

Pacific Islands - Ocean and Climate Outlook Forum (OCOF) No. 171

Country:

Part 1: Recent climate

TABLE 1: Monthly Rainfall

Station (include data period)	Sep-2021	Oct-2021	Nov-2021				
			Total (mm)	33%tile	67%tile	Median	Rank
	Total (mm)	Total (mm)	Rainfall (mm)				
Northern Division							
Niuafo'ou (1971-2021)	26	56.6	145.1	164.9	271.4	235.3	14/48
Niuatoputapu (1947-2021)	33.2	20.6	99.7	138.3	243.0	183.0	17/72
Central Division							
Vava'u (1947-2021)	194	144.4	121.7	79.7	171.9	118.8	39/75
Ha'apai (1947-2021)	97.5	58.3	158.6	61.7	133.0	82.0	54/75
Southern Division							
Fua'amotu (1979-2021)	104.8	110.3	23.6	47.3	135.0	102.0	4/42
Nuku'alofa (1944-2021)	79.5	100	38.2	49.0	131.2	80.0	21/78

TABLE 2: Three-month Total Rainfall for September to November 2021

Station	Three-month Total		33%tile	67%tile	Median	Rank
	Rainfall (mm)					
Northern Division						
Niuafo'ou (1971-2021)	227.7	Below normal	451.0	657.7	567.0	4/48
Niutopotapu (1947-2021)	153.5	Below normal	395.7	584.0	472.5	4/72
Central Division						
Vava'u (1947-2021)	460.1	Normal	364.7	529.4	427.0	44/75
Ha'apai (1947-2021)	314.4	Normal	225.6	396.2	295.0	41/75
Southern Division						
Fua'amotu (1979-2021)	238.7	Below normal	249.3	408.4	315.9	12/42
Nuku'alofa (1944-2021)	217.7	Below normal	242.3	421.7	354.7	24/77

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

Very Low: $X < 0.0$

Low: $0 \leq X < 5$

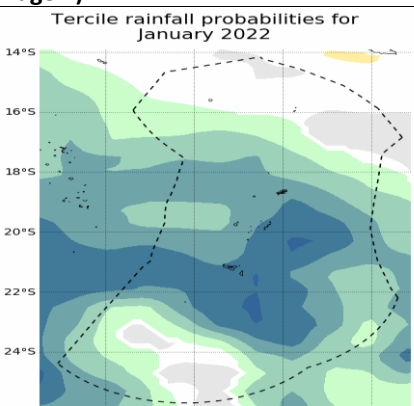
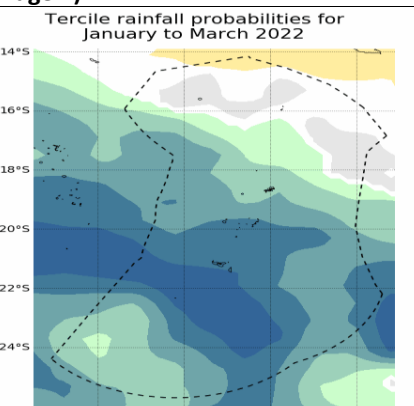
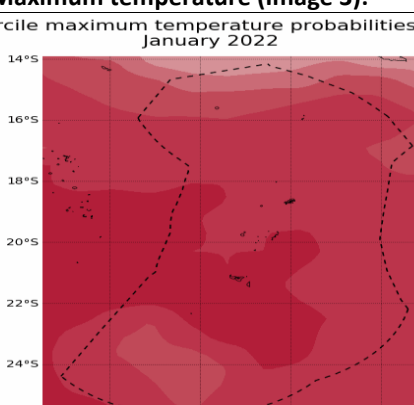
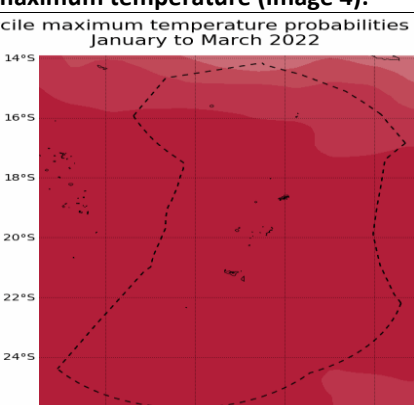
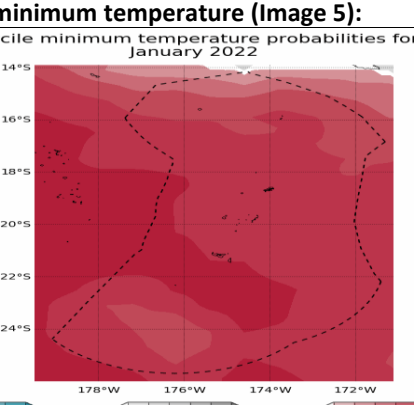
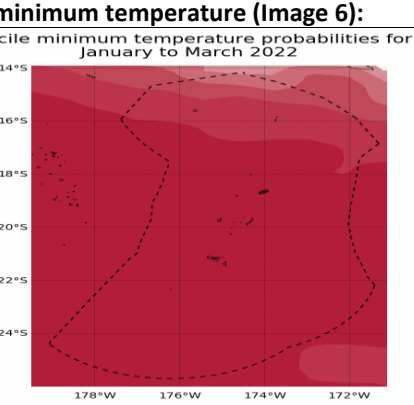
Moderate $5 \leq X < 10$

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 January and January to March 2022

Monthly	Seasonal
Rainfall (Image 1)  <p>Tercile rainfall probabilities for January 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021. Australian Bureau of Meteorology Shapfiles data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at http://www.maritimerregions.org/</p>	Rainfall (Image 2)  <p>Tercile rainfall probabilities for January to March 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021. Australian Bureau of Meteorology Shapfiles data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at http://www.maritimerregions.org/</p>
Monthly Maximum temperature (Image 3):  <p>Tercile maximum temperature probabilities for January 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021. Australian Bureau of Meteorology Shapfiles data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at http://www.maritimerregions.org/</p>	Seasonal maximum temperature (Image 4):  <p>Tercile maximum temperature probabilities for January to March 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021. Australian Bureau of Meteorology Shapfiles data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at http://www.maritimerregions.org/</p>
Monthly minimum temperature (Image 5):  <p>Tercile minimum temperature probabilities for January 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021. Australian Bureau of Meteorology Shapfiles data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at http://www.maritimerregions.org/</p>	Seasonal minimum temperature (Image 6):  <p>Tercile minimum temperature probabilities for January to March 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021. Australian Bureau of Meteorology Shapfiles data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at http://www.maritimerregions.org/</p>

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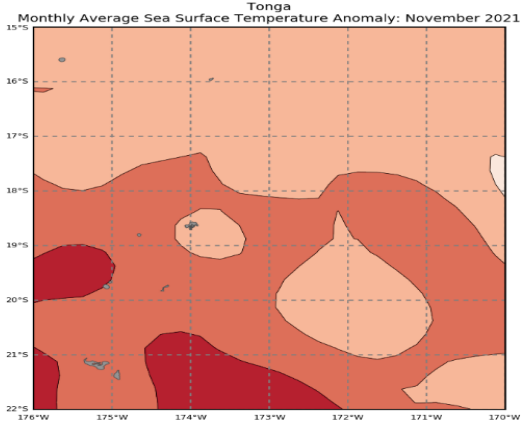
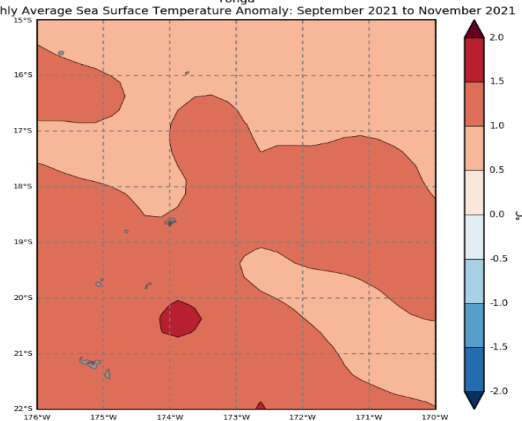
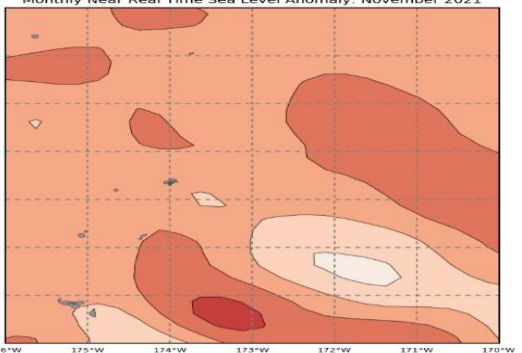
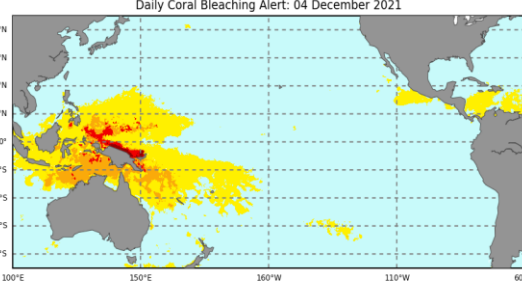
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Part 2: Recent Ocean summary statement

Monthly: November 2021

Monthly: November Sea Surface Temperature (Image 1):	Last three months: September to November 2021: Sea Surface Temperature (Image 4):
 <p>Monthly Average Sea Surface Temperature Anomaly: November 2021</p> <p>Tonga</p> <p>© Commonwealth of Australia 2021 Australian Bureau of Meteorology, COSPPac COMP</p> <p>Reynolds SST</p>	 <p>3 monthly Average Sea Surface Temperature Anomaly: September 2021 to November 2021</p> <p>Tonga</p> <p>© Commonwealth of Australia 2021 Australian Bureau of Meteorology, COSPPac COMP</p> <p>Reynolds SST</p>
Sea level (Image 2):	
 <p>Monthly Near Real Time Sea Level Anomaly: November 2021</p> <p>Tonga</p> <p>© Commonwealth of Australia 2021 Australian Bureau of Meteorology, COSPPac COMP</p> <p>AVISO SeaTopo2000 SLA</p>	
Daily coral bleaching alert (Image 3):	
 <p>Pacific Ocean Daily Coral Bleaching Alert: 04 December 2021</p> <p>Alert Level 2 Alert Level 1 Warning Watch No Stress</p> <p>© Commonwealth of Australia 2021 Australian Bureau of Meteorology, COSPPac COMP</p> <p>NOAA Coral Reef Watch</p>	

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Part 2i. Monthly and Seasonal Outlooks for January and January to March 2022

Monthly: January	Seasonal: January to March
Monthly sea surface temperature (Image 5):	Seasonal sea surface temperature (Image 6):
<p>Difference from average sea surface temperature forecast for January 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021, Australian Bureau of Meteorology Shapelle data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 1.1. Available online at http://www.maritimerregions.org/</p> <p>Model run: 04/12/2021 Issued: 06/12/2021</p>	<p>Difference from average sea surface temperature forecast for January to March 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2021, Australian Bureau of Meteorology Shapelle data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 1.1. Available online at http://www.maritimerregions.org/</p> <p>Model run: 04/12/2021 Issued: 06/12/2021</p>
Monthly sea level (Image 7):	Seasonal sea level (Image 8):
<p>Difference from average sea surface height forecast for January 2022</p> <p>© Commonwealth of Australia 2021 Bureau of Meteorology</p> <p>Model: ACCESS-S2 Base Period: 1981-2018</p> <p>Model Run: 28/11/2021 Issued: 07/12/2021</p>	<p>Difference from average sea surface height forecast for January 2022 to March 2022</p> <p>© Commonwealth of Australia 2021 Bureau of Meteorology</p> <p>Model: ACCESS-S2 Base Period: 1981-2018</p> <p>Model Run: 28/11/2021 Issued: 07/12/2021</p>
4-week Coral Bleaching (Image 9):	
<p>Pacific Ocean 4 Weeks Coral Bleaching Outlook: 26 December 2021</p> <p>© Commonwealth of Australia 2021 Australian Bureau of Meteorology, COSPPac COMP</p> <p>NOAA Coral Reef Watch</p>	

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Summary Statement

Monthly and last three months: November 2021/September to November statement (Highly significant changes)

Below normal rainfall was recorded at the northern division (Niuafu'ou and Niuatoputapu) and the southern division, (Fuaamotu and Nuku'alofa). On the other hand, above normal and normal rainfall was recorded at central division (Vava'u and Ha'apai). Similar to the month of November, same tercile for rainfall were observed for the different regions except for central region with normal rainfall.

Fua'amotu recorded its 4th lowest rainfall in November, and Niuafu'ou and Niuatoputapu both recorded their 4th lowest September to November rainfall total.

Part 1i. Monthly and Seasonal Outlooks for January and January to March 2022

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

The outlook for Tonga for January is very likely for above normal for both southern division (Fuaamotu and Nuku'alofa) and central division (Vava'u and Ha'apai). The outlook for Niuafu'ou and Niuatoputapu offers little guidance as the chances of above, normal and below normal rainfall are similar. Similar outlook is true for January to March 2022 except for Niuafu'ou with likely normal rainfall.

Part 2: Recent Ocean summary statement

Monthly and last three months: November/September to November 2021 (Highly significant changes)

Most of Tonga experienced above average SST in the month of November and September to November 2021. Highest SSTs were 1.0 to 1.5 degrees above average spanning from the south to central division. Sea level was also above normal reaching a maximum of 250mm above average.

Part 2i. Monthly and Seasonal Outlooks for January and January to March 2022

Ocean Variable statement (Highly significant changes)

The outlook for southern and central division of Tonga shows a significant temperature difference of 0.8-1.2 °C for January 2022. Elevated sea level of up to 200mm is favoured near to Tongatapu in January and from January to March.

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

Product	Date: November 2021	Stakeholder	Total Number of Participants	Number of male	Number of female
Rainfall Outlook	19 November	Government ministries, NGOs, Media, Private sectors	155	118	37
EAR Watch					
Monthly Climate Briefing					
Ocean Outlook	19 November	Government ministries, NGOs, Media, Private sectors	155	118	37
Climate data request					
Total			310	236	74

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