ TROUGHS (SFC &amp; UA) INVESTS CIRCULATIONS UPPER LEVEL LOW</b>	<b>MONSOON TROUGHS (SFC &amp; UA) INVEST AREAS TC 05W</b>	<b>WEAK MONSOON MONSOON TROUGH SHIFTING NORTH LEADING TO RIDGING ACROSS PALAU</b>	<b>STRONG MONSOON SURGE MONSOON TROUGHS INVEST AREAS TC 14W and TC 15W</b>

**OCTOBER: CONTINUED RIDGING AND DRIER DAYS AS MONSOON TROUGH LOCATION IS FURTHER NORTH**

## Timeline of Climate Impacts and Influences

Source: Regional and Local Observations

# 2024 Rainfall vs Climate



**2024**

**JAN TO SEP 2024 OBSERVATIONS**

## Koror 2024 Monthly Rainfall versus Climatology 1991-2020

Source: Normals and Database for Koror (PTKR) from xmACIS2: <https://xmacis.rcc-acis.org/>



# HAZE, LANDSLIDES, AND DOWNED POWER LINES

Source: Individual and various agencies in Palau

- Variability in Monthly Rainfall
- Weak, Hot and Dry Trade Winds
- Haze
- Monsoon damaging Winds, Gusts and Heavy Rainfall.



Top image: Haze seen over Koror, view from Aimeliik on April 6, 2024. Credits: K. Mochimaru.  
Bottom image: Landslide between Aimeliik and Ngatpang covering the compact road July 17, 2024. Credits: Island Times



Fallen tree damaging power lines and hardware in Ngermid and Aimeliik on Sep. 11, 2024. Credits: PPUC  
Significant landslide at Ngarmeskang, Ngeremlengui on Sep. 12, 2024. Credits: Ngeremlengui State

# Republic of Palau Summary

## Climate Drivers

- 2023-2024 ENSO: El Nino to ENSO Neutral
- April to June, Active ITCZ: Trade wind troughs, Near Equatorial Troughs with embedded circulations/Invest Areas/Tropical Cyclones. Generally weak trade winds across Palau.
- May to October: weaker trade winds and high temperatures in the 90s
- June and July: Added influence of the Tropical Upper Tropospheric Trough (TUTT) and Upper Level Low
- July to August: Weak to Strong influence from the Monsoon
- August to October: More Ridging due to Monsoon Trough location further north of Palau.

## Climate Impacts

- Haze in April
- ROP Water Shortage Watch still in effect since March 26, 2024 and canceled on May 14, 2024.
- Variability in Rainfall Trend from April to October. April and May was similar to previous months where there was lack of rainfall for the first half of the month and a few days of significant rainfall increased monthly totals to Above or just Below the Median. July had the Highest Rainfall Total of 21.46in.(545.1mm). May was the Lowest Rainfall Total at 8.01in.(203.5mm).
- Monsoon winds, gusts and heavy rainfall damaged power lines and caused landslides.

# CHUUK CLIMATE IMPACTS

Boyd Mackenzie  
Staff Meteorologist  
Chuuk National Weather Service Office



**NIWA**  
Taihoro Nukurangi

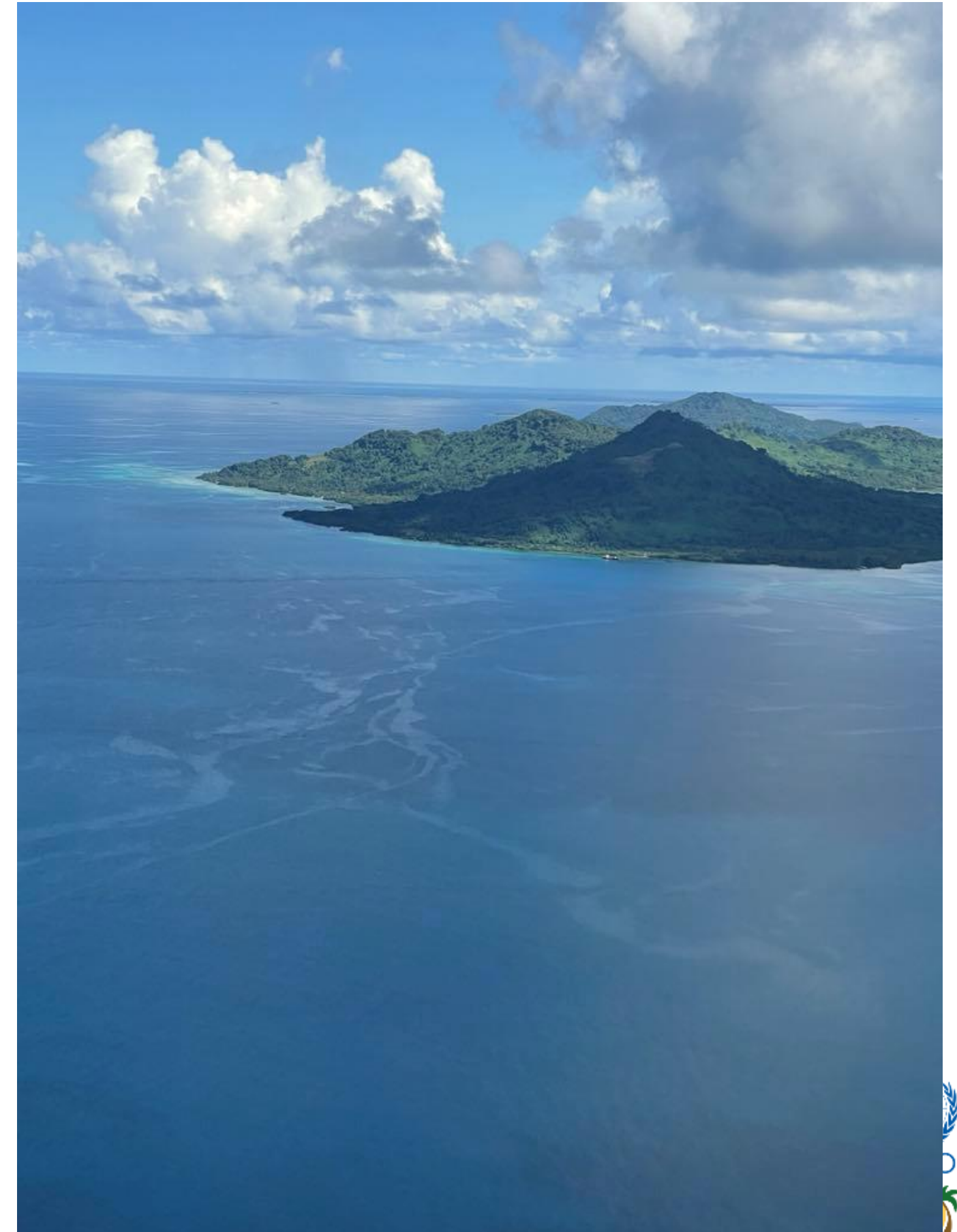




# Chuuk Island

Source: ???

- During April, rainfall returned, and conditions were near-normal throughout the AMJ season. Over the past five months, there has been above 8 inches of rainfall each month, sufficient to meet most water needs.
- Experienced some windier conditions with passing tropical systems.
- Vegetation has significantly recovered.



# Chuuk Summary

- No Significant impacts to report
- Rainfall returned to near normal conditions during the AMJ season
- Vegetation recovered significantly
- Some windy conditions experienced with passing tropical systems

# KIRIBATI CLIMATE IMPACTS

Miriam Kataunati  
Oceanographer  
Kiribati Meteorological Service



**NIWA**  
Taihoro Nukurangi





**During the ENSO Neutral phase, the extreme spring tide occurred causing coastal erosion at some areas in Betio, Tarawa.**

Source: Tenanorai Tonana, 18<sup>th</sup> September 2024



**The ENSO Neutral phase cause insufficient fresh water supplies which coincides with the dry season months in Kiribati.**

Source: Tenanoraoi Tonana, 10<sup>th</sup> October 2024

# Bush-fire



**The impacts of the ENSO Neutral phase in Kiribati caused the fire to spread out into the bush.**

Source: Social Media, FB 15/09/2024

# Kiribati Summary

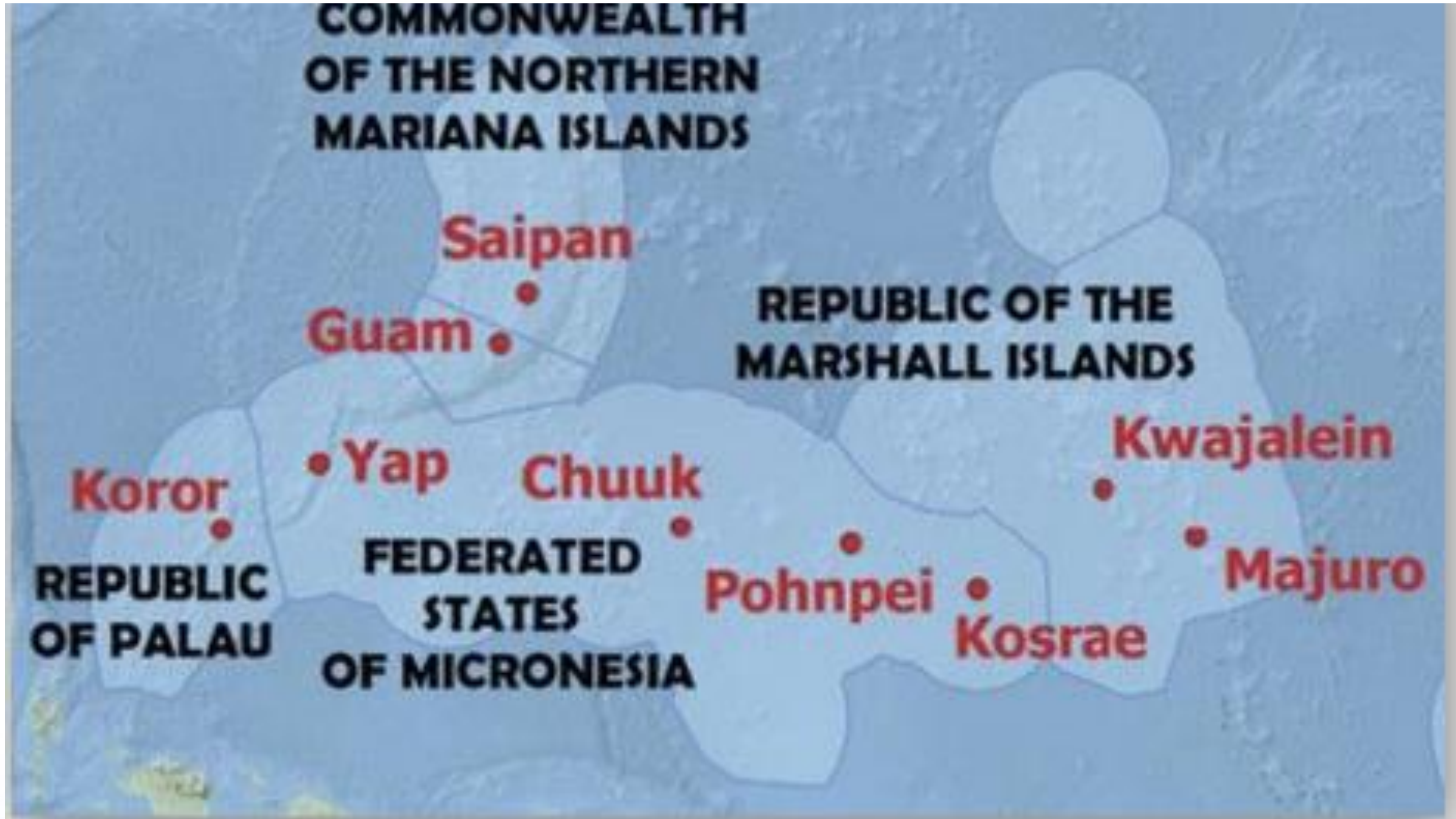
- For the past six-months, El Nino to ENSO Neutral phase associated with Dry Season affects people's livelihood.
- Even though, La Nina has not yet established, the impacts have been experienced recently including insufficient fresh water supplies and bush-fire in Kiritimati island (Line group).

# RMI CLIMATE IMPACT FOR THE PAST SIX MONTHS

Samson Kaneko  
Climate Service Focal Point  
National Weather Service Office, Majuro RMI







# Emerging from El Nino

- El Nino weaken gradually.
- Most of the central and southern atolls, including the capital Majuro, recovered swiftly.
- Majuro started to get sufficient and beneficial rainfall in the 2<sup>nd</sup> week of April.

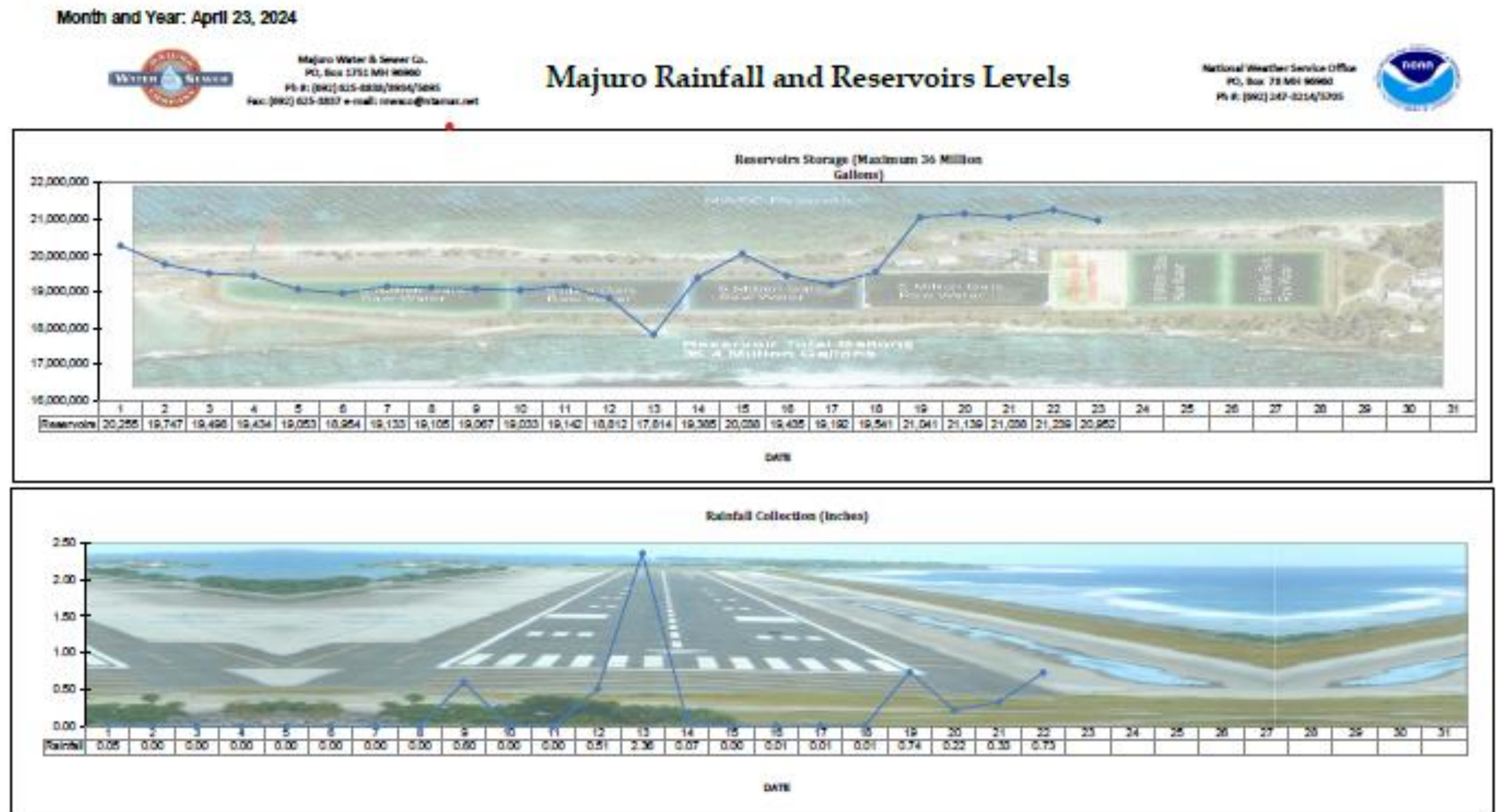


Figure:1 Reservoir Level

A sudden increase in the reservoir level

# Drought persist in the northern RMI

- Recovery delayed for the northern atolls as dry condition continue. It took Kwajalein up to mid May, and late June for the neighboring atolls in the north to recovered from the El Nino.

## Affected Atolls

- D0 (Abnormally Dry)- Kwajalein
- D1 (Moderate Drought)- Wotje and atolls in the northern RMI.

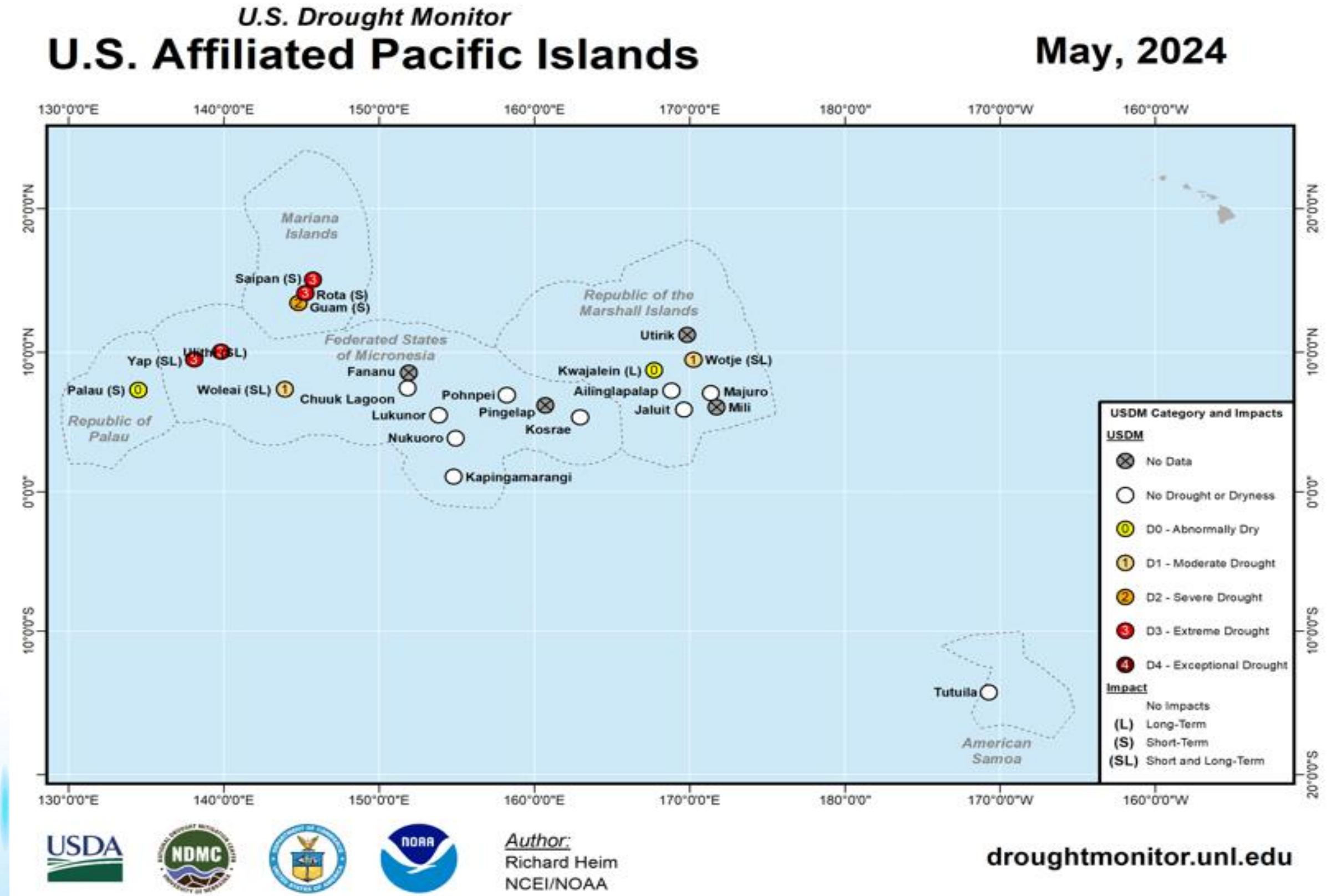


Figure:2 US Drought Monitor

# Relief Efforts by the GRMI/NDMO

- As the dry condition persist in the northern RMI, the government along with the National Disaster Management Office continue to provide relief supports for the affected atolls.
- Reverse Osmosis units deployed to affected atolls.
- Water quality testing kits also sent out to the affected atolls.



Figure:3 RO Unit Installment Enewetak Atoll



Figure:4 Water Testing Enewetak



Figure:5 Utirik Atoll



Figure:5 Utirik Atoll Airstrip

# Republic of the Marshall Islands Summary

The southern RMI recovered quickly, while the Northern RMI continues to experienced dry conditions as the El Nino was subsiding. The impacted atolls survived the event due to the extensive relief activities undertaken by the National Disaster Management Office and the RMI Government. Since the rainfall pattern returned to normal, the entire RMI is drought Free.



# NAURU CLIMATE IMPACTS FOR THE PAST 6 MONTHS

**Ricky Joram**

Senior Forecaster Nauru Meteorology & Hydrology Services  
National Emergency Services



2024 Nauru Met & Hydro Service / Monthly Report

Threshold	Heavy Rain	Strong wind	Climate outlook	Sea Swell	Extreme Wave Hieght	Tsunami	Rainfall	Temperature
January	25-50mm 14/01/24 15//01/24	NIL	Above Normal (JFM) El nino, stage	3 Meter 20th-23rd Jan-24	3 Meter 20th-23rd /01/2024	NIL	240mm	High - 32.8° Low - 24°
February	NIL	NIL	Above Normal (FMA) El nino, alert	NIL	NIL	NIL	355.8mm	High - 32.7° Low -23.7°
March	NIL	GUST 25KT 3/10/2024	Above Nomal (MAM) El-nino watch	2.5-3.5m 3/10/2024	2.5-3.5m 3/10/2024	NIL	318.8mm	High - 31.6° Low - 25.2°
April	NIL	GUST 22KT NA	Normal Normal (AMJ) Neutral Phase	NIL	NIL	NIL	94mm	High - 32.0° Low - 24.0°
May	NIL	NIL	Normal Normal (MJJ) La- nina watch	NIL	NIL	NIL	121.7mm	High - 33.1° Low - 25.4°
June	NIL	NIL	Below Normal (JJA) La- nina watch	NIL	NIL	NIL	6.9mm	High - 33.3° Low -25.3°
July	NIL	NIL	Below Normal (JAS) La- nina watch	NIL	NIL	NIL	168.2mm	High - 33° Low - 24.2°
August	71mm/ 2nd 55.5mm/12th	NIL	Below Normal (ASO) La- nina Watch	NIL	NIL	NIL	148.8mm	High - 32.5° Low - 25.5°
September	NIL	25-27KT GUST 30-3/8-9/2024	Below Normal (SON) La- nina Watch	NIL	NIL	NIL	68mm	High - 32.5° Low - 25.1°
October			Below Normal (OND) La- nina Watch					

# NMHS Monthly Report Sheet

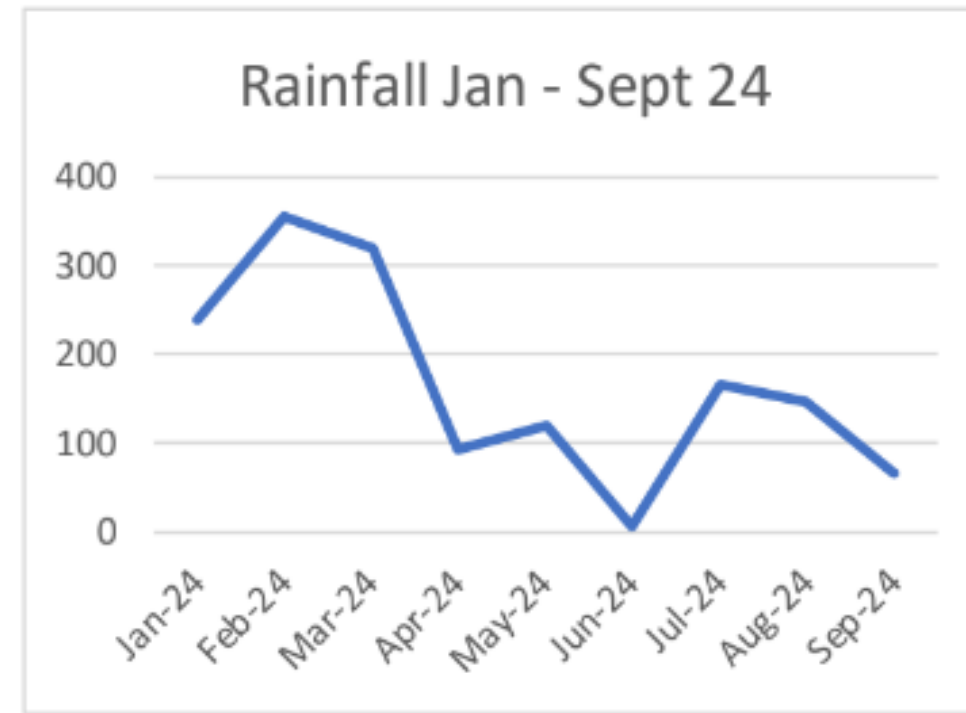
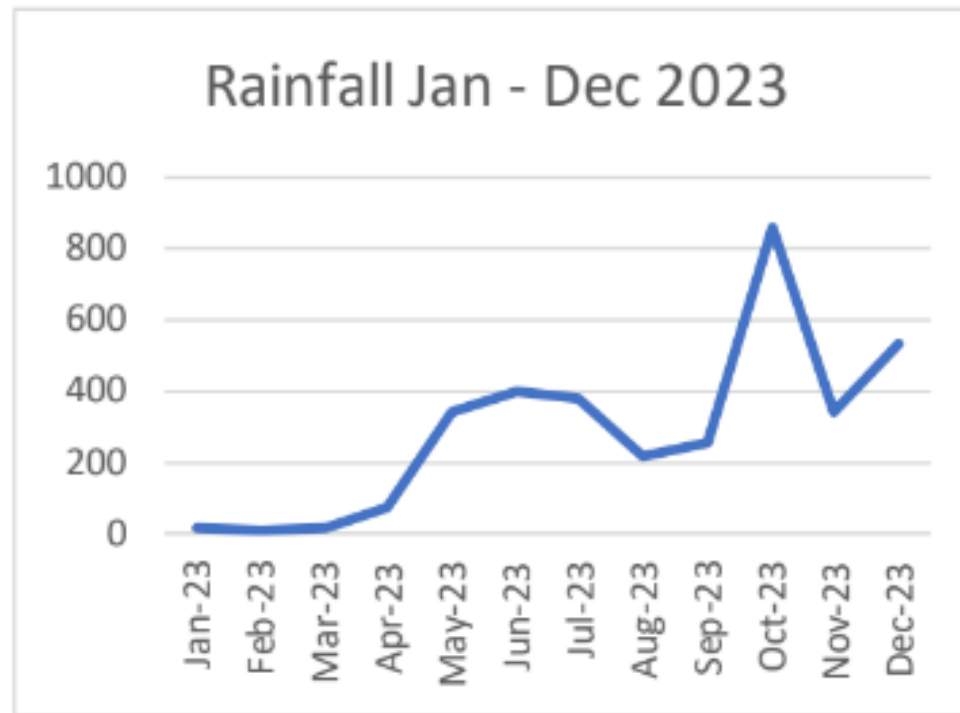


# 2024 Rainfall Graphs



## National Meteorology & Hydrology Services Graph Report

### Rainfall 2023 vs 2024





# Nauru Summary

## Climate Drivers & impacts

- ENSO 2023 – 2024: El-Nino – Neutral (La-Nina Watch)
- Atmospheric and oceanic indicators are currently within ENSO-neutral thresholds.
- The chance of La-Nina developing in the coming seasons has increased.
- NUC reports increasing water demands
- Dry air in the atmosphere
- Awareness & Preparedness (NDMO)
- Nauru experiencing below normal rainfall.

# POHNPEI RAINFALL IMPACTS

**Wallace Jacob**

WSS/Climate focal point

Pohnpei National Weather Service Office



# Rainfall impacts during the 6 months



Kepiroi Waterfall around April May June

- April to July, Pohnpei's rainfall was fairly above normal
- During the transition from El Nino to ENSO Neutral, in August rainfall was recorded as the 3<sup>rd</sup> driest on record.
- Rainfall was near normal in September, with rain gradually coming back. Pohnpei received a fair amount of rain from the tropical system that formed near Chuuk.



Kepiroi Waterfall in August

# Pohnpei Summary

For the past 6 months, Pohnpei's rainfall was above normal. However, Pohnpei and the outer islands of Nukuoro and Kapingamarangi received below-normal rainfall in August. Pohnpei (a 74-year record) and Kapinga (a 34-year record) recorded their third driest while Nukuoro (a 41-year record) recorded their fifth driest. Rainfall will gradually go back to normal for Pohnpei once we transition into the neutral phase. At the same time, the southern outer island will be a concern since they experience dry conditions during a La Nina.

# Micronesia Summary

Climate impacts over the past 6 months affected water and agricultural sectors in addition to air quality and coastal erosion.



# THANK YOU!

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