

# Pacific Islands - Ocean and Climate Outlook Forum (OCOF) No. 176

Country: Tonga

## Part 1: Recent climate

**TABLE 1: Monthly Rainfall**

Station (include data period)	Feb-2022	Mar-2022	Apr-2022				
			Total (mm)	33%tile	67%tile	Median	Rank
	Total (mm)	Total (mm)	Rainfall (mm)				
Northern Division							
Niuafo'ou (1971-2022)	344.5	209.0	138.5	166.5	284.0	209.0	13/51
Niuaatoputapu (1947-2022)	661.5	138.5	69.0	163.8	303.1	226.5	3/72
Central Division							
Vava'u (1947-2022)	406.0	285.5	346.9	154.3	267.8	212.5	63/76
Ha'apai (1947-2022)	233.5	420.5	191.0	115.0	236.6	170.5	45/76
Southern Division							
Fua'amotu (1979-2022)	510.4	594.0	276.1	109.9	239.6	173.0	32/43
Nuku'alofa (1944-2022)	356.0	384.0	300.5	112.0	215.4	142.0	68/77

**TABLE 2: Three-month Total Rainfall for February to April 2022**

Station	Three-month Total	33%tile	67%tile	Median	Rank	
	Rainfall (mm)					
Northern Division						
Niuafo'ou (1971-2022)	692.0	Below normal	720.0	938.0	861.0	12/50
Niuaatoputapu (1947-2022)	869.0	Above normal	701.1	842.8	772.5	51/70
Central Division						
Vava'u (1947-2022)	1038.4	Above normal	707.8	955.2	831.6	63/76
Ha'apai (1947-2022)	845.0	Above normal	546.8	721.1	652.9	63/76
Southern Division						
Fua'amotu (1979-2022)	1380.5	Above normal	471.7	693.2	594.0	43/43
Nuku'alofa (1944-2022)	1040.5	Above normal	549.2	717.5	622.0	73/78

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 June and June to August 2022

Monthly: June	Seasonal: June to August
Rainfall (Image 1)	Rainfall (Image 2)
<p>Tercile rainfall probabilities for June 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022. Australian Bureau of Meteorology Shapfile data extracted from Flinders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.marinerregions.org/">http://www.marinerregions.org/</a> Model run: 02/05/2022 Issued: 05/05/2022</p>	<p>Tercile rainfall probabilities for June to August 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022. Australian Bureau of Meteorology Shapfile data extracted from Flinders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.marinerregions.org/">http://www.marinerregions.org/</a> Model run: 02/05/2022 Issued: 05/05/2022</p>
Monthly Maximum temperature (Image 3):	Seasonal maximum temperature (Image 4):
<p>Tercile maximum temperature probabilities for June 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022. Australian Bureau of Meteorology Shapfile data extracted from Flinders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.marinerregions.org/">http://www.marinerregions.org/</a> Model run: 02/05/2022 Issued: 05/05/2022</p>	<p>Tercile maximum temperature probabilities for June to August 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022. Australian Bureau of Meteorology Shapfile data extracted from Flinders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.marinerregions.org/">http://www.marinerregions.org/</a> Model run: 02/05/2022 Issued: 05/05/2022</p>
Monthly minimum temperature (Image 5):	Seasonal minimum temperature (Image 6):
<p>Tercile minimum temperature probabilities for June 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022. Australian Bureau of Meteorology Shapfile data extracted from Flinders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.marinerregions.org/">http://www.marinerregions.org/</a> Model run: 02/05/2022 Issued: 05/05/2022</p>	<p>Tercile minimum temperature probabilities for June to August 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022. Australian Bureau of Meteorology Shapfile data extracted from Flinders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.marinerregions.org/">http://www.marinerregions.org/</a> Model run: 02/05/2022 Issued: 05/05/2022</p>

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Very Low:  $X < 0.0$

Low:  $0 \leq X < 5$

Moderate  $5 \leq X < 10$

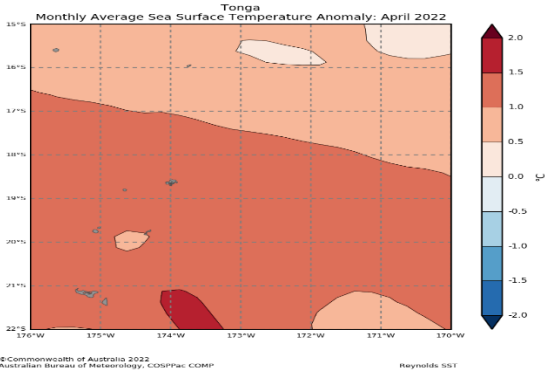
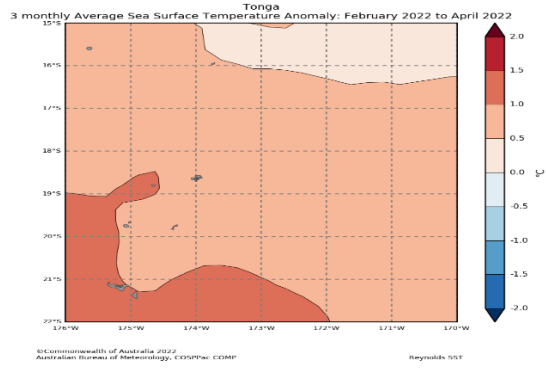
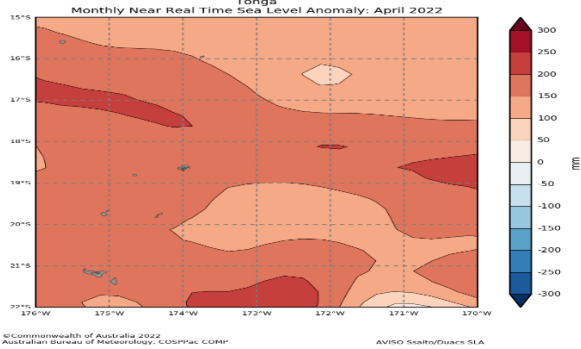
Good:  $10 \leq X < 15$

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Part 2: Recent Ocean summary statement

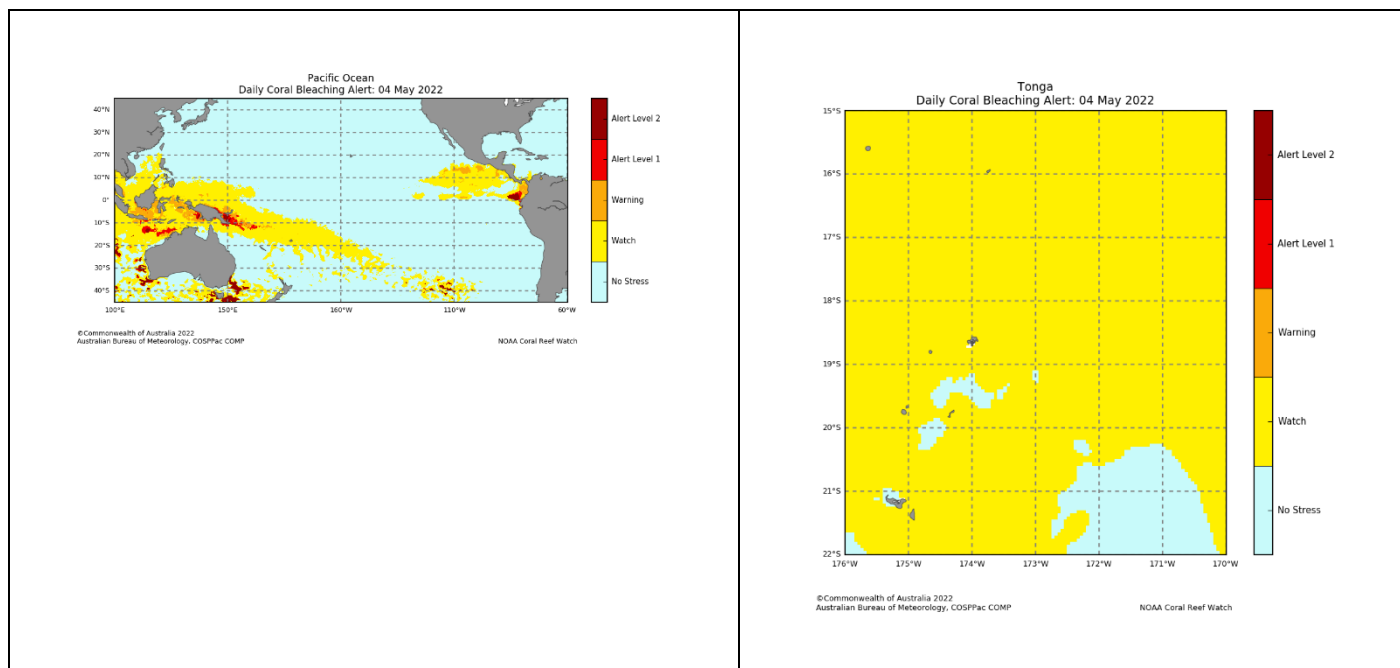
Monthly: April 2022

Monthly: April	Last three months: February to April 2022:
Sea Surface Temperature (Image 1):	Sea Surface Temperature (Image 4):
	
Sea level (Image 2):	
	
Daily coral bleaching alert (Image 3):	

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## Part 2i. Monthly and Seasonal Outlooks for June and June to August 2022

Monthly: June	Seasonal: June to August
Monthly sea surface temperature (Image 5):	Seasonal sea surface temperature (Image 6):
<p style="text-align: center;">Difference from average sea surface temperature forecast for June 2022</p> <p style="text-align: center;">Difference from average (°C)</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022, Australian Bureau of Meteorology Shapefile data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimerregions.org/">http://www.maritimerregions.org/</a></p> <p style="text-align: right;">Model run: 14/05/2022 Issued: 16/05/2022</p>	<p style="text-align: center;">Difference from average sea surface temperature forecast for June to August 2022</p> <p style="text-align: center;">Difference from average (°C)</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022, Australian Bureau of Meteorology Shapefile data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimerregions.org/">http://www.maritimerregions.org/</a></p> <p style="text-align: right;">Model run: 14/05/2022 Issued: 16/05/2022</p>
Monthly sea level (Image 7):	Seasonal sea level (Image 8):

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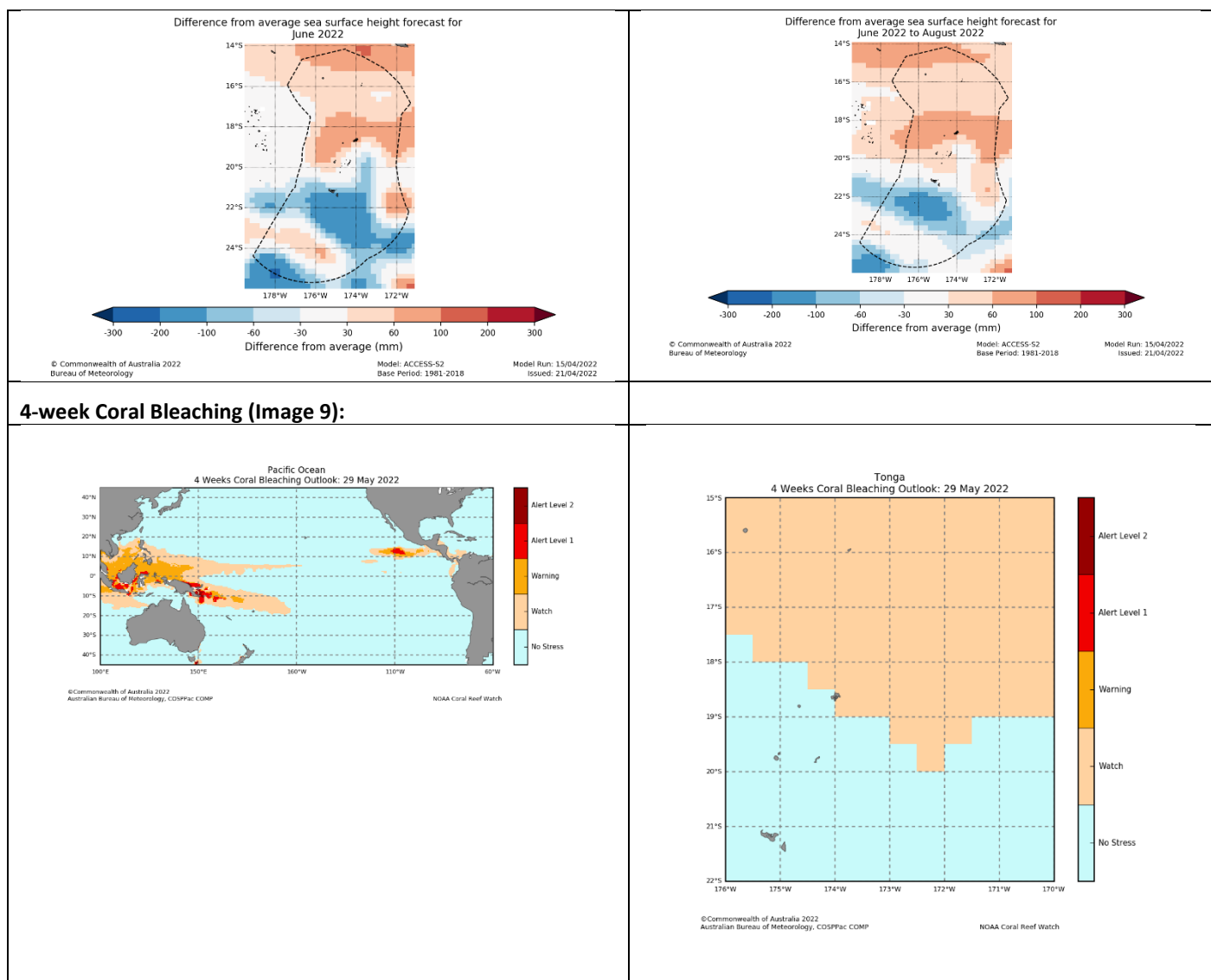
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## Summary Statement

### Monthly and last three months: April 2022/February to April 2022 statement (*Highly significant changes*)

Below normal rainfall was recorded at Niufo'ou and Niuatoputapu in the northern division. Normal to above normal rainfall was recorded at all other stations. Niuatoputapu recorded its 3<sup>rd</sup> lowest April rainfall since its record started. For February to April period, rainfall was mostly above normal across the country. Fua'amotu recorded its wettest February to April period while Nuku'alofa recorded its sixth wettest.

## Part 1i. Monthly and Seasonal Outlooks for June and June to August 2022

### Monthly /Seasonal rainfall and temperature Outlook statements (*Highly significant changes*)

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The rainfall outlook for Tonga for June is very likely/likely to be above normal for the central region/northern region while little guidance for the southern region. The seasonal rainfall outlook is very likely to be above normal for northern, parts of central region and further south while Tongatapu is likely to receive above normal rainfall. Above normal temperatures is very likely for the group.

## Part 2: Recent Ocean summary statement

### **Monthly and last three months: April/February to April 2022** *(Highly significant changes)*

The sea surface temperature anomaly for April reveals that the majority of Tonga experienced above average SST differences, with the most significant temperatures located in central and southern Tonga division with temperature differences of 1.0 to 1.5 degrees. For the past three months, February to April 2022, central and northern Tonga had above SST differences of 0.5-1.0 degrees, with Tongatapu islands in the south experiencing significant SST differences of 1.0-1.5 degrees.

The monthly sea level anomaly for April reveals the Tonga experienced above average sea surface heights of 150-200mm.

Coral bleaching status is at 'Watch' level for Tonga.

## Part 2i. Monthly and Seasonal Outlooks for June and June to August 2022

### **Ocean Variable statement** *(Highly significant changes)*

The monthly and seasonal outlook for Tonga SST shows above SST differences for central and northern Tonga with Tongatapu islands forecasted to have near normal temperatures.

The monthly and seasonal outlook reveals that northern and central Tonga will experience above average sea surface heights. Southern Tonga group, Tongatapu Islands are forecasted to have below normal for the June outlook and near normal sea surface heights for June to August outlook. Coral bleaching outlook is at 'Watch'.

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

Product	Date: April 2022	Stakeholder	Total Number of Participants	Number of male	Number of female
Climate Bulletin	13 April	Government ministries, NGOs, Media, Private sectors	155	118	37

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EAR Watch					
Monthly Climate Briefing					
Ocean Outlook	13 April	Government ministries, NGOs, Media, Private sectors	155	118	37
Climate data request					
<b>Total</b>			<b>310</b>	<b>156</b>	<b>74</b>

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