



# Tonga Ocean Outlook

Issue: 10

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## TONGA METEOROLOGICAL SERVICE

P. O. Box 1380,

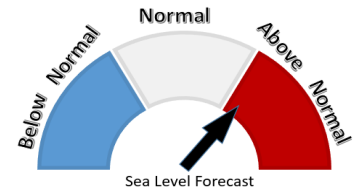
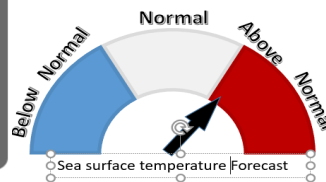
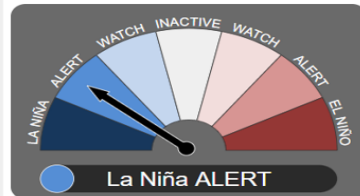
Domestic Terminal, Fua'amotu Airport,  
Tonga

Phone: (676) 35009

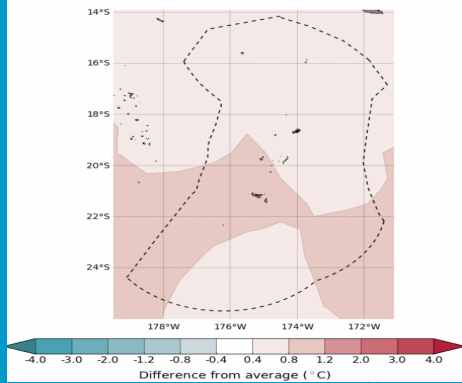
Fax: (676) 35123

Website: [www.met.gov.to](http://www.met.gov.to)Email: [metstaff@met.gov.to](mailto:metstaff@met.gov.to)

- La Nina Alert at 70% chance of occurring towards end of the year.
- Above normal sea surface temperatures (SSTs) are favoured for small patches of country EEZ including Tonga.
- Sea level is favoured to be notably higher than normal in most of Tonga waters.
- The fisheries convergence zone is predicted to be far north of Tonga in the next few months.
- Next extreme highest and lowest tides will be on 6<sup>th</sup> November at height of 1.84m, lowest tide will be 0.89m.

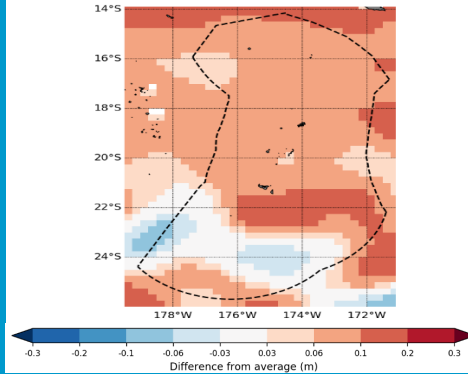


## Sea Surface Temperature Forecast

Difference from average sea surface temperature forecast for  
November 2021 to January 2022

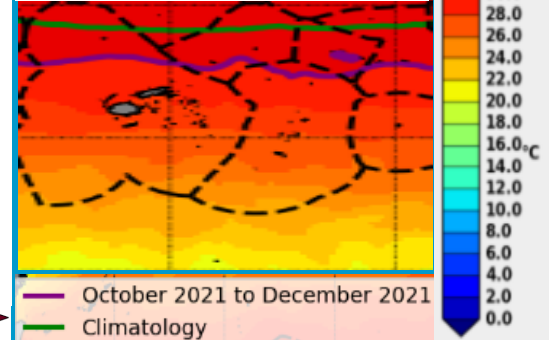
Sea surface temperature forecast for November 2021 to January 2022 shows above average across the country. Presence of warmer or cooler waters than usual indicates whether El Nino or La Nina like pattern is likely during the forecast period or monitoring warm patches of warm waters which gives insight into the potential for cyclone formation.

## Sea-level Forecast

Difference from average sea surface height forecast for  
October 2021 to December 2021

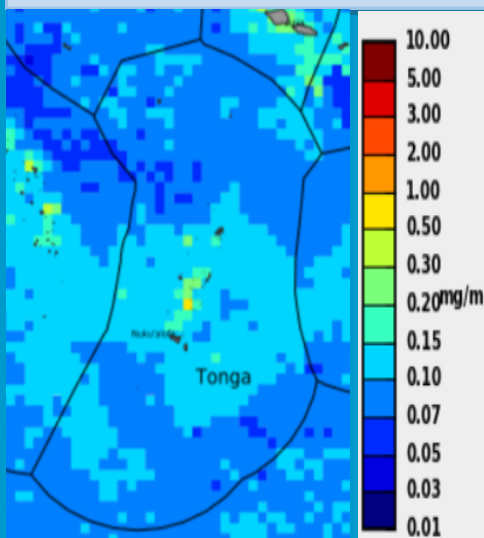
Sea level anomaly 3 month forecast shows above average sea level height to south of Tonga waters through to the north of Tonga waters. Stakeholders can use this forecasts to make decisions about the protection of communities and infrastructure against coastal inundation.

## Nutrient Zone Forecast

Sea surface temperature forecast for  
October 2021 to December 2021

The boundary between warm and cold ocean water is rich in nutrients and attracts Tuna. This convergence zone is normally located far north of Tonga during this time of year (green line), however it is forecast to be displaced a south of its normal position and closer to the Niuas during this period.

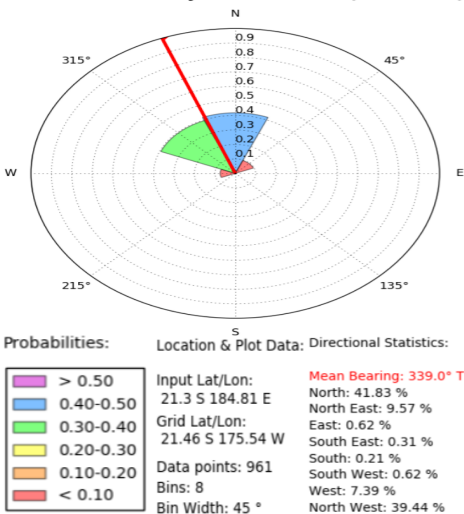
## Monthly Chlorophyll



October's map shows a higher concentration of chlorophyll spreading across central Tonga. Chlorophyll is present in algae and small marine plants and fish. These areas tend to be rich for fishing during this time period. Also high concentration of chlorophyll provide indication of potential hazardous conditions near the coast from reef fish diseases, such as ciguatera, harmful algal blooms, and outbreak of Crown of Thorns starfish, which is a coral eating pest.

## Monthly Wave Direction

October mean daily wave direction (1979-2009)



Nuku'alofa wave climate for the month of October shows majority of the waves to come from the south east going toward the north west direction. This has been the average direction for the past 30 years. The average wave height for this location in October is 2.4 m with the possibility of waves reaching as high as 4.1m.

## The highest tide predicted for 2021

10 highest tides for 2021			10 lowest tides for 2021		
Date	Time	Height (m)	Date	Time	Height (m)
5-Dec	20:05	1.87	26-Jun	14:47	0.19
6-Dec	21:00	1.86	28-May	15:03	0.20
29-Apr	08:56	1.86	25-Jun	13:53	0.20
4-Dec	19:12	1.85	27-May	14:09	0.21
28-Apr	8:56	1.85	27-Jun	15:40	0.22
31-Mar	9:20	1.84	29-May	15:58	0.22
27-May	7:41	1.84	7-Dec	3:30	0.22
6-Nov	20:27	1.84	6-Dec	2:36	0.22
28-May	8:35	1.84	25-Jul	14:30	0.23
1-Apr	10:11	1.83	8-Nov	3:46	0.23

2021 Tidal predictions show the highest tides of the year for Nuku'alofa. The next highest tide coming up on the 6th November with a height of 1.68m. The next lowest tide is again on the 6th November with a height of 0.28m.