

Review of Ocean Conditions November to April 2023

[Zulfikar Begg (SPC), John Marra (NOAA)
and Grant Smith (Bureau)]



11th Pacific Islands Climate Outlook Forum Statement

This statement was produced by the [WMO RA-V Pacific Regional Climate Centre Network](#) following the 11th Pacific Islands Climate Outlook Forum (PICO-11) held on 25 October 2022, for use by National Meteorological and Hydrological Services (NMHSs) in the Pacific Islands. For more information, please see the [background section](#) and/or contact your local meteorological office.

[Key messages](#) [Climate in review](#) [ENSO](#) [Rainfall](#) [Air temperature & wind](#) [Sea level](#) [Tropical cyclones](#)

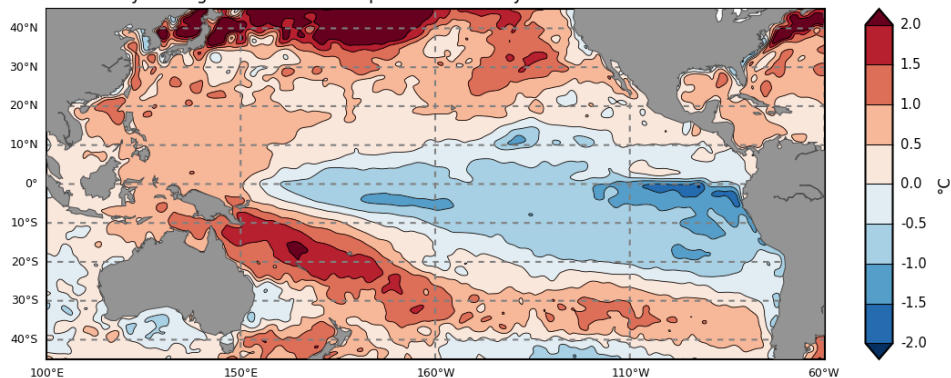
Key messages – November 2022 to April 2023

- Climate model outlooks favour La Niña conditions in the tropical Pacific Ocean from November to February. Between February and April, La Niña will most likely transition to ENSO-neutral, with the second most likely outcome being a continuation of La Niña.
- Drier than normal conditions are favoured for island groups near and west of the Date Line that are located close to the equator. Drier than normal conditions are forecast to extend northeast and southeast from the Date Line towards the sub-tropics, especially in the Southern Hemisphere. Dry conditions in the northern hemisphere seem to zonally span (along the latitude 5° N) in the northeast direction
- Wetter than normal conditions are favoured for islands located between Palau and the central Marshall Islands in the North Pacific and from southeast Papua New Guinea (PNG) to the southernmost French Polynesian islands.
- Sea surface temperatures (SSTs) are favoured to be above normal in the western Pacific and Coral Sea. Below normal SSTs are favoured near the equator typical of La Niña. This is reflected in the air temperature outlook.
- The risk for coral bleaching is enhanced in the tropical west Pacific.
- Sea level is favoured to be notably higher than normal for most of the countries in the region. Communities are encouraged to note periods of higher-than-normal tides, especially when a tropical cyclone (TC) is in the vicinity.
- There is an enhanced risk for TC activity in the western tropical Pacific. In the central part of the region, TC risks are generally near normal to below normal.
- It does not take a severe TC to produce severe impacts. Coastal and river flooding rainfall can occur with a distant, weak, or former TC. Communities should remain vigilant and follow forecast information provided by their NMHS.

Sea surface temperature

Pacific Ocean

3 monthly Average Sea Surface Temperature Anomaly: October 2022 to December 2022

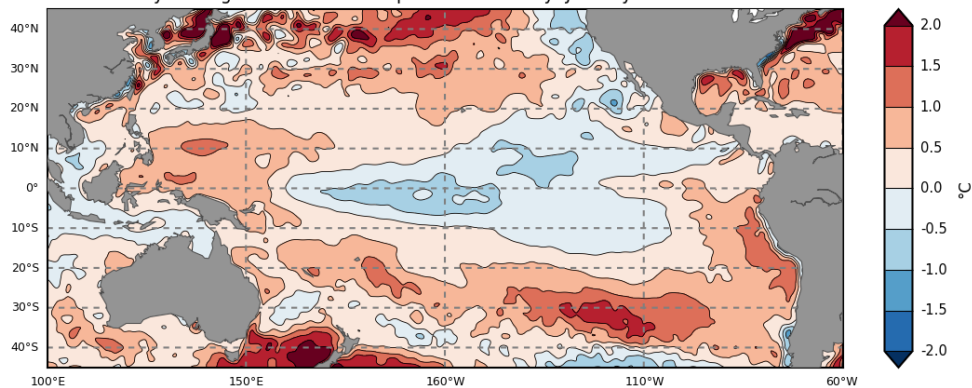


© Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac COMP

Reynolds SST

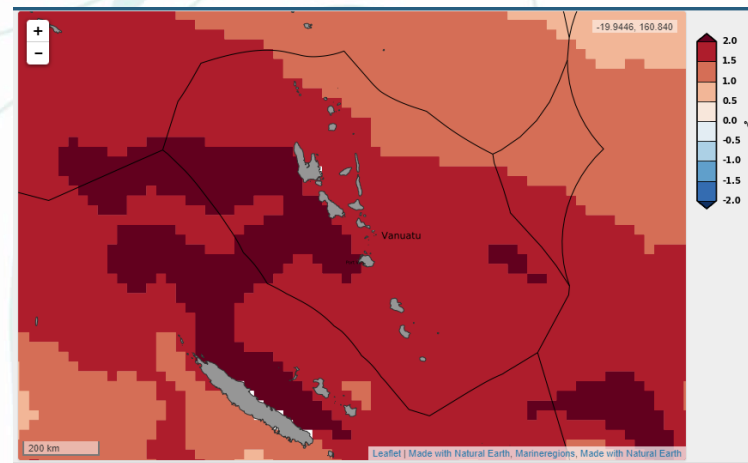
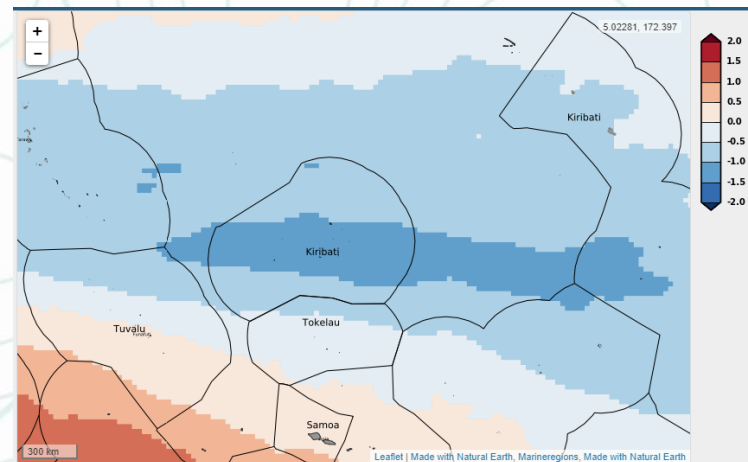
Pacific Ocean

3 monthly Average Sea Surface Temperature Anomaly: January 2023 to March 2023

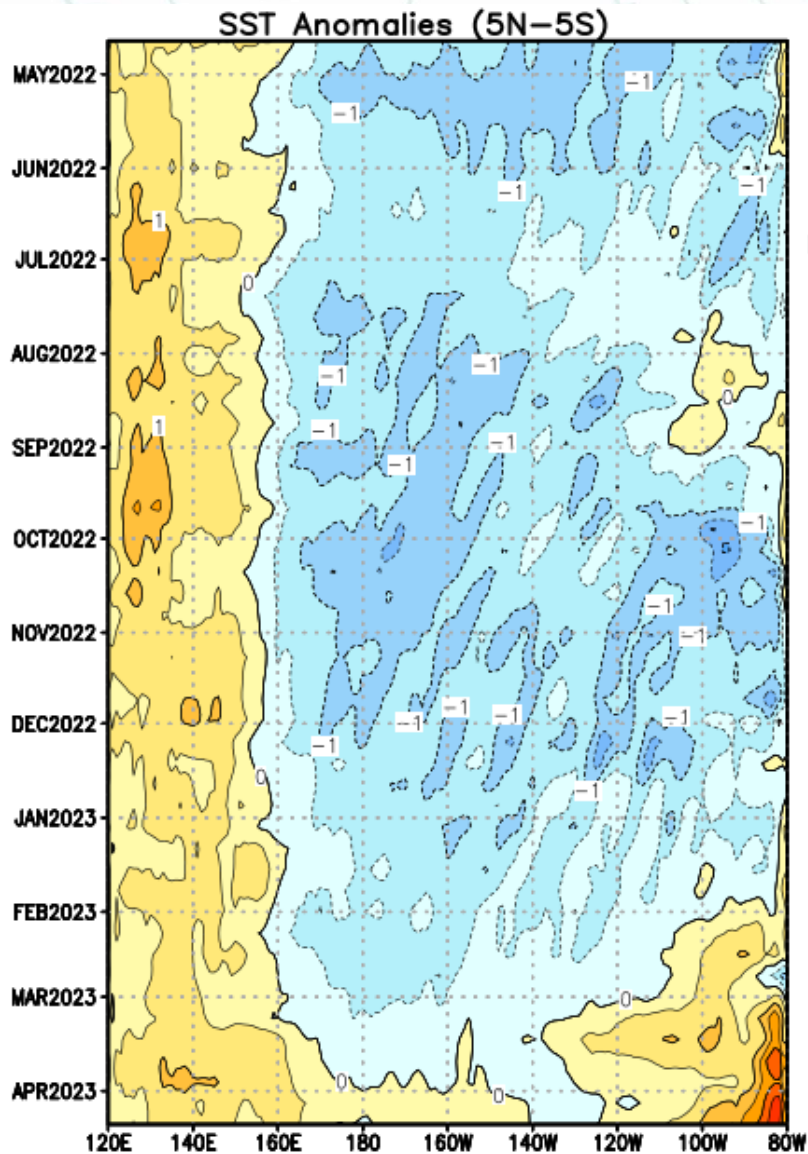


© Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

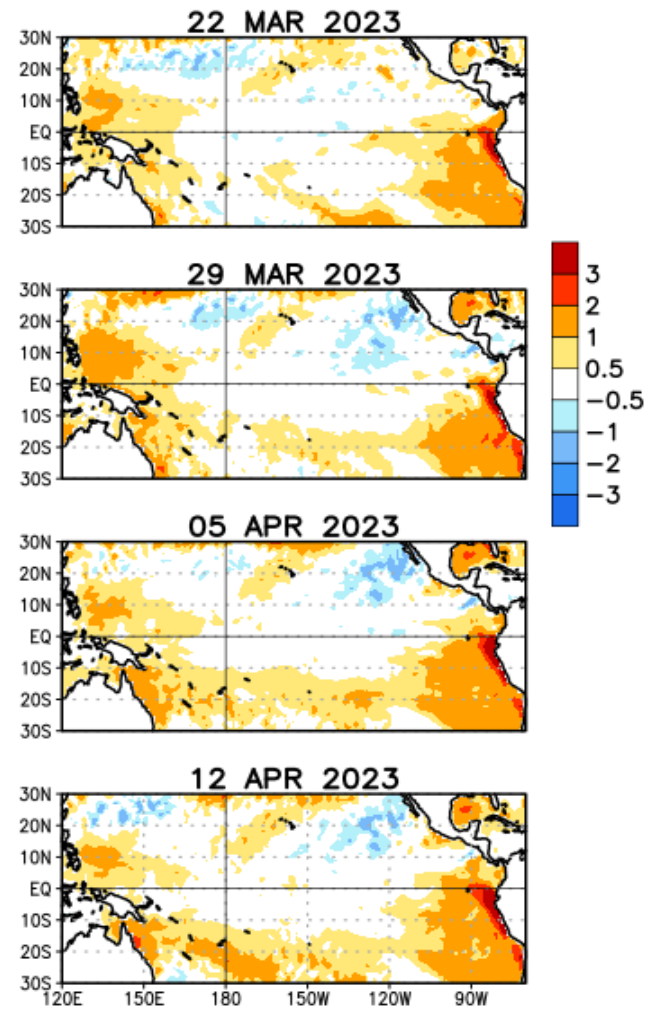
Reynolds SST



Sea surface temperature



Weekly SST Anomalies (DEG C)



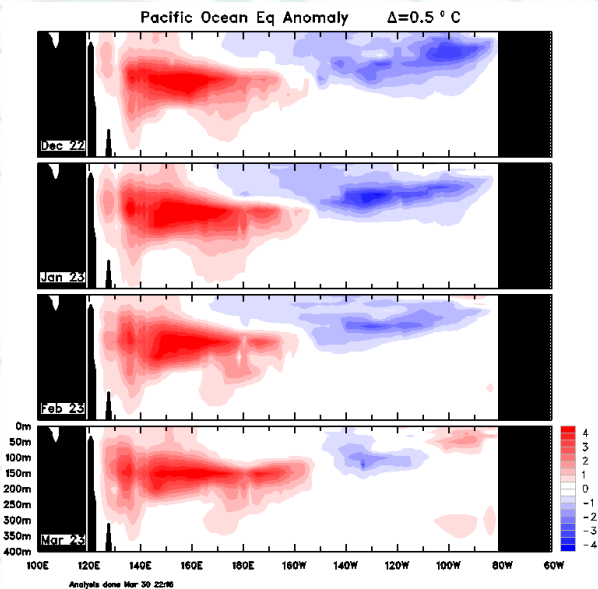
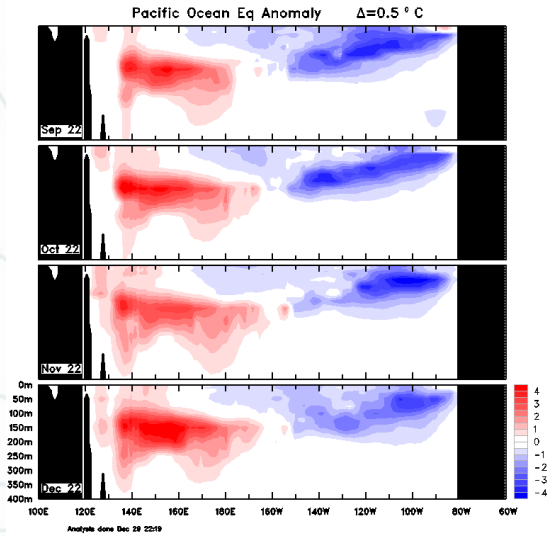
Source:NOAA

Sub-surface temperature

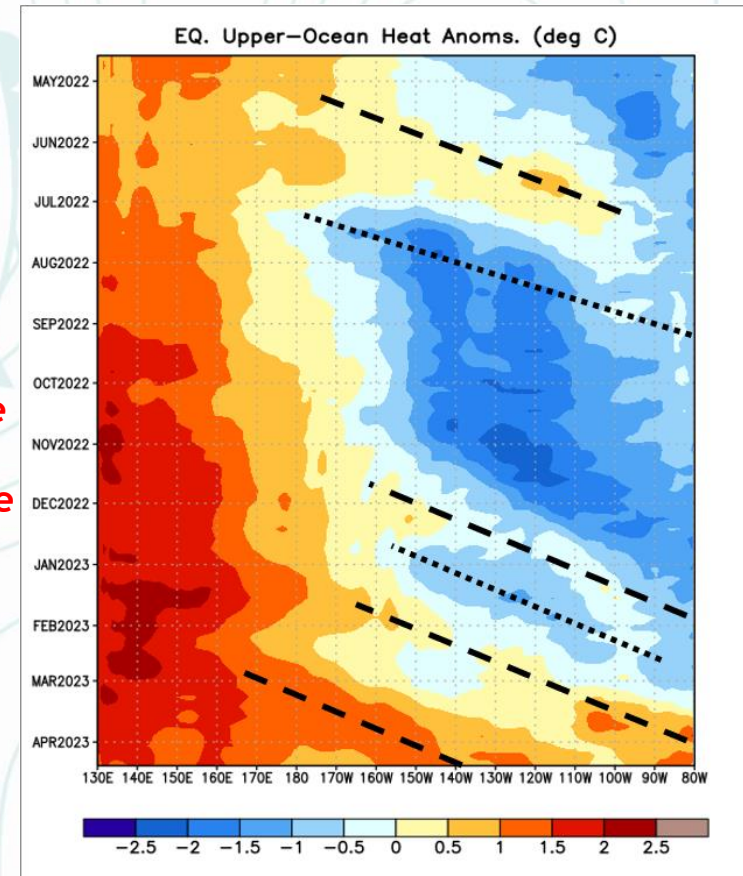
Significant equatorial oceanic Kelvin wave activity (dashed and dotted lines) has been present throughout the period shown.

From August through November 2022, negative subsurface temperature anomalies persisted in the east-central and eastern Pacific Ocean.

Several downwelling Kelvin waves have been evident since late November 2022. More recently, another eastward propagating downwelling Kelvin wave is approaching the eastern Pacific Ocean.



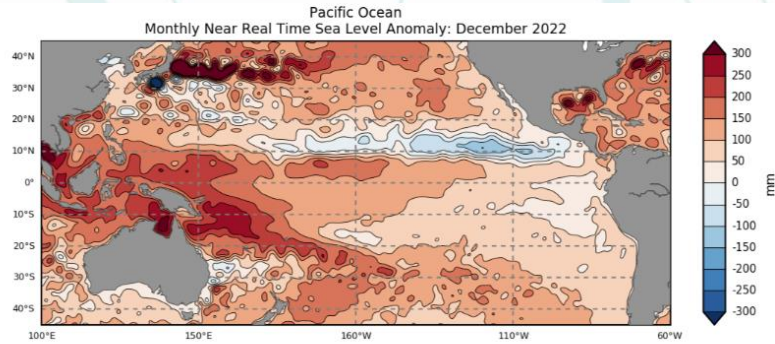
Source: Bureau



Source:NOAA

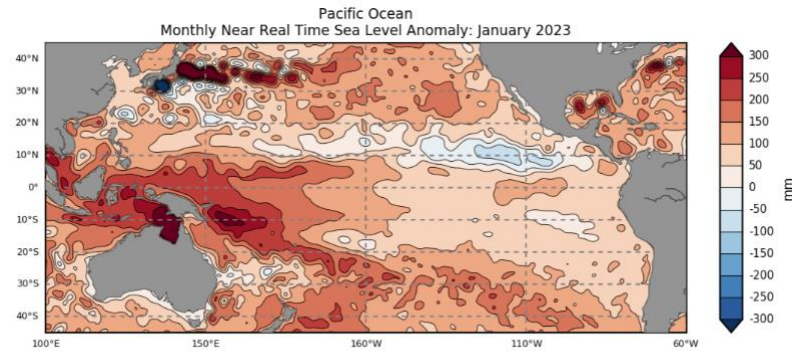
SEA LEVEL ANOMALIES THROUGH JANUARY 2023 (m)

Sea level



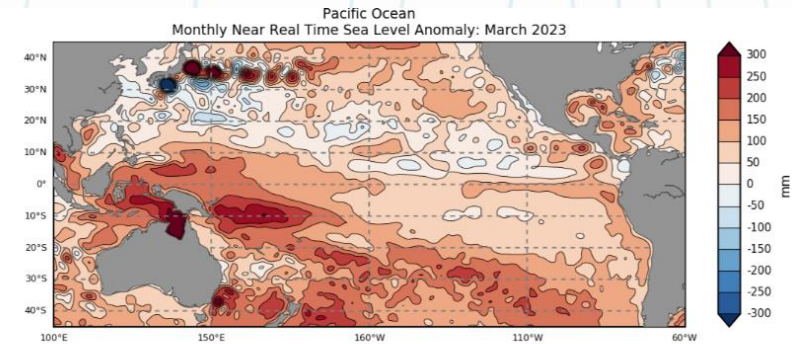
©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac COMP

AVISO Ssalto/Duacs SLA



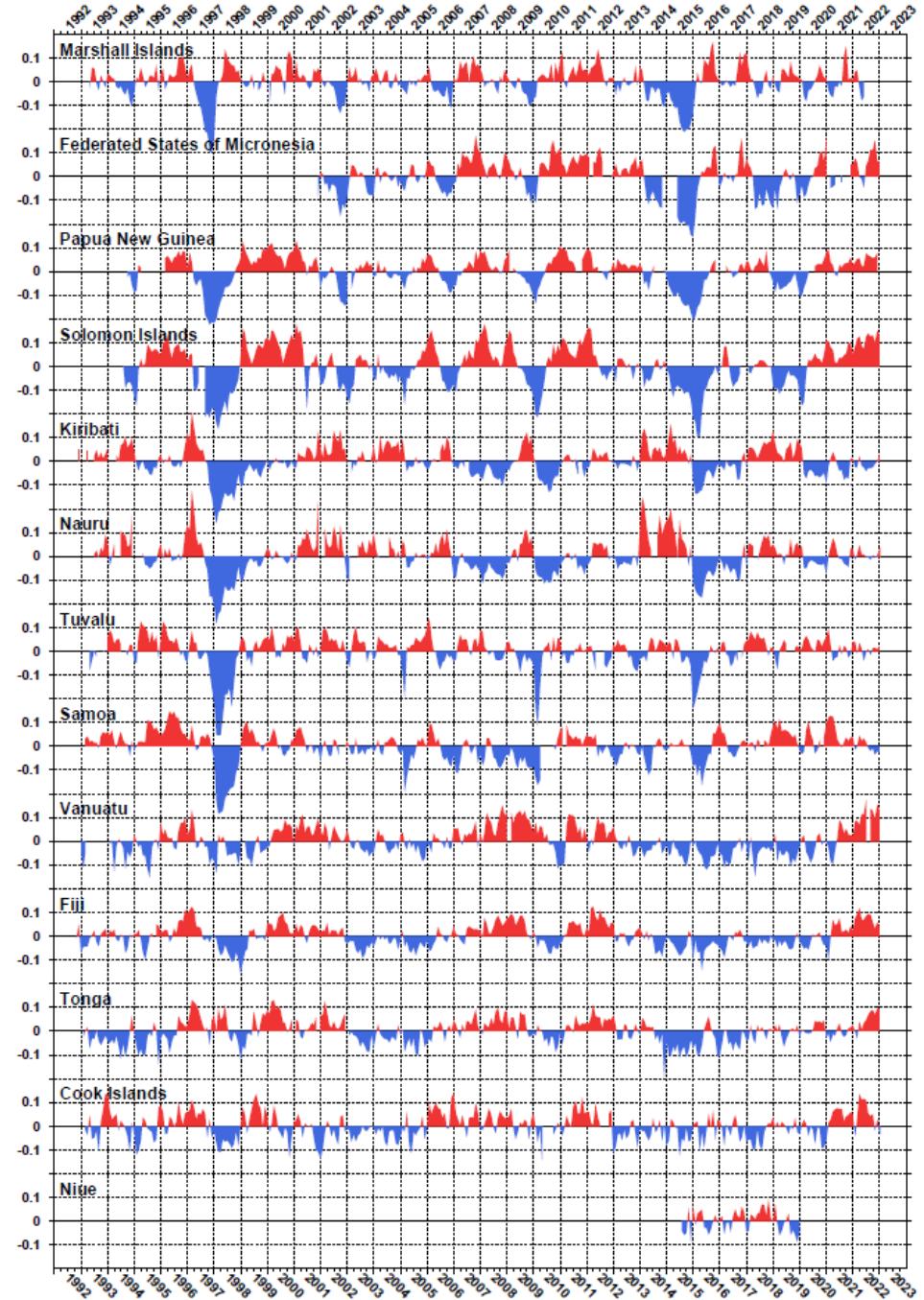
©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

AVISO Ssalto/Duacs SLA



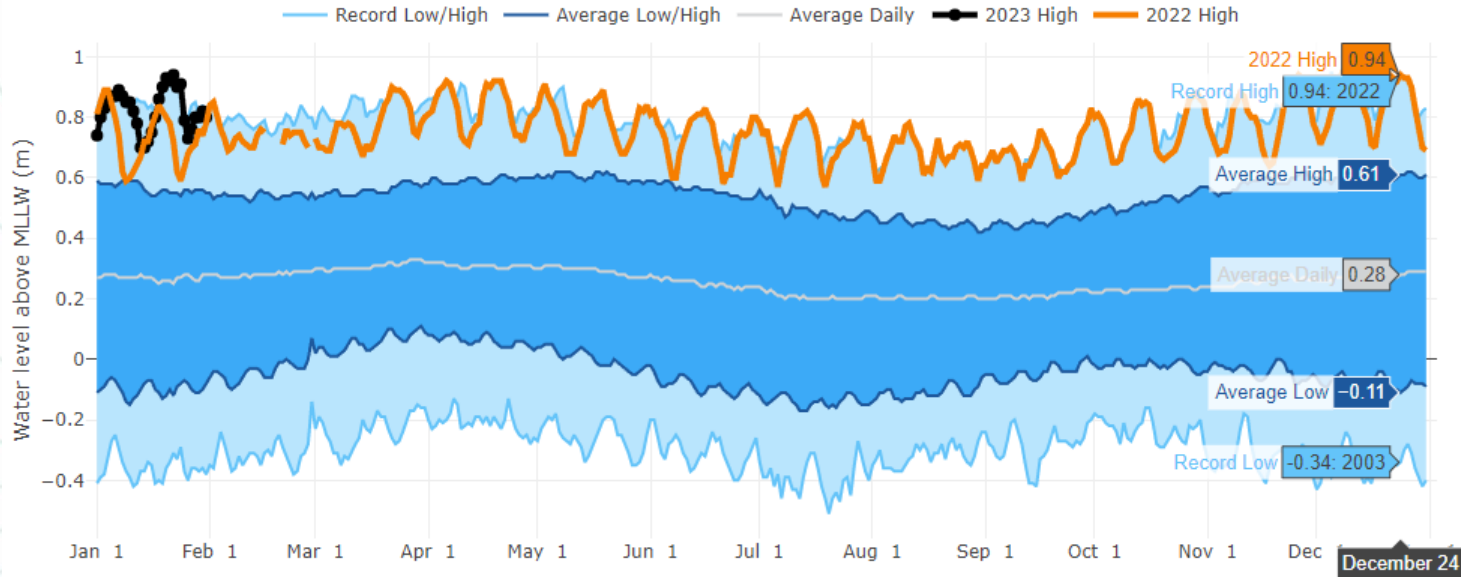
©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

AVISO Ssalto/Duacs SLA

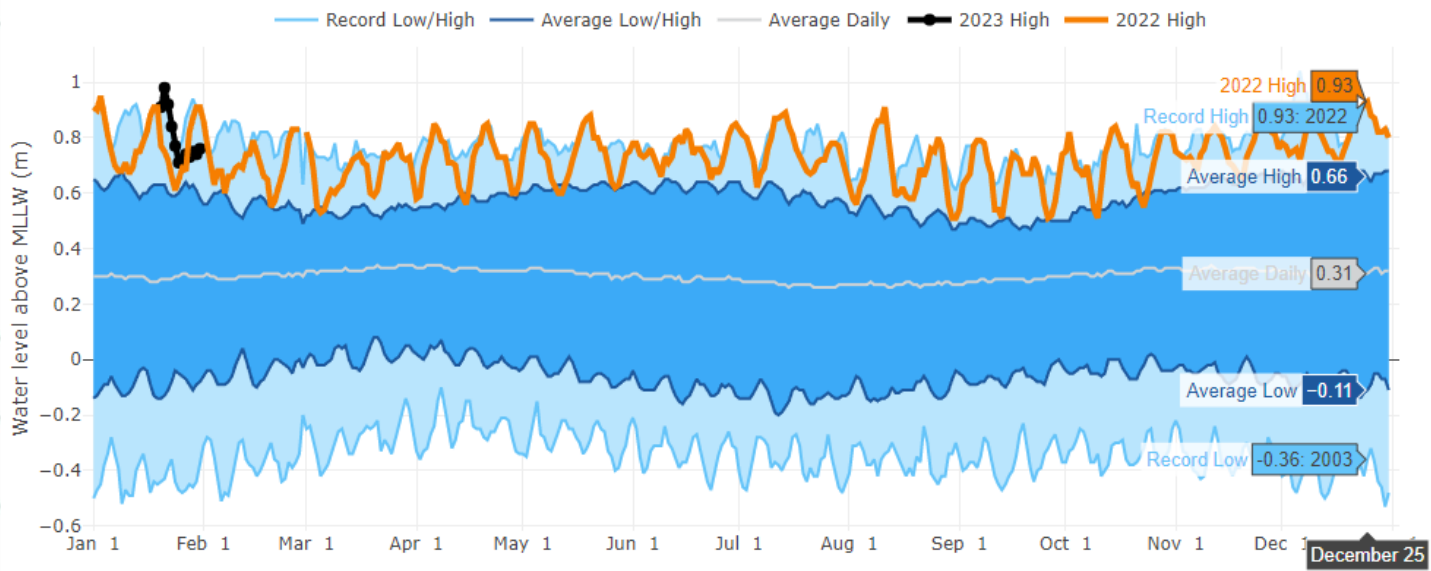


UoH-Sea level

Honiara

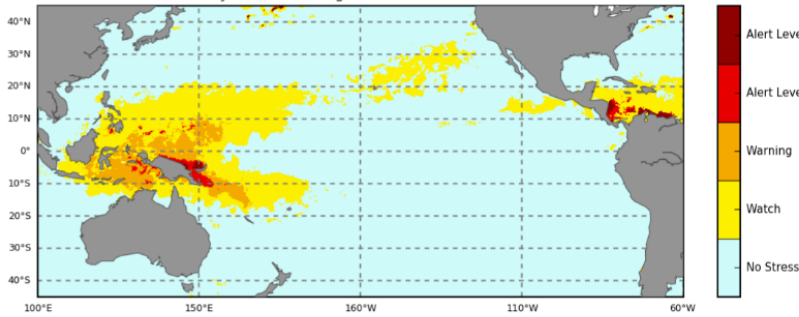


Lombrum



Coral bleaching

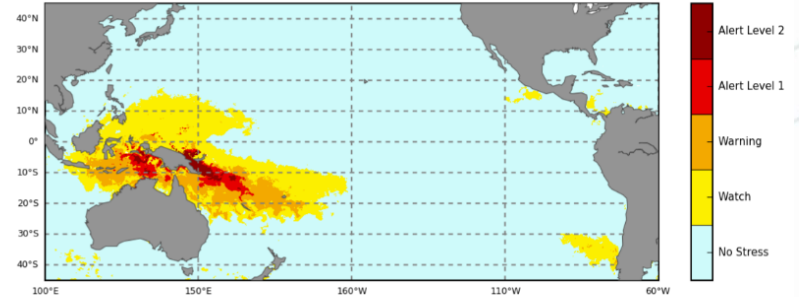
Pacific Ocean
Daily Coral Bleaching Alert: 15 November 2022



©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

NOAA Coral Reef Watch

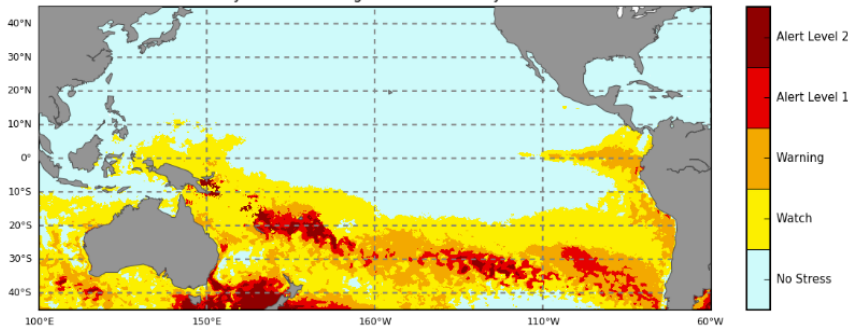
Pacific Ocean
Daily Coral Bleaching Alert: 15 December 2022



©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac COMP

NOAA Coral Reef Watch

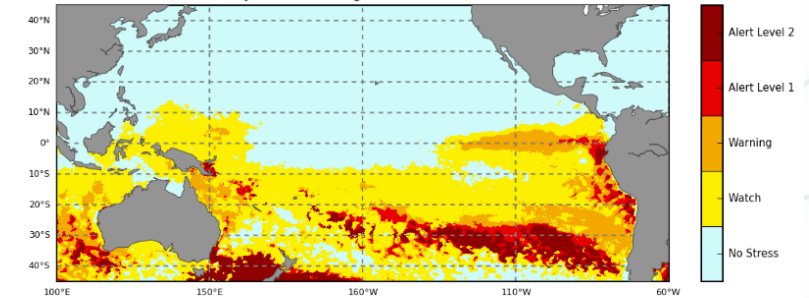
Pacific Ocean
Daily Coral Bleaching Alert: 15 February 2023



©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

NOAA Coral Reef Watch

Pacific Ocean
Daily Coral Bleaching Alert: 15 March 2023



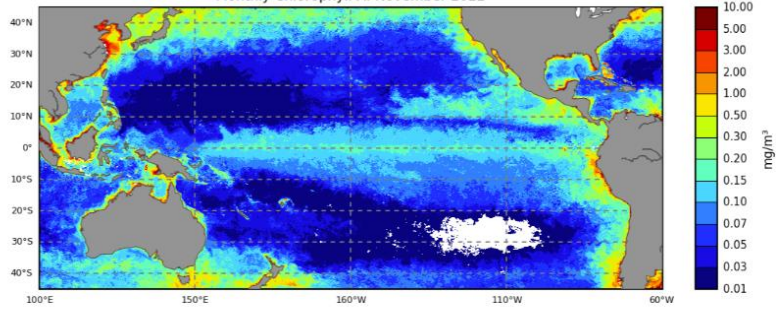
©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

NOAA Coral Reef Watch

Alert Level	Effect	Coral Bleaching Alert
No Data	No alert data available	
No Stress	No thermal stress	
Bleaching Watch	Low-level thermal stress	
Bleaching Warning	Coral bleaching possible	
Bleaching Alert Level 1	Coral bleaching likely	
Bleaching Alert Level 2	Coral mortality likely	

Chlorophyll

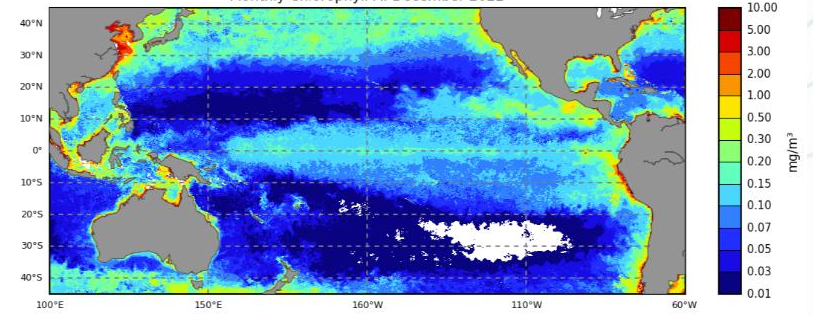
Pacific Ocean
Monthly Chlorophyll-A: November 2022



©Commonwealth of Australia 2022
Australian Bureau of Meteorology, COSPPac COMP

Chlorophyll-A

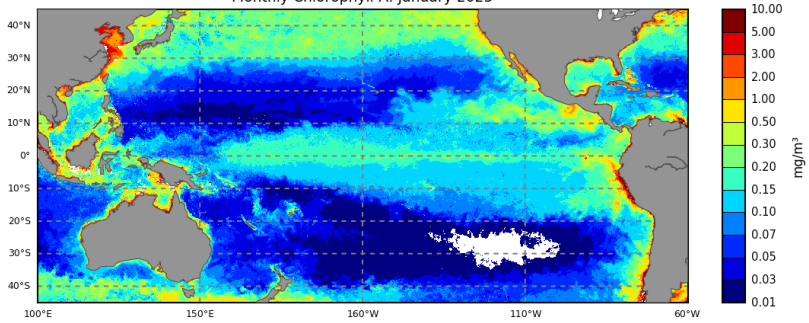
Pacific Ocean
Monthly Chlorophyll-A: December 2022



©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

Chlorophyll-A

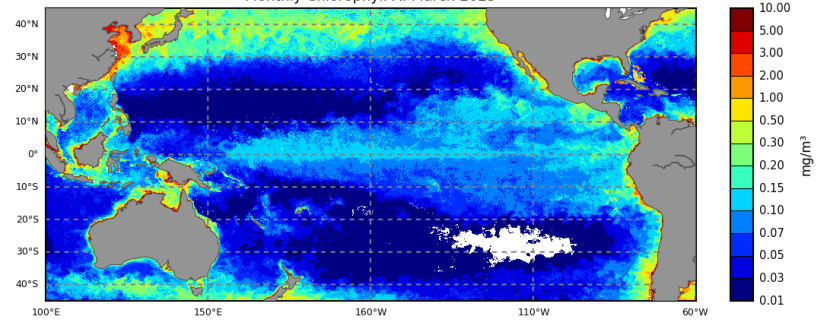
Pacific Ocean
Monthly Chlorophyll-A: January 2023



©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

Chlorophyll-A

Pacific Ocean
Monthly Chlorophyll-A: March 2023

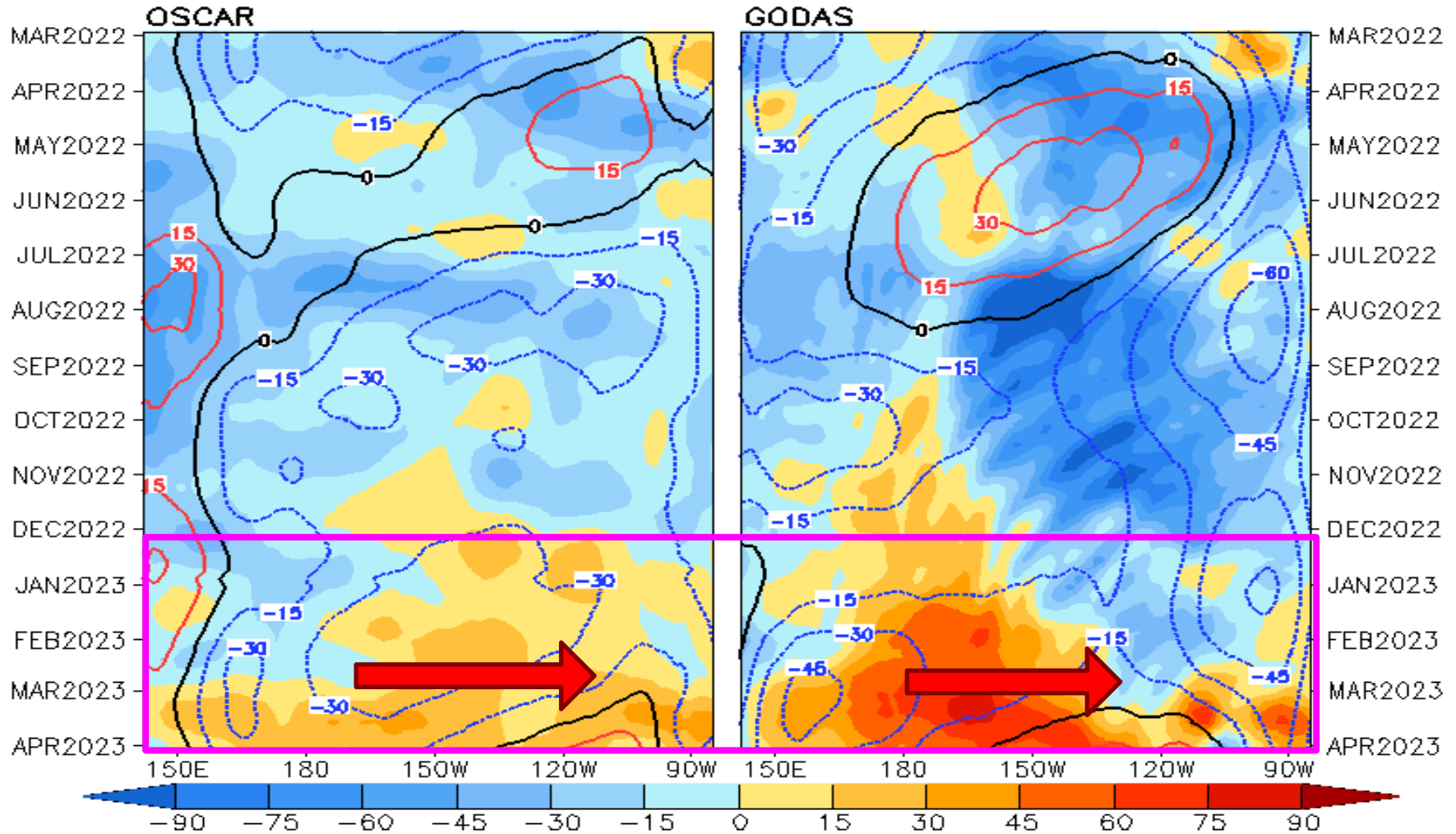


©Commonwealth of Australia 2023
Australian Bureau of Meteorology, COSPPac

Chlorophyll-A

Current Anomaly (cm/s)

U (15m), cm/s, 2°S–2°N (Shading=Anomaly; Contour=1993–2020 Clim)



Source:NOAA

Case Study-Tuvalu



Tuvalu Meteorological Service

February 22 · 🌐

...

KING TIDE peak on the 20th, Feb,2023

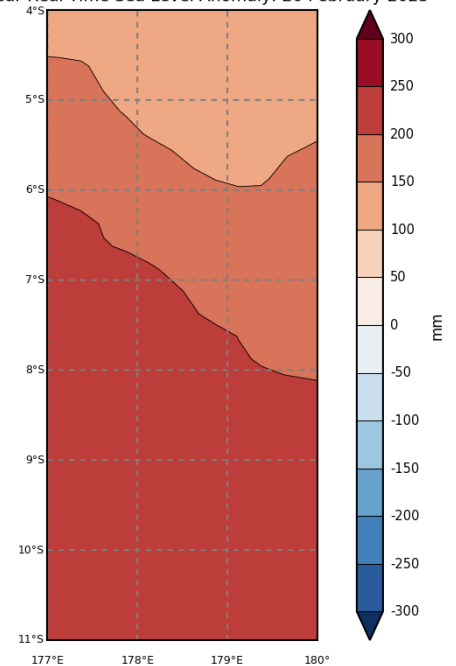
#17.18pm#3.30m#

Impact of Climate Change continue to affect most residents of Fongafale, Funafuti.



10 highest tides for 2023		
Date	Time	Height (m)
20-Feb	17:18	3.3
21-Feb	18:00	3.28
21-Mar	16:58	3.25
22-Jan	17:31	3.24
19-Feb	16:35	3.23
23-Jan	18:18	3.23
20-Mar	16:18	3.21
22-Mar	17:36	3.2
21-Jan	16:45	3.18
01-Sep	5:33	3.18

Tuvalu
Daily Near Real Time Sea Level Anomaly: 20 February 2023



Case Study-Fiji



Fiji Meteorological Service

February 21 · 🌐

🚨 CORAL BLEACHING- ALERT 2

The 4 and 8 weeks coral bleaching outlook is at 'Alert 2' for majority of the Fiji waters, with the outlook for 12 weeks at 'Alert 1'.

Relevant authorities should take heed of this potential bleaching event and ensure that proper management plans are implemented to reduce the impacts of coral bleaching in the coming months.

All divers, and other marine interests are advised to report any bleaching spotted in reefs to the [Ministry of Fisheries, Fiji](#).

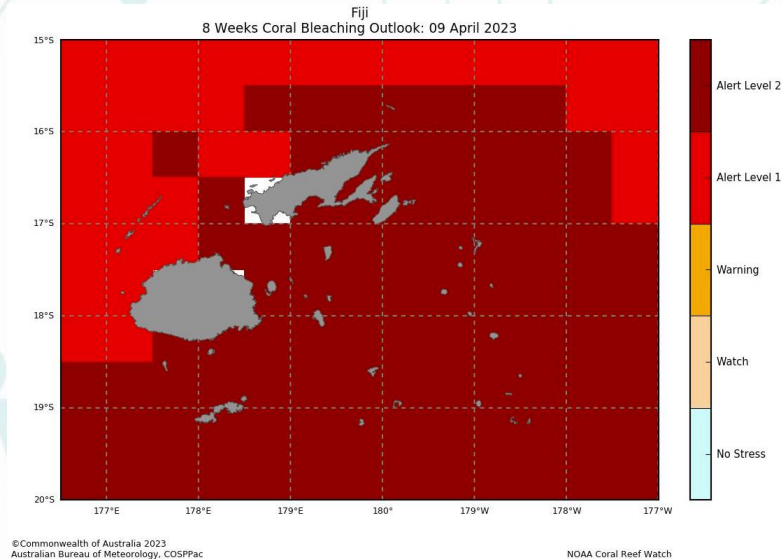
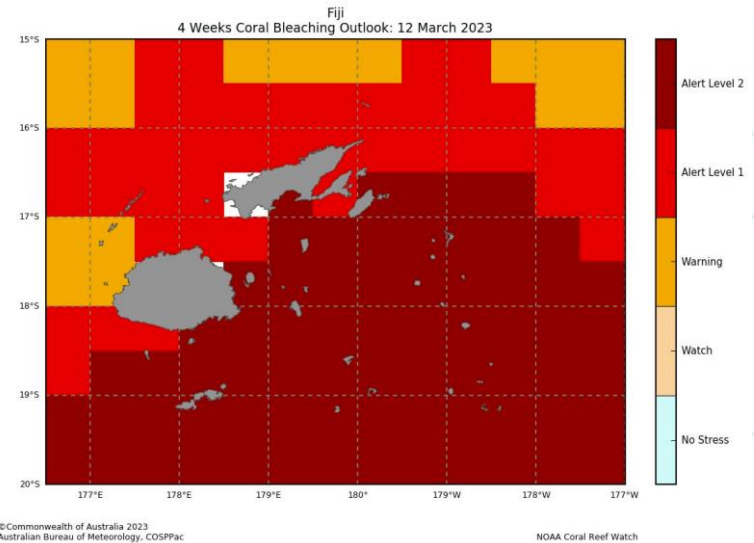
🔗 Click on the link for the detailed Fiji Ocean Outlook (March to May 2023):
<https://www.met.gov.fj/index.php?page=FijiOceanOutlook>



FIJI METEOROLOGICAL SERVICE

CORAL BLEACHING OUTLOOK ALERT 2

Learn more about Fiji's Ocean Outlook at
www.met.gov.fj



Summary

- SST well aligned with La Nina patterns, cooler than normal conditions extending from 160E eastwards and surrounded by warmer conditions. Peak negative anomalies close to -1.5°C in Kiribati and peak positive anomaly of more than 2°C in Vanuatu.
- Sea level generally remained higher than normal for most of the countries with countries close to the Coral Sea region experiencing peak anomalies of up to 30cm.
- Countries experiencing highest tides of the year- coastal flooding experienced in Tuvalu
- Coral bleaching: towards the end of last year, alert levels in the western Pacific and recently the alert levels for countries below 10°S .

The background features a complex pattern of light blue, wavy lines that resemble topographical contour lines or fluid flow paths. These lines are interspersed with small, light blue arrows pointing in various directions, creating a sense of movement and flow. The overall aesthetic is clean and modern, with a focus on organic, flowing shapes.

Thank you/vinaka