# Republic of Korea-Pacific Islands
# Climate Prediction Services Project
## Summary: May to July 2023 (MJJ)

## Climate Outlook for May ~ October 2023

- The APCC ENSO Alert suggests "El Niño WATCH". In March 2023, slightly negative sea surface temperature anomalies were observed over the central equatorial Pacific, whereas above normal ones spanned the eastern equatorial Pacific. The Niño3.4 index is expected to increase from 0.5°C to 1.6°C for May – October 2023. The probability for El Niño conditions is expected to be above 90% for the same period.
- Strongly enhanced probability for above normal temperatures is predicted for the whole Pacific Islands for May – July 2023, which is expected to decrease for Micronesia, southern Melanesia, and southern Polynesia for August – October 2023.
- For the same period, a strongly enhanced probability for above normal precipitation is predicted along the equator. Enhanced probability for above normal precipitation is expected for Micronesia. Strongly enhanced probability for below normal precipitation is expected for off-equatorial Polynesia for May – July 2023, which decreases for August – October 2023.
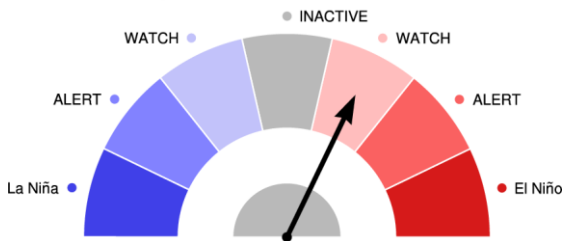- Please see https://apcc21.org/ser/outlook.do?lang=en for more information.

## ENSO

### CURRENT STATUS

**ENSO Alert System**

Issued: 17 Apr 2023

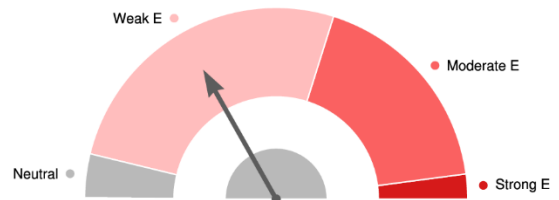2023 MJJASO

- INACTIVE
- WATCH
- WATCH
- ALERT
- ALERT
- La Niña
- El Niño

El Niño WATCH

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### ENSO FORECAST

**Probabilistic ENSO Forecast for MJJ 2023**

Issued: 17 Apr 2023

- Weak E
- Moderate E
- Neutral
- Strong E

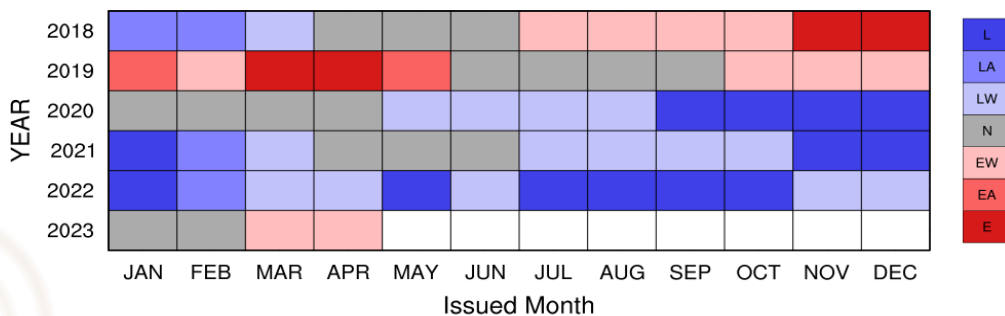Weak El Niño (52.1%)

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* ENSO Intensity based on 3M Mean Nino3.4 SST Anomaly (Category Boundaries: +/-1.5, 1.0, 0.5°C)
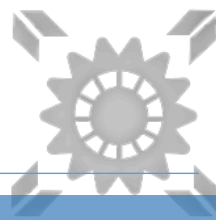
### ENSO ALERT HISTORY

**APCC ENSO Alert History**



E: El Niño    EA: El Niño Alert    EW: El Niño Watch    N: Neutral    L: La Niña    LA: La Niña Alert    LW: La Niña Watch

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*A resilient Pacific environment, sustaining our livelihoods and natural heritage in harmony with our cultures.*

# Republic of Korea-Pacific Islands Climate Prediction Services Project
## PICASO & CLIK℗ Summary

## RAINFALL OUTLOOK

| Model | PICASO | CLIK℗ (APCC MME) |
|---|---|---|
| Status | COUNTRY (Area) | |
| **Above Normal** | **Cook Islands** (Rarotonga)<br>**Fiji** (Udu Point)<br>**FSM** (Chuuk, Pohnpei, Yap)<br>**Kiribati** (Butaritari, Tarawa, Kiritimati, Kanton)<br>**Republic of Marshall Islands** (Majuro)<br>**Nauru**<br>**Palau** (*Koror)<br>**PNG** (Momote)<br>**Solomon Islands** (Munda, Henderson)<br>**Tonga** (Lupepau'u, Niuafo'ou, Keppel Mata'aho)<br>**Tuvalu** (Niulakita)<br>**Vanuatu** (Port Vila, Lamap, *Sola) | **FSM** (*Chuuk, Pohnpei, Yap)<br>**Kiribati** (Butaritari, Kanton, Tarawa, Kiritimati)<br>**Nauru**<br>**Palau** (*Koror)<br>**Republic of Marshall Islands** (Majuro, Kwajalein)<br>**PNG** (Port Moresby, Madang, Nadzab, Misima)<br>**Solomon Islands** (Honiara, Henderson)<br>**Vanuatu** (*Port Vila, *Aneityum, *Bauerfield, *Lamap, *Pekoa, *Sola, *Whitegrass) |
| **Normal** | **Fiji** (Nadi, Suva, Nabouwalu, Rotuma, *Ono-i-lau,)<br>**Republic of Marshall Islands** (Kwajalein)<br>**Niue** (*Hanan)<br>**PNG** (Port Moresby)<br>**Samoa** (Afiamalu)<br>**Solomon Islands** (*Taro Island, *Honiara)<br>**Tonga** (*Ha'apai, *Nukualofa)<br>**Tuvalu** (Nanumea, *Funafuti, *Nui)<br>**Vanuatu** (Bauerfield,) | **Fiji** (Suva, Nabouwalu, Nadi, Udu Point, Onoilau)<br>**Niue**<br>**PNG** (*Momote, *Kavieng)<br>**Solomon Islands** (Munda, Taro Island, Auki)<br>**Tonga** (Lupepau'u, *Nukualofa, *Ha'apai, *Niuafo'ou, *Keppel Mata'aho) |
| **Below Normal** | **Cook Islands** (Penrhyn)<br>**PNG** (Misima, Madang, *Nadzab, *Kavieng)<br>**Samoa** (Faleolo, Apia, Lauli'i)<br>**Solomon Islands** (Santa Cruz, Kirakira, Auki)<br>**Vanuatu** (Pekoa, Whitegrass, Aneityum) | **Cook Islands** (Penrhyn, *Rarotonga)<br>**Fiji** (Rotuma)<br>**Samoa** (Apia, Afiamalu, Faleolo, Lauli'i)<br>**Solomon Islands** (Santa Cruz, Kirakira)<br>**Tuvalu** (Funafuti, Nuilakita, Nui, *Nanumea)<br>**Tokelau** |

*Note:* * *indicate stations that have an* <u>*equal or similar probability*</u> *of getting Above Normal, Normal, and Below Normal (Climatology)*

## TEMPERATURE OUTLOOK : CLIK℗ toolkit

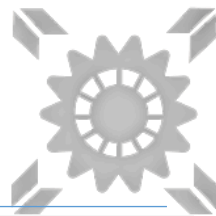| Status | COUNTRY (Area) |
|---|---|
| **Above Normal** | **Cook Is, FSM, Fiji, Kiribati , Republic of Marshall Is, Nauru, Niue, Palau, PNG, Samoa, Solomon Islands, Tonga, Tuvalu, Tokelau, Vanuatu** |
| Normal | |
| Below Normal | |

# Republic of Korea-Pacific Islands
# Climate Prediction Services Project
# PICASO Regional Rainfall Forecast (MJJ)
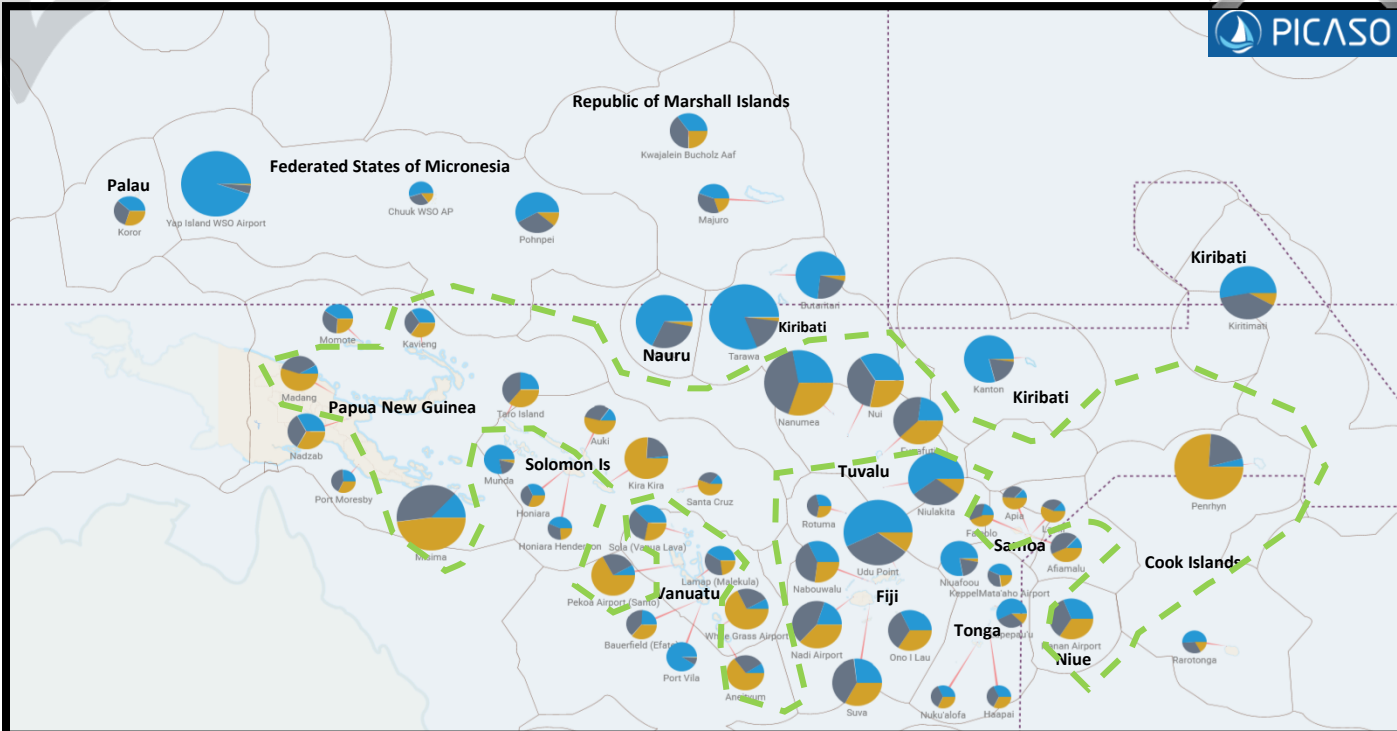


**Figure 1:** Regional outlook map of the Pacific. In general, all stations enclose within the green-dash line anticipated to have Below Normal (BN) rainfall. Normal (N) to Above Normal (AN) rainfall is predicted for stations outside the green-dashed line. *(Note: the larger the pie chart the higher the forecast skills.)*

## OUTLOOK TABLE BY COUNTRY

| Station | Tercile Probability | | | Verification Score (LEPS) | | Verification Score (HSS) | Hit/NearMiss/Miss | | |
|---|---|---|---|---|---|---|---|---|---|
| | KEY | BN | N | AN | | | | | |
| **Cook Islands** | | | | | | | | | |
| Penrhyn | 76% | | 20% | 44 | Excellent | 29.4 | 9 | 8 | 0 |
| Rarotonga | 17% | 32% | 51% | -11 | Very Low | -5.9 | 5 | 6 | 6 |
| **Fiji** | | | | | | | | | |
| Rotuma | 28% | 43% | 29% | -3.3 | Very Low | 2.9 | 6 | 5 | 6 |
| Udu Point | 10 | 33% | 57% | 45.8 | Excellent | 25 | 7 | 7 | 0 |
| Nabouwalu | 27% | 41% | 32% | 12.1 | Good | -9.1 | 3 | 6 | 2 |
| Nadi Airport | 37% | 43% | 20% | 22.5 | High | 51.5 | 11 | 5 | 1 |
| Suva | 33% | 40% | 27% | 22 | High | 29.4 | 9 | 7 | 1 |
| Ono I Lau | 34% | 34% | 32% | 13.1 | Good | 62.5 | 12 | 0 | 4 |
| **Kiribati** | | | | | | | | | |
| Kiritimati | 8% | 39% | 53% | 29 | Very High | 64.7 | 13 | 3 | 1 |
| Butaritari | 23% | 73% | | 17.5 | High | 25 | 8 | 7 | 1 |
| Tarawa | 17% | 81% | | 35.7 | Excellent | 47.1 | 11 | 6 | 0 |
| Kanton | 19% | 79% | | 24.8 | High | 46.4 | 9 | 5 | 0 |
| **Marshall Islands** | | | | | | | | | |
| Kwajalein Bucholz Aaf | 25% | 40% | 35% | 6.5 | Moderate | 11.8 | 7 | 7 | 3 |
| Majuro | 20% | 36% | 44% | 0.8 | Low | -14.7 | 4 | 9 | 4 |

| Station | Tercile Probability | | | Verification Score (LEPS) | | Verification Score (HSS) | Hit/NearMiss/Miss | | |
|---|---|---|---|---|---|---|---|---|---|
| | KEY | BN | N | AN | | | | | |
| **Micronesia** | | | | | | | | | |
| Chuuk WSO AP | 15% | 30% | 55% | -0.4 | Very Low | 42.6 | 10 | 2 | 5 |
| Pohnpei | 11% | 31% | 58% | 14.4 | Good | 51.5 | 11 | 3 | 3 |
| Yap Island WSO Airport | - | 95% | | 67.6 | Excellent | 100 | 17 | 0 | 0 |
| **Nauru** | | | | | | | | | |
| Nauru | 29% | 68% | | 30.6 | Very High | 16.7 | 4 | 5 | 0 |
| **Niue** | | | | | | | | | |
| Hanan Airport | 34% | 35% | 31% | 11.4 | Good | 38.2 | 10 | 5 | 2 |
| **Palau** | | | | | | | | | |
| Koror | 30% | 32% | 38% | 2.4 | Low | -5.9 | 5 | 7 | 5 |
| **Papua New Guinea** | | | | | | | | | |
| Madang | 55% | 37% | 8% | 5.3 | Moderate | 0 | 5 | 7 | 3 |
| Port Moresby | 32% | 42% | 26% | -3.6 | Very Low | 2.9 | 6 | 7 | 4 |
| Momote | 26% | 33% | 41% | 2.5 | Low | 29.4 | 7 | 7 | 3 |
| Nadzab | 33% | 34% | 33% | 6.9 | Moderate | 29.4 | 9 | 4 | 4 |
| Kavieng | 35% | 31% | 34% | 0.5 | Low | 16.2 | 5 | 6 | 6 |
| Misima | 48% | 39% | 13% | 38.2 | Excellent | 43.8 | 10 | 6 | 0 |
| **Samoa** | | | | | | | | | |
| Afiamalu | 43% | 44% | 13% | -4.9 | Low | 42.6 | 10 | 4 | 3 |
| Laulii | 57% | 30% | 13% | -9 | Very Low | 2.9 | 6 | 6 | 5 |
| Faleolo | 44% | 35% | 21% | -2.9 | Very Low | -5.9 | 5 | 7 | 5 |
| Apia | 51% | 36% | 13% | -3.7 | Very Low | 2.9 | 6 | 9 | 2 |
| **Solomon Islands** | | | | | | | | | |
| Taro Island | 36% | 39% | 25% | 7.2 | Moderate | 29.4 | 9 | 7 | 1 |
| Munda | 18% | 78% | | 1.6 | Low | 20.6 | 8 | 5 | 4 |
| Auki | 54% | 31% | 15% | 0.6 | Low | -5.9 | 5 | 7 | 5 |
| Honiara | 31% | 37% | 32% | -7.7 | Very Low | 2.9 | 3 | 10 | 4 |
| Honiara Henderson | 24% | 33% | 43% | -1.7 | Very Low | -5.9 | 5 | 6 | 6 |
| Kira Kira | 76% | 22% | | 12.5 | Good | 33.8 | 8 | 8 | 1 |
| Santa Cruz | 56% | 30% | 14% | -1.9 | Very Low | 11.8 | 7 | 6 | 4 |
| **Tonga** | | | | | | | | | |
| Niuafoou | 19% | 78% | | 9.9 | Moderate | 33.8 | 8 | 6 | 3 |
| KeppelMata'aho Airport | 23% | 34% | 43% | -0.4 | Very Low | 11.8 | 5 | 5 | 7 |
| Lupepau'u | 12% | 31% | 57% | 4.5 | Low | 11.8 | 7 | 4 | 6 |
| Haapai | 32% | 35% | 32% | -3.9 | Very Low | -5.9 | 5 | 7 | 5 |
| Nuku'alofa | 32% | 36% | 32% | -1.2 | Very Low | 20.6 | 7 | 7 | 3 |
| **Tuvalu** | | | | | | | | | |
| Nanumea | 30% | 42% | 28% | 36 | Excellent | 69.1 | 12 | 5 | 0 |
| Nui | 28% | 38% | 34% | 32.4 | Very High | 29.4 | 9 | 8 | 0 |
| Funafuti | 38% | 39% | 23% | 21.9 | High | 20.6 | 8 | 8 | 1 |
| Niulakita | 10% | 30% | 60% | 26.1 | Very High | 33.8 | 8 | 8 | 1 |
| **Vanuatu** | | | | | | | | | |
| Sola (Vanua Lava) | 28% | 35% | 37% | 9.5 | Moderate | 7.7 | 5 | 6 | 2 |
| Pekoa Airport (Santo) | 67% | 25% | 8% | 13.3 | Good | 43.8 | 10 | 4 | 2 |
| Lamap (Malekula) | 23% | 36% | 41% | 2.6 | Low | 10 | 6 | 6 | 3 |
| Bauerfield (Efate) | 36% | 40% | 24% | 3.4 | Low | -14.7 | 4 | 10 | 3 |
| Port Vila | 8% | 91% | | 1.9 | Low | 6.3 | 6 | 6 | 4 |
| White Grass Airport | 68% | 24% | 8% | 10.5 | Good | 57.8 | 10 | 4 | 2 |
| Aneityum | 65% | 26% | 9% | 5.1 | Moderate | 11.8 | 7 | 9 | 1 |

# Republic of Korea-Pacific Islands
# Climate Prediction Services Project
## CLIK℗ Rainfall Forecast (MJJ)
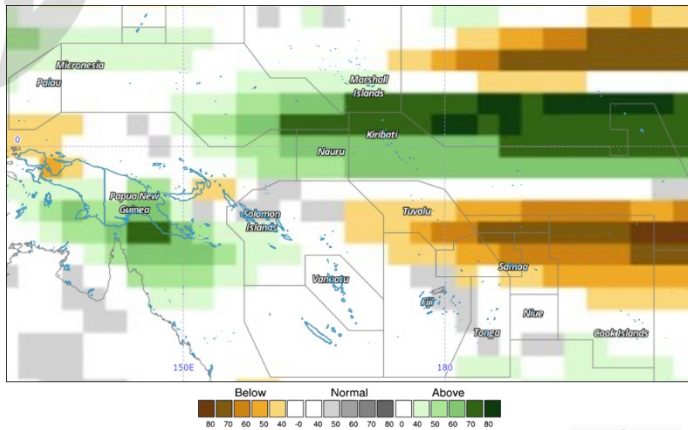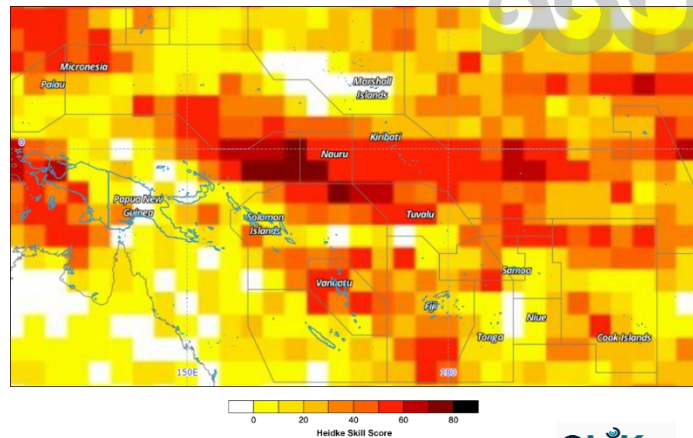


Year: 2023, Season: MJJ, Lead Month: 3, Method: GAUS
Model: APCC, BOM, CMCC, CWB, MSC, NASA, NCEP, PNU
Generated using CLIK® (2023-4-27)

*Figure 1: MME Rainfall Forecast for the Pacific Islands – MJJ 2023 period*



Year: 2023, Season: MJJ, Lead Month: 3, Method: GAUS
Model: APCC, BOM, CMCC, CWB, MSC, NASA, NCEP, PNU
Generated using CLIK® (2023-4-27)

*Figure 2: Rainfall Forecast Skill for the Pacific Islands – MJJ 2023 period*

| Country | Rainfall Outlook | Skill |
|---|---|---|
| Cook Islands | Below Normal - Penrhyn<br>Little guidance - Rarotonga | Low - High |
| FSM | Above Normal - Yap, Pohnpei<br>Little guidance –Chuuk | Very Low - Moderate |
| Fiji | Normal<br>Below Normal - Rotuma | Very Low - Low |
| Kiribati | Above Normal – Tarawa, Butaritari, Kanton, Kiritimati | Low - High |
| Marshall Islands | Above Normal | Very Low |
| Nauru | Above Normal | High |
| Niue | Normal | Very Low |
| Palau | Little guidance | Low |
| PNG | Little guidance – Momote, Kavieng<br>Above Normal – Port Moresby, Madang, Nadzab, Misima | Very Low – Low |
| Samoa | Below Normal | Low |
| Solomon Islands | Above Normal – Honiara, Henderson<br>Normal – Auki, Munda, Taro Island<br>Little guidance – Santa Cruz, Kirakira | Very Low - Low |
| Tonga | Normal - Lupepauu<br>Little guidance – Nukualofa, Niuafoou, Keppel Mataaho, Haapai | Very Low - Low |
| Tokelau | Below Normal | High |
| Tuvalu | Below Normal – Funafuti, Nuilakita, Nui<br>Little guidance - Nanumea | Very Low - High |
| Vanuatu | Little guidance | Very Low – High |

**Table 1:** *Rainfall Outlook and Skill for the Pacific Islands.*
**Note:** *Variation in the skill is due to model agreement and data availability at each location.*

Year: 2023, Season: MJJ, Lead Month: 3, Method: GAUS
Model: APCC, BOM, CMCC, CWB, MSC, NASA, NCEP, PNU
Generated using CLIK℗ (2023-4-27)

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Year: 2023, Season: MJJ, Lead Month: 3, Method: GAUS
Model: APCC, BOM, CMCC, CWB, MSC, NASA, NCEP, PNU
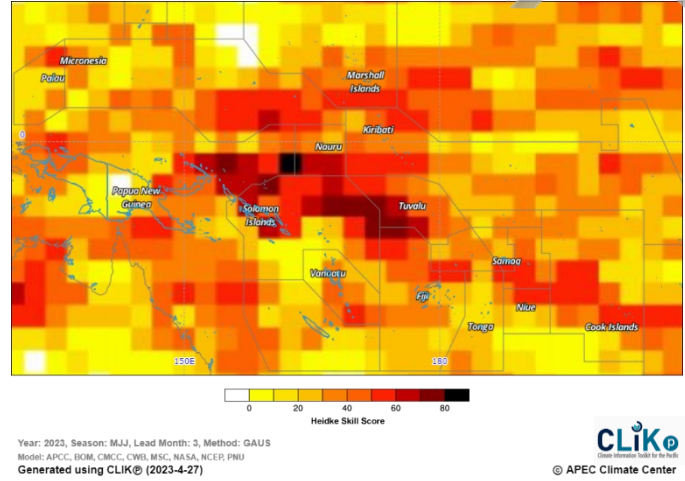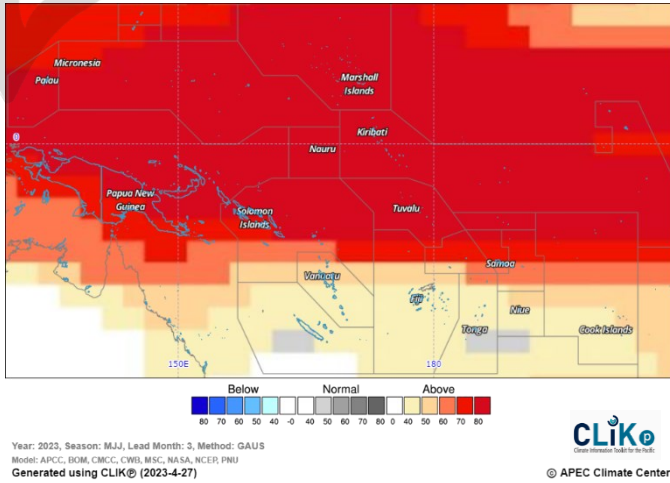Generated using CLIK℗ (2023-4-27)

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**Figure 3:** *MME Temperature Forecast for the Pacific Islands – MJJ 2023 period*

**Figure 4:** *Air Temperature Forecast Skill for the Pacific Islands – MJJ 2023 period*

| Country | Air Temperature Outlook | Skill |
|---|---|---|
| Cook Islands | Above Normal | Low - High |
| FSM | Above Normal | Low - Moderate |
| Fiji | Above Normal | Low - Moderate |
| Kiribati | Above Normal | Low - Moderate |
| Marshall Islands | Above Normal | Moderate |
| Nauru | Above Normal | Low |
| Niue | Above Normal | Low |
| Palau | Above Normal | Low |
| PNG | Above Normal | Low – High |
| Samoa | Above Normal | High |
| Solomon Islands | Above Normal | Low - High |
| Tonga | Above Normal | Low |
| Tokelau | Above Normal | Moderate |
| Tuvalu | Above Normal | Moderate |
| Vanuatu | Above Normal | Very Low – High |

**Table 2:** *Temperature Outlook and Skill for the Pacific Islands.*

# Republic of Korea-Pacific Islands
# Climate Prediction Services Project

**Important:**
This publication is developed from information in PICASO and CLIK®, products of the Republic of Korea-Pacific Islands Climate Prediction Services Project (ROK-PI CliPS).

This resource is compiled to provide dynamical model data to support and complement information generated by Pacific Islands NMHS.

Contact your location Meteorology Service for site specific forecasts.

**PICASO**
PICASO (Pacific Island Countries Advanced Seasonal Outlook) is a PC-based seasonal prediction tool tailored for the Pacific Island countries jointly developed by APCC and SPREP through the ROK-PI CliPS project.

PICASO produces probabilistic forecasts of the seasonal mean rainfall of the given weather stations by customizing the data from the APCC dynamical seasonal prediction multi-model ensemble.

**CLIK®**
The rainfall and temperature forecasts are derived from a multi-model ensemble (MME) of all available Dynamical Models that are provided by WMO Global Producing Centers (GPCs) available on the Climate Services Toolkit for the Pacific (CLIK Pacific or CLIK®).

CLIK® is a product of the Republic of Korea-Pacific Islands Climate Prediction Services Project (ROK-PI CliPS).

Visit the CLIK® Online Climate Prediction System: clikp.sprep.org

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**POSTECH**

*A resilient Pacific environment, sustaining our livelihoods and natural heritage in harmony with our cultures.*