

Pacific Islands - Ocean and Climate Outlook Forum (OCOF) No. 174

Country: Cook Islands

Part 1: Recent climate

TABLE 1: Monthly Rainfall

Station (include data period)	Dec-2021	Jan-2022	Feb-2022				
			Total (mm)	33%tile	67%tile	Median	Rank
	Total (mm)	Total (mm)	Rainfall (mm)				
Penrhyn (1937-2022)	72.0	423.0	269.0	120.0	295.6	225.0	52/84
Rarotonga (1899-2022)	286.1	430.4	140.4	155.3	241.3	208.0	31/124

TABLE 2: Three-month Total Rainfall for December 2021 to February 2022

Station	Three-month Total		33%tile	67%tile	Median	Rank
	Rainfall (mm)					
Penrhyn (1937-2022)	764.0	Normal	523.9	867.3	638.0	52/84
Rarotonga (1899-2022)	856.9	Above normal	555.0	741.3	654.0	96/123

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 April and April to June 2022

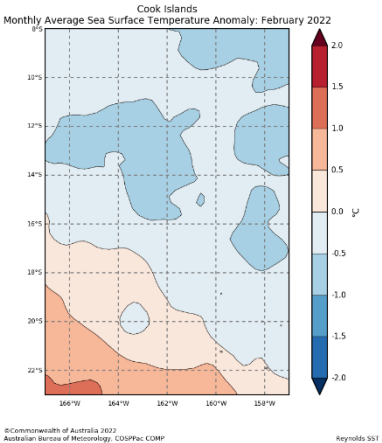
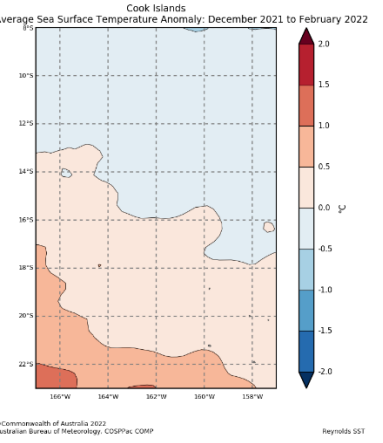
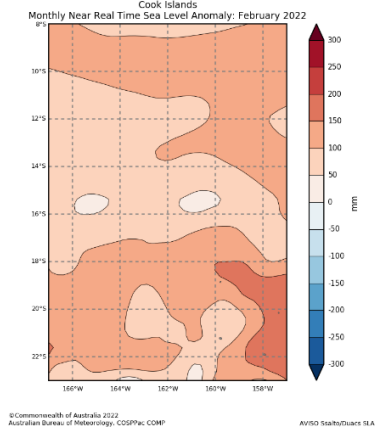
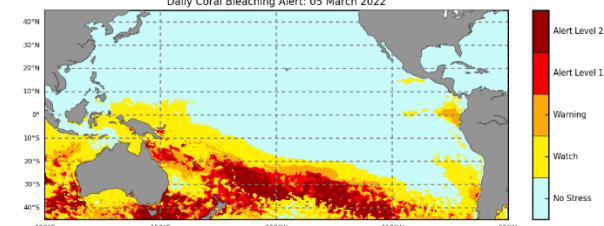
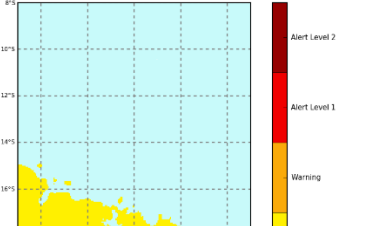
<p>Monthly: April</p> <p>Rainfall (Image 1):</p> <p>Tercile rainfall probabilities for April 2022</p> <p>Base period: 1981-2018 Model: ACCESS-S2 © Commonwealth of Australia 2022, Australian Bureau of Meteorology Shapellie data extracted from Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: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

Monthly: February 2022

Monthly: February	Last three months: December 2021 to February 2022:
<p>Sea Surface Temperature (Image 1):</p>  <p>Monthly Average Sea Surface Temperature Anomaly: February 2022</p> <p>©Commonwealth of Australia 2022 Australian Bureau of Meteorology, COSPac COMP</p> <p>Reynolds SST</p>	<p>Sea Surface Temperature (Image 4):</p>  <p>3 monthly Average Sea Surface Temperature Anomaly: December 2021 to February 2022</p> <p>©Commonwealth of Australia 2022 Australian Bureau of Meteorology, COSPac COMP</p> <p>Reynolds SST</p>
<p>Sea level (Image 2):</p>  <p>Monthly Near Real Time Sea Level Anomaly: February 2022</p> <p>©Commonwealth of Australia 2022 Australian Bureau of Meteorology, COSPac COMP</p> <p>AVISO SeaWiFS/SeaWiFS SLA</p>	
<p>Daily coral bleaching alert (Image 3):</p>  <p>Pacific Ocean Daily Coral Bleaching Alert: 05 March 2022</p> <p>©Commonwealth of Australia 2022 Australian Bureau of Meteorology, COSPac COMP</p> <p>NOAA Coral Reef Watch</p>	 <p>Cook Islands Daily Coral Bleaching Alert: 05 March 2022</p> <p>©Commonwealth of Australia 2022 Australian Bureau of Meteorology, COSPac COMP</p> <p>NOAA Coral Reef Watch</p>

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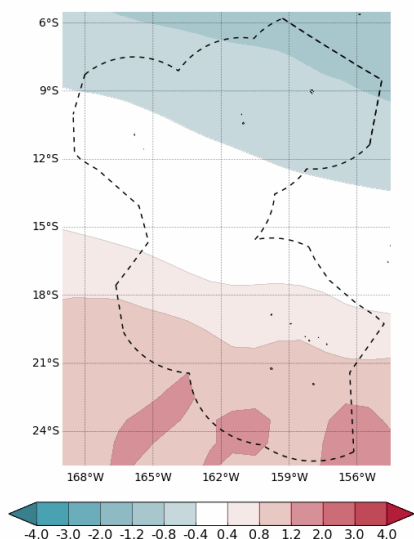
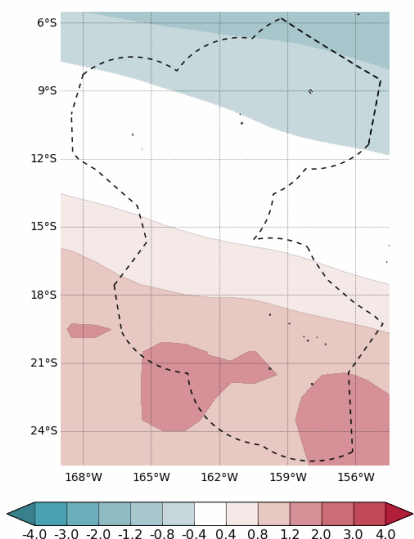
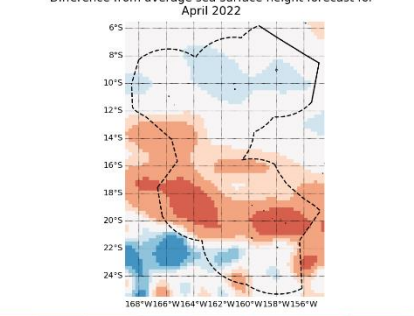
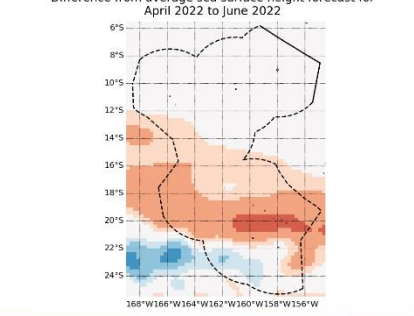
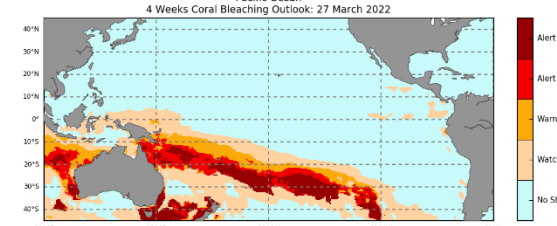
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Exceptional: $X \geq 35$

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

Monthly: April	Seasonal: April to June
Monthly sea surface temperature (Image 5):	Seasonal sea surface temperature (Image 6):
<p>Difference from average sea surface temperature forecast for April 2022</p>  <p>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 http://www.marinerregions.org/</p> <p>Model run: 12/03/2022 Issued: 14/03/2022</p>	<p>Difference from average sea surface temperature forecast for April to June 2022</p>  <p>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 http://www.marinerregions.org/</p> <p>Model run: 12/03/2022 Issued: 14/03/2022</p>
Monthly sea level (Image 7):	Seasonal sea level (Image 8):
<p>Difference from average sea surface height forecast for April 2022</p>  <p>Difference from average (mm)</p> <p>© Commonwealth of Australia 2022 Bureau of Meteorology</p> <p>Model: ACCESS-S2 Base Period: 1981-2018</p> <p>Model Run: 28/02/2022 Issued: 09/03/2022</p>	<p>Difference from average sea surface height forecast for April 2022 to June 2022</p>  <p>Difference from average (mm)</p> <p>© Commonwealth of Australia 2022 Bureau of Meteorology</p> <p>Model: ACCESS-S2 Base Period: 1981-2018</p> <p>Model Run: 28/02/2022 Issued: 09/03/2022</p>
4-week Coral Bleaching (Image 9):	
<p>Pacific Ocean 4 Weeks Coral Bleaching Outlook: 27 March 2022</p>  <p>Alert Level 2 Alert Level 1 Warning Watch No Stress</p> <p>© Commonwealth of Australia 2022 Australian Bureau of Meteorology, COGIPAC COMP</p> <p>NOAA Coral Reef Watch</p>	

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Summary Statement

Monthly and last three months: February 2022/December 2021 to February 2022 statement (Highly significant changes)

Normal rainfall was recorded at Penrhyn station for February, and Rarotonga recorded below normal rainfall. For December 2021 to February 2022, accumulated rainfall was normal for Penrhyn and above normal for Rarotonga.

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

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

Rainfall outlook for next month and 3 months is very likely to be below normal for Penrhyn and above normal for Rarotonga.

Temperature pattern outlooks is similar for next month and next 3 months which is very likely to be near normal for central and Northern Cooks, Penrhyn is expected to be below normal. Above normal is very likely for all Southern Cooks including Rarotonga.

Part 2: Recent Ocean summary statement

Monthly and last three months: February/December 2021 to February 2022 (Highly significant changes)

Sea Surface Temperature statement

The northern Cooks experienced below average SST and the Southern Cooks had above average SST for February 2022.

Sea level statement

Higher than average sea levels was experienced across the whole Cook Islands.

Daily bleaching alert statement

A 'no stress' coral bleaching alert status was seen throughout the region, whilst Rarotonga was on 'watch' for February 2022.

Last three months Sea Surface Temperature statement

For the December 2021 to February 2022 period, similar to the monthly pattern of warmer than average SSTs were experienced for the majority of Cook Islands, with the exception of northern Cook Islands.

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

Ocean Variable statement (Highly significant changes)

Monthly sea surface temperature statement

Monthly outlook show below average for Penrhyn and above average for Southern Cooks including Rarotonga with a significant temperature difference of -0.8 to 1.2°C for April 2022.

Seasonal Sea Surface Temperature statement

Seasonal outlook similar to the monthly outlook, with Rarotonga and Mangaia forecasted to experience significant temperatures of 1.2-2°C.

Monthly sea level statement

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Outlook sea surface heights are likely to be below average for Penrhyn and above average for Rarotonga in April 2022.

Seasonal sea level statement

Similar patterns to the monthly outlook, with near normal for Penrhyn and above average for Rarotonga for April to June 2022 period.

4-weeks Coral Bleaching statement

The outlook for the Cook Islands shows a watch alert for central Cooks and warning alert for southern Cooks, this includes Rarotonga. No stress for Penrhyn.

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

Product	Date: February 2022	Stakeholder	Total Number of Participants	Number of male	Number of female
Climate Bulletin		MoT (Ministry of Transport)	29	17	12
EAR Watch		C.I Govt. Stakeholders and Public	?	?	?
Monthly Climate Briefing		Climate Change	8	2	6
Ocean Outlook					
Climate data request		MMR (Ministry of Marine Resources)	1		1
Total			38	19	19

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