

Pacific Islands - Ocean and Climate Outlook Forum (OCOF) No. 168

Country: Tonga

Part 1: Recent climate

TABLE 1: Monthly Rainfall

Station (include data period)	Jun-2021	Jul-2021	Aug-2021				Rank
			Total (mm)	33%tile	67%tile	Median	
	Total (mm)	Total (mm)	Rainfall (mm)				
Northern Division							
Niuafu'ou (1971-2021)	294.9	59.0	154.7	63.0	126.2	88.5	39/49
Niuatoputapu (1947-2021)	109.2	132.9	144.9	53.0	103.0	75.1	58/74
Central Division							
Vava'u (1947-2021)	191.6	122.4	267.0	61.4	127.0	87.0	71/75
Ha'apai (1947-2021)	128.4	54.7	141.2	60.1	117.3	78.0	60/75
Southern Division							
Fua'amotu (1979-2021)	100.2	135.1	82.0	67.8	138.1	95.0	17/42
Nuku'alofa (1944-2021)	116.6	93.4	74.0	61.3	138.2	102.0	30/77

TABLE 2: Three-month Total Rainfall for June to August 2021

Station	Three-month Total	33%tile	67%tile	Median	Rank	
	Rainfall (mm)					
Northern Division						
Niuafu'ou (1971-2021)	508.6	Above normal	275.5	417.0	361.0	38/46
Niuatoputapu (1947-2021)	387.0	Above normal	244.0	369.0	316.0	53/74
Central Division						
Vava'u (1947-2021)	581.0	Above normal	249.7	353.7	308.0	66/75
Ha'apai (1947-2021)	324.3	Above normal	198.7	311.4	278.0	53/75
Southern Division						
Fua'amotu (1979-2021)	317.3	Normal	285.4	402.3	353.0	16/42
Nuku'alofa (1944-2021)	284.0	Normal	238.0	375.0	398.2	32/77

NB: The X LEPS % score has been categorised as follows:

Very Low: $X < 0.0$

Low: $0 \leq X < 5$

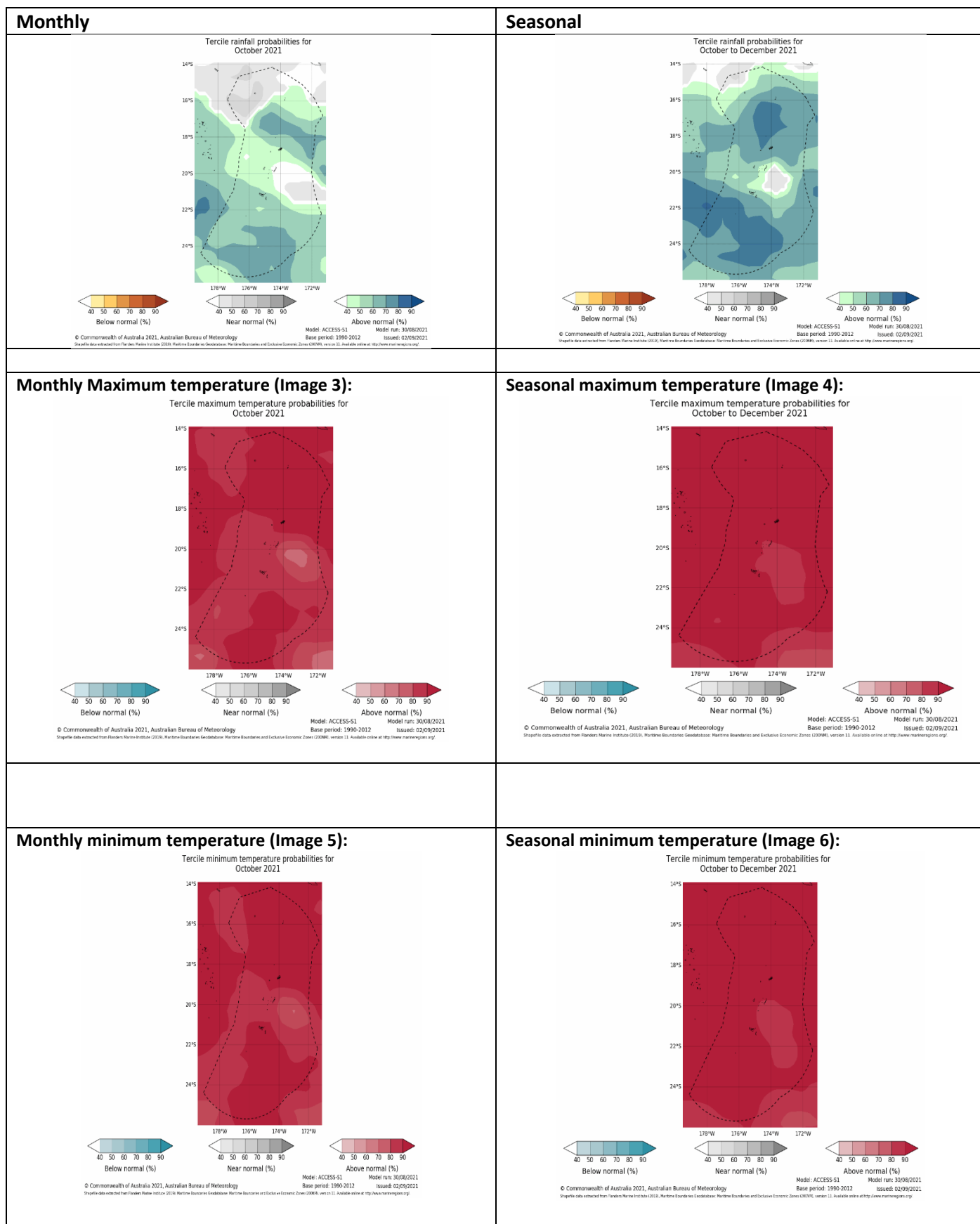
Moderate $5 \leq X < 10$

Good: $10 \leq X < 15$

High: $15 \leq X < 25$

Very High: $25 \leq X < 35$ Exceptional: $X \geq 35$

Part 1i. Monthly and Seasonal Outlooks for October and October to December 2021



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Part 2: Recent Ocean summary statement

Monthly: August 2021

<p>Monthly: August</p> <p>Sea Surface Temperature (Image 1):</p> <p>Tonga Monthly Average Sea Surface Temperature Anomaly: August 2021</p> <p>© Pacific Community (SPC) 2021 Geoscience Energy and Maritime Division, COSPPac: SPP Reynolds SST</p>	<p>Last three months: June to August 2021:</p> <p>Sea Surface Temperature (Image 4):</p> <p>Tonga 3 monthly Average Sea Surface Temperature Anomaly: June 2021 to August 2021</p> <p>© Pacific Community (SPC) 2021 Geoscience Energy and Maritime Division, COSPPac: SPP Reynolds SST</p>
<p>Sea level (Image 2):</p> <p>Tonga Monthly Near Real Time Sea Level Anomaly: August 2021</p> <p>© Pacific Community (SPC) 2021 Geoscience Energy and Maritime Division, COSPPac: SPP AVISO SeaWiFS/Duacs SLA</p>	<p>Daily coral bleaching alert (Image 3):</p> <p>Pacific Ocean Daily Coral Bleaching Alert: 30 August 2021</p> <p>© Pacific Community (SPC) 2021 Geoscience Energy and Maritime Division, COSPPac: SPP MGA Coral Bleach</p>

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Part 2i. Monthly and Seasonal Outlooks for October and October to December 2021

<p>Monthly: October</p> <p>Monthly sea surface temperature (Image 5): Difference from average sea surface temperature forecast for October 2021</p> <p>Difference from average (°C)</p> <p>Model: ACCESS-S1 Model Run: 04/09/2021 Base Period: 1990-2012 Issued: 06/09/2021</p> <p><small>© Commonwealth of Australia 2021, Australian Bureau of Meteorology Datafile data extracted from: Pacific Marine, 14/10/2021; Marine Bioregions, Geospatial, Marine Bioregions and Exclusive Economic Zone, 20/09/2021; version 12; available online at http://www.marine.gov.au/</small></p>	<p>Seasonal: October to December</p> <p>Seasonal sea surface temperature (Image 6) Difference from average sea surface temperature forecast for October to December 2021</p> <p>Difference from average (°C)</p> <p>Model: ACCESS-S1 Model Run: 04/09/2021 Base Period: 1990-2012 Issued: 06/09/2021</p> <p><small>© Commonwealth of Australia 2021, Australian Bureau of Meteorology Datafile data extracted from: Pacific Marine, 14/10/2021; Marine Bioregions, Geospatial, Marine Bioregions and Exclusive Economic Zone, 20/09/2021; version 12; available online at http://www.marine.gov.au/</small></p>
<p>Monthly sea level (Image 7): Difference from average sea surface height forecast for October 2021</p> <p>Difference from average (mm)</p> <p>Model: ACCESS-S1 Model Run: 27/08/2021 Base Period: 1990-2012 Issued: Map not issued</p> <p><small>© Commonwealth of Australia 2021 Bureau of Meteorology</small></p>	<p>Seasonal sea level (Image 8): Difference from average sea surface height forecast for October 2021 to December 2021</p> <p>Difference from average (mm)</p> <p>Model: ACCESS-S1 Model Run: 27/08/2021 Base Period: 1990-2012 Issued: Map not issued</p> <p><small>© Commonwealth of Australia 2021 Bureau of Meteorology</small></p>
<p>4-week Coral Bleaching (Image 9):</p> <p>Pacific Ocean 4 Weeks Core Bleaching Outlook: 11 October 2021</p> <p>0 1 2 3 4 5 6</p> <p><small>© Commonwealth of Australia 2021 Datafile data extracted from: Pacific Marine, 11/10/2021; Marine Bioregions, Geospatial, Marine Bioregions and Exclusive Economic Zone, 20/09/2021; version 12; available online at http://www.marine.gov.au/</small></p>	

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Summary Statement

Monthly and last three months: August 2021/June to August statement

Above normal rainfall was recorded in Niuafou'ou, Niuatoputapu, Vava'u and Ha'apai. Normal rainfall was received at Fua'amotu and Nuku'alofa. Vava'u recorded its fifth wettest August on record.

Above normal rainfall was recorded across the country, except normal rainfall at Fua'amotu and Nuku'alofa.

Part 1i. Monthly and Seasonal Outlooks for October and October to December 2021

Monthly /Seasonal rainfall and temperature Outlook statements

The outlook for Tonga for October is likely to be above normal. Above normal rainfall is likely for Niuatoputapu, Vava'u and Tongatapu. The outlook for Niuafou'ou for the period of October is likely to be near normal. The outlook for Ha'apai offers little guidance as the changes of below normal, normal and above normal rainfall are similar.

The outlook for Tonga for October to December is very likely to be above normal. The outlook for Tongatapu, Vava'u, Niuatoputapu and Niuafou'ou for the period of October to December is very likely to be above normal. The outlook for Ha'apai for the period of October to December is likely to be above normal.

The maximum and minimum temperatures outlook for Tonga for October and October to December is very likely to be above normal.

Part 2: Recent Ocean summary statement

Monthly and last three months: August/June to August 2021

The August Sea Surface Temperature for all of Tonga shows above normal temperature differences of 0.5°C to 1.0°C for the month of August. Patches of SST ranging from 1 to 2°C above normal were noted around Tonga.

The June to August Sea Surface Temperature for Tonga Shows warmer temperature conditions, with difference of 0.5°C to 1.0°C.

Ocean Variable statement

In August the sea level anomaly was up to 200 mm above average in the Ha'apai and Vava'u group, and up to 150 mm in the Tongatapu group.

The coral bleaching shows no stress for Tonga

The outlook for Tonga archipelago shows sea surface temperatures are likely to be near normal for October, ranging from 0.4, 0.8°C. The outlook for Tonga shows near normal to slightly above normal conditions ranging from 0.4, 0.8°C.

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The sea surface height outlook for Niuafu'ou is nearly normal and the outlook across the rest of Tonga shows sea surface heights are likely to slightly above the normal for October.

The sea surface height outlook for Tonga is likely to be above normal with a maximum increase of up to 200mm above normal.

The outlook for the Tonga shows there are no coral bleaching alerts.

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

Product	Date: August 2021	Stakeholder	Total Number of Participants	Number of male	Number of female
Climate Bulletin		General public	132	66	34
EAR Watch					
Monthly Climate Briefing					
Ocean Outlook		General public	132	66	34
Total			132	66	34

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