

Country: Cook Islands

Part 1: Recent climate

TABLE 1: Monthly Rainfall

Station (include data period)	Sep-2023	Oct-2023	Nov-2023				
	Total (mm)	Total (mm)	Total (mm)	33%tile	67%tile	Median	Rank
			Rainfall (mm)				
Penrhyn (1937-2023)	74.2	107.2	289.4	94.0	188.0	145.9	73/86
Rarotonga (1899-2023)	104.5	93.2	11.3	90.0	155.0	121.0	3/125

TABLE 2: Three-month Total Rainfall for September to November 2023

Station	Three-month Total		33%tile	67%tile	Median	Rank
	Rainfall (mm)					
Penrhyn (1937-2023)	470.8	Normal	299.3	480.0	365.0	55/84
Rarotonga (1899-2023)	209.0	Below normal	278.4	399.0	347.0	20/125

Part 1i. Monthly and Seasonal Outlooks for January and January to March 2024

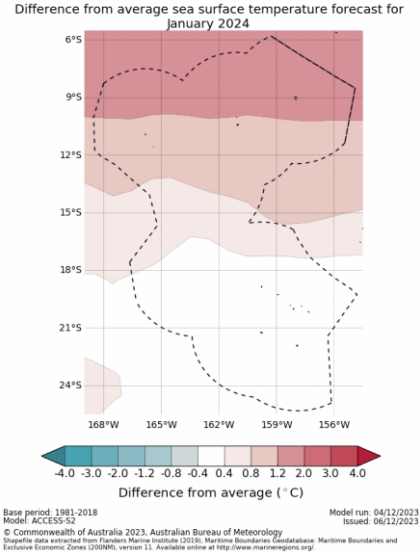
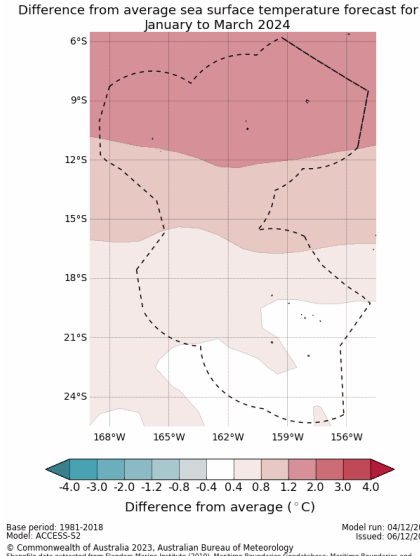
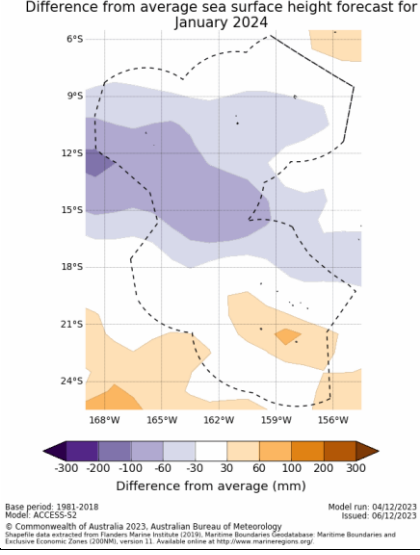
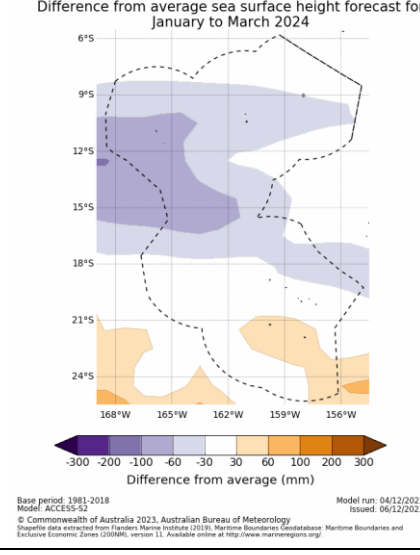
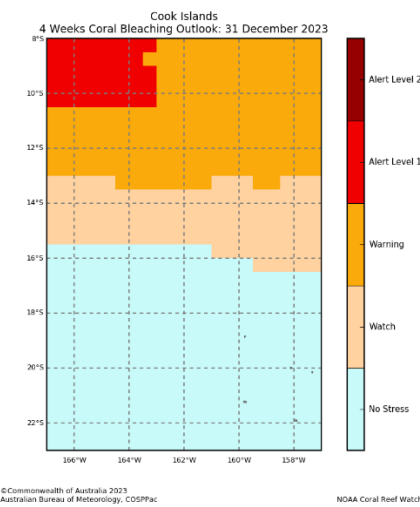
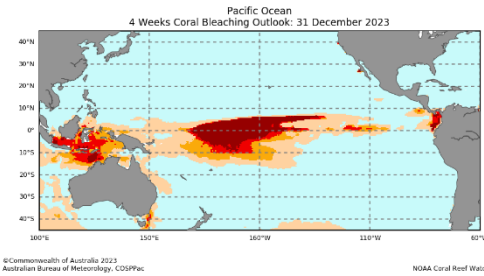
Monthly: January	Seasonal: January to March
Rainfall (Image 1)	Rainfall (Image 2)
<div><p>Tercile rainfall probabilities for January 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Shapellie data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (2008M), version 11. Available online at http://www.maritimergions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>	<div><p>Tercile rainfall probabilities for January to March 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Shapellie data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (2008M), version 11. Available online at http://www.maritimergions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>
Monthly Maximum temperature (Image 3):	Seasonal maximum temperature (Image 4):
<div><p>Tercile maximum temperature probabilities for January 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Shapellie data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (2008M), version 11. Available online at http://www.maritimergions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>	<div><p>Tercile maximum temperature probabilities for January to March 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Shapellie data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (2008M), version 11. Available online at http://www.maritimergions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>
Monthly minimum temperature (Image 5):	Seasonal minimum temperature (Image 6):
<div><p>Tercile minimum temperature probabilities for January 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Shapellie data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (2008M), version 11. Available online at http://www.maritimergions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>	<div><p>Tercile minimum temperature probabilities for January to March 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Shapellie data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (2008M), version 11. Available online at http://www.maritimergions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>

Part 2: Recent Ocean Observation

Monthly/Three months: November and September to November 2023

Monthly: November	Last three months: September to November 2023:
<div>Sea Surface Temperature (Image 1):</div> <div><p>Cook Islands</p><p>Monthly Average Sea Surface Temperature Anomaly: November 2023</p><p>©Commonwealth of Australia 2023 Australian Bureau of Meteorology, COSPPac</p><p>Reynolds SST</p></div>	<div>Sea Surface Temperature (Image 4):</div> <div><p>Cook Islands</p><p>3 monthly Average Sea Surface Temperature Anomaly: September 2023 to November 2023</p><p>©Commonwealth of Australia 2023 Australian Bureau of Meteorology, COSPPac</p><p>Reynolds SST</p></div>
<div>Sea level (Image 2):</div> <div><p>Cook Islands</p><p>Monthly Near Real Time Sea Level Anomaly: November 2023</p><p>©Commonwealth of Australia 2023 Australian Bureau of Meteorology, COSPPac</p><p>AVISO SeaWiFS/SeaWiFS SLA</p></div>	
<div>Daily coral bleaching alert (Image 3):</div> <div><p>Cook Islands</p><p>Daily Coral Bleaching Alert: 06 December 2023</p><p>©Commonwealth of Australia 2023 Australian Bureau of Meteorology, COSPPac</p><p>NOAA Coral Reef Watch</p></div>	<div>Daily coral bleaching alert (Image 5):</div> <div><p>Pacific Ocean</p><p>Daily Coral Bleaching Alert: 06 December 2023</p><p>©Commonwealth of Australia 2023 Australian Bureau of Meteorology, COSPPac</p><p>NOAA Coral Reef Watch</p></div>

Part 2i. Monthly and Seasonal Outlooks for January and January to March 2024

Monthly: January	Seasonal: January to March
Monthly sea surface temperature (Image 5):	Seasonal sea surface temperature (Image 6):
<div><p>Difference from average sea surface temperature forecast for January 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023. Australian Bureau of Meteorology Shapefile data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (GEOBM), version 11. Available online at http://www.maritimeregions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>	<div><p>Difference from average sea surface temperature forecast for January to March 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023. Australian Bureau of Meteorology Shapefile data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (GEOBM), version 11. Available online at http://www.maritimeregions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>
Monthly sea level (Image 7):	Seasonal sea level (Image 8):
<div><p>Difference from average sea surface height forecast for January 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023. Australian Bureau of Meteorology Shapefile data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (GEOBM), version 11. Available online at http://www.maritimeregions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>	<div><p>Difference from average sea surface height forecast for January to March 2024</p><p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2023. Australian Bureau of Meteorology Shapefile data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (GEOBM), version 11. Available online at http://www.maritimeregions.org/</p><p>Model run: 04/12/2023 Issued: 06/12/2023</p></div>
4-week Coral Bleaching (Image 9):	
<div><p>Cook Islands 4 Weeks Coral Bleaching Outlook: 31 December 2023</p><p>© Commonwealth of Australia 2023 Australian Bureau of Meteorology, COSPPac</p><p>NOAA Coral Reef Watch</p></div>	<div><p>Pacific Ocean 4 Weeks Coral Bleaching Outlook: 31 December 2023</p><p>© Commonwealth of Australia 2023 Australian Bureau of Meteorology, COSPPac</p><p>NOAA Coral Reef Watch</p></div>

Summary Statement

Monthly and last three months: November 2023/September to November 2023 statement

The rainfall for November was above normal over Penrhyn and below normal at Rarotonga, which had its third driest November in 125 years of record. For the past three months, rainfall was near-normal over Penrhyn and below normal for Rarotonga.

Part 1i. Monthly and Seasonal Outlooks for January and January to March 2024

Monthly /Seasonal rainfall and temperature Outlook statements

The rainfall for January 2024 is likely to be above normal over Penrhyn, but there is little guidance for the rest of the Northern Cooks. In the south, the outlook offers little guidance for Rarotonga and Mangaia, but below normal is likely for the rest of the Southern Cooks. Above normal rainfall is favoured for Penrhyn and the Northern Cooks for January – March 2024, but there is little guidance for Rarotonga and most Southern Cook Islands.

Maximum and minimum temperatures during January 2024 are very likely to be above normal over the northern Cook Is, and likely to be above normal at Palmerston in the south. At most remaining southern islands, the outlook offers little guidance for January temperatures.

Maximum and minimum temperatures averaged over January to March 2024 are very likely to be above normal across the country.

Part 2: Recent Ocean summary statement

Monthly and last three months: November 2023/September to November 2023

November ocean temperatures around Penrhyn and the Northern Cooks was 0.0 to 1.5°C above normal, and near normal for Rarotonga and the Southern Cooks. Averaged September to November ocean temperatures around the Cooks were 0.0 to 1.5°C above normal

November sea levels around the Cooks were 0.0mm to 150.0mm above normal.

Coral bleaching alert status at 'Watch' for Penrhyn and parts of Northern Cook Islands.

Part 2i. Monthly and Seasonal Outlooks for January and January to March 2024

Ocean Variable statement

January ocean temperatures around Penrhyn are predicted to be 1.2 to 2.0°C above normal, and near normal for Rarotonga.

Averaged over January to March 2024, ocean temperatures around Penrhyn are predicted to be 1.2 to 2.0°C above normal, and 0.4 to 0.8°C above normal for Rarotonga.

Monthly and seasonal sea levels around Penrhyn are predicted to be near normal and 30mm to 60mm above normal for Rarotonga.

Coral bleaching outlook predicted at 'Warning' for the Northern Cook Islands.

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

Product	Date: November 2023	Stakeholder	Total Number of Participants	Number of Male	Number of Female	Comments (If there are comments from you Stakeholders)
Climate Bulletin						
EAR Watch		Red Cross, Island Council and Executive Officers, To Tatou Vai, etc.....	39	?	?	
Monthly Climate Briefing		Climate Change	8	?	?	
Ocean Outlook						
Climate data request		Ministry of Marine Resources	1		1	
Total			48		1	