

# Pacific Islands - Ocean and Climate Outlook Forum (OCOF) No. 202

Country: Tonga

Part 1: Recent climate

**TABLE 1: Monthly Rainfall**

Station (include data period)	Apr-2024	May-2024	Jun-2024				Rank
			Total (mm)	33%tile	67%tile	Median	
	Total (mm)	Total (mm)	Rainfall (mm)				
<i>Northern Division</i>							
Niuafu'ou (1971-2024)	192.0	67.5	25.0	72.3	152.6	111.9	3/52
Niuatoputapu (1947-2024)	178.5	163.0	157.5	62.7	163.0	89.6	52/78
<i>Central Division</i>							
Vava'u (1947-2024)	100.4	162.2	107.8	57.3	134.0	90.0	46/78
Ha'apai (1947-2024)	40.6	135.5	110.1	46.7	109.3	74.5	55/78
<i>Southern Division</i>							
Fua'amotu (1979-2024)	22.3	384.8	46.3	70.4	135.2	99.2	8/45
Nuku'alofa (1944-2024)	134.5	297.5	37.5	58.0	113.7	84.0	18/80

**TABLE 2: Three-month Total Rainfall for April to June 2024**

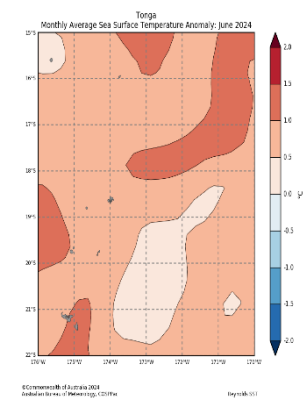
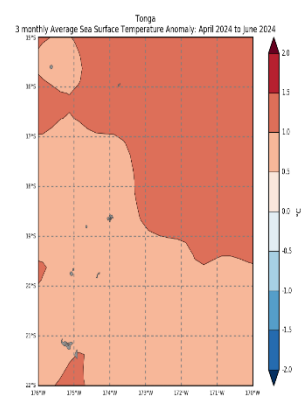
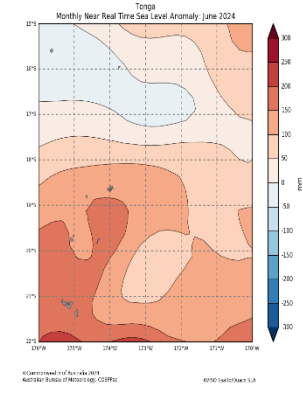
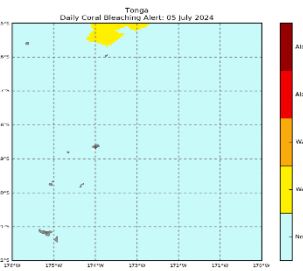
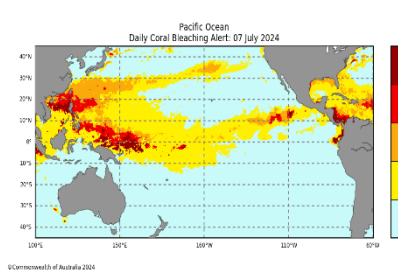
Station	Three-month Total	33%tile	67%tile	Median	Rank	
	Rainfall (mm)					
<i>Northern Division</i>						
Niuafu'ou (1971-2024)	284.5	Below normal	490.7	650.0	581.2	5/51
Niuatoputapu (1947-2024)	499.0	Normal	425.0	605.0	533.0	32/71
<i>Central Division</i>						
Vava'u (1947-2024)	370.4	Below normal	412.7	587.7	493.5	21/78
Ha'apai (1947-2024)	286.2	Below normal	295.0	437.0	356.0	24/77
<i>Southern Division</i>						
Fua'amotu (1979-2024)	453.4	Normal	333.7	511.2	454.9	23/45
Nuku'alofa (1944-2024)	469.5	Above normal	293.0	438.0	363.0	57/79

# Part 1i. Monthly and Seasonal Outlooks for August and August to October 2024

<b>Monthly: August</b> <b>Rainfall (Image 1)</b>	<b>Seasonal: August to October</b> <b>Rainfall (Image 2)</b>
<p style="text-align: center;"><b>Tercile rainfall probabilities for August 2024</b></p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p style="text-align: center;">© Commonwealth of Australia 2024. Bureau of Meteorology, supported by COSPPac. --- EEZ border V11 (Flanders Marine Institute, 2019).</p>	<p style="text-align: center;"><b>Tercile rainfall probabilities for August to October 2024</b></p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p style="text-align: center;">© Commonwealth of Australia 2024. Bureau of Meteorology, supported by COSPPac. --- EEZ border V11 (Flanders Marine Institute, 2019).</p>
<p><b>Monthly Maximum temperature (Image 3):</b></p>	<p><b>Seasonal maximum temperature (Image 4):</b></p>
<p style="text-align: center;"><b>Tercile maximum temperature probabilities for August 2024</b></p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p style="text-align: center;">© Commonwealth of Australia 2024. Bureau of Meteorology, supported by COSPPac. --- EEZ border V11 (Flanders Marine Institute, 2019).</p>	<p style="text-align: center;"><b>Tercile maximum temperature probabilities for August to October 2024</b></p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p style="text-align: center;">© Commonwealth of Australia 2024. Bureau of Meteorology, supported by COSPPac. --- EEZ border V11 (Flanders Marine Institute, 2019).</p>
<p><b>Monthly minimum temperature (Image 5):</b></p>	<p><b>Seasonal minimum temperature (Image 6):</b></p>
<p style="text-align: center;"><b>Tercile minimum temperature probabilities for August 2024</b></p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p style="text-align: center;">© Commonwealth of Australia 2024. Bureau of Meteorology, supported by COSPPac. --- EEZ border V11 (Flanders Marine Institute, 2019).</p>	<p style="text-align: center;"><b>Tercile minimum temperature probabilities for August to October 2024</b></p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p style="text-align: center;">© Commonwealth of Australia 2024. Bureau of Meteorology, supported by COSPPac. --- EEZ border V11 (Flanders Marine Institute, 2019).</p>

# Part 2: Recent Ocean Observation

## Monthly/Three months: June 2024 and April to June 2024

Monthly: June 2024	Last three months: April to June 2024:
<p><b>Sea Surface Temperature (Image 1):</b></p>  <p>Tonga Monthly Average Sea Surface Temperature Anomaly: June 2024</p> <p>© Commonwealth of Australia 2024 Australian Bureau of Meteorology, CSIRO Keyhole 511</p>	<p><b>Sea Surface Temperature (Image 4):</b></p>  <p>Tonga 3 monthly Average Sea Surface Temperature Anomaly: April 2024 to June 2024</p> <p>© Commonwealth of Australia 2024 Australian Bureau of Meteorology, CSIRO Keyhole 557</p>
<p><b>Sea level (Image 2):</b></p>  <p>Tonga Monthly Near Real Time Sea Level Anomaly: June 2024</p> <p>© Commonwealth of Australia 2024 Australian Bureau of Meteorology, CSIRO Keyhole 513</p>	
<p><b>Daily coral bleaching alert (Image 3):</b></p>  <p>Tonga Daily Coral Bleaching Alert: 05 July 2024</p> <p>© Commonwealth of Australia 2024 Australian Bureau of Meteorology, CSIRO NOAA Coral Bleach</p>	 <p>Pacific Ocean Daily Coral Bleaching Alert: 07 July 2024</p> <p>© Commonwealth of Australia 2024 Australian Bureau of Meteorology, CSIRO NOAA Coral Bleach</p>

# Part 2i. Monthly and Seasonal Outlooks for August and August to October 2024

Monthly: August	Seasonal: August to October
<b>Monthly sea surface temperature (Image 5):</b>	<b>Seasonal sea surface temperature (Image 6):</b>
<p>Difference from average sea surface temperature forecast for August 2024</p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p>14°S 16°S 18°S 20°S 22°S 24°S</p> <p>178°W 176°W 174°W 172°W</p> <p>-4.0 -3.0 -2.0 -1.2 -0.8 -0.4 0.4 0.8 1.2 2.0 3.0 4.0</p> <p>Difference from average (°C)</p> <p>--- EEZ border V11 (Flanders Marine Institute, 2019)</p>	<p>Difference from average sea surface temperature forecast for August to October 2024</p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p>14°S 16°S 18°S 20°S 22°S 24°S</p> <p>178°W 176°W 174°W 172°W</p> <p>-4.0 -3.0 -2.0 -1.2 -0.8 -0.4 0.4 0.8 1.2 2.0 3.0 4.0</p> <p>Difference from average (°C)</p> <p>--- EEZ border V11 (Flanders Marine Institute, 2019)</p>
<b>Monthly sea level (Image 7):</b>	<b>Seasonal sea level (Image 8):</b>
<p>Difference from average sea surface height forecast for August 2024</p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p>14°S 16°S 18°S 20°S 22°S 24°S</p> <p>178°W 176°W 174°W 172°W</p> <p>-300 -200 -100 -60 -30 30 60 100 200 300</p> <p>Difference from average (mm)</p> <p>--- EEZ border V11 (Flanders Marine Institute, 2019)</p>	<p>Difference from average sea surface height forecast for August to October 2024</p> <p>Base period: 1981-2018 Model: ACCESS-S2 Model run: 06/07/2024 Issued: 08/07/2024</p> <p>14°S 16°S 18°S 20°S 22°S 24°S</p> <p>178°W 176°W 174°W 172°W</p> <p>-300 -200 -100 -60 -30 30 60 100 200 300</p> <p>Difference from average (mm)</p> <p>--- EEZ border V11 (Flanders Marine Institute, 2019)</p>
<b>4-week Coral Bleaching (Image 9):</b>	
<p>Tonga 4 Weeks Coral Bleaching Outlook: 21 July 2024</p> <p>19°S 21°S 23°S 25°S</p> <p>179°W 178°W 177°W 176°W</p> <p>Alert Level 2 Alert Level 1 Warning Watch No Stress</p> <p>© Commonwealth of Australia 2024 Australian Bureau of Meteorology, COSPPac</p> <p>NZMA Coral Reef Watch</p>	<p>Pacific Ocean 4 Weeks Coral Bleaching Outlook: 21 July 2024</p> <p>40°N 30°N 20°N 10°N 0° 10°S 20°S 30°S 40°S</p> <p>180°E 150°E 120°E 90°E</p> <p>Alert Level 2 Alert Level 1 Warning Watch No Stress</p> <p>© Commonwealth of Australia 2024 Australian Bureau of Meteorology, COSPPac</p> <p>NZMA Coral Reef Watch</p>

## Summary Statement

### Monthly and last three months: June 2024/April to June 2024 statement

The rainfall for June was above normal at Ha'apai, near-normal at Niuatoputapu and Vava'u, and below normal at Niuafu'ou, Fua'amotu and Nuku'alofa. Niuafu'ou recorded its third lowest June rainfall.

April to June 2024 rainfall was above normal at Nuku'alofa, near-normal at Niuatoputapu and Fua'amotu, and below normal rainfall at remaining sites. Niuafu'ou had its fifth lowest April to June rainfall on record.

## Part 1i. Monthly and Seasonal Outlooks for August and August to October 2024

### Monthly /Seasonal rainfall and temperature Outlook statements

For most of Tonga, rainfall in August and over August to October is likely or very likely to be above normal. The main exception is for parts central Tonga, including Vava'u, where August rainfall is likely to be near-normal.

Maximum and minimum temperatures during August and averaged over August to October, are very likely to be above normal across the country.

## Part 2: Recent Ocean summary statement

### Monthly and last three months: June 2024/April to June 2024

June and average over April to June, ocean temperatures around Tonga were 0.5 to 1.5°C above normal .

June sea levels were near normal over northern Tonga and utmost 300mm above normal over the rest of the group. Coral Bleaching is at "No Stress"

## Part 2i. Monthly and Seasonal Outlooks for August and August to October 2024

### Ocean Variable statement

August and averaged over August to October, ocean temperatures around Tonga are predicted to be 0.4 to 1.2°C above normal.

August sea levels are predicted to be -30mm to 30mm near- normal over central Tonga, below-normal over northern Tonga and utmost 200mm above-normal over southern Tonga.

Averaged over August to October, sea levels are predicted to be -30mm to 30mm near-normal over central and northern Tonga, but 60mm to 100mm above normal over southern Tonga.

### IN BRIEF for Teleconference

- Rainfall was a mix of above normal, near-normal and below normal for June and April to June.
- For most of Tonga, rainfall is likely or very likely to be above normal in August and over August to October.
- SSTs were above normal for June and April to June. The outlook shows above normal SSTs for the next one and three months.

- Sea-surface heights (SSHs) were near-normal to above normal for June. Near-normal to above normal sea surface heights are predicted for August and August to October.
- Coral bleaching “NO Stress”

**TABLE 3: Stakeholder Engagement- Evaluations of how effective NMS engage with stakeholders**

Product	Date: June 2024	Stakeholder	Total Number of Participants	Number of Male	Number of Female	Comments (If there are comments from you Stakeholders)
Climate Bulletin	3 June	Government3 ministries, NGOs, Media, Private sector	155	188	37	
EAR Watch						
Monthly Climate Briefing						
Ocean Outlook	3 June	Government3 ministries, NGOs, Media, Private sector	155	188	37	
Climate data request						
<b>Total</b>			<b>310</b>	<b>236</b>	<b>74</b>	