



Tonga Ocean Outlook

October to December 2024

Issue: 8

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TONGA METEOROLOGICAL SERVICE

P. O. Box 1380,

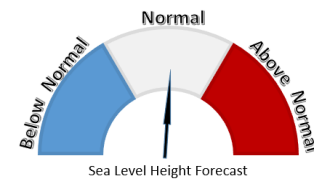
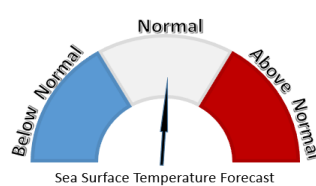
Domestic Terminal, Fua'amotu
Airport, Tonga

Phone: (676) 7400062

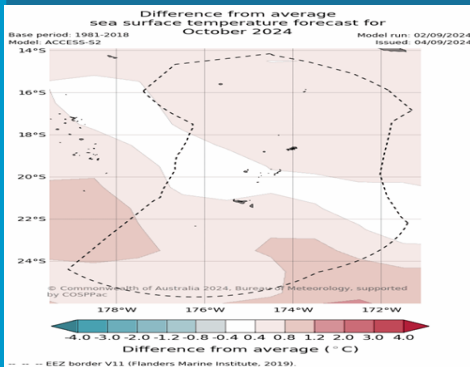
Website: www.met.gov.to

Email: metstaff@met.gov.to

- ENSO continues to be neutral and will continue during the forecast period.
- Sea surface temperatures (SSTs) forecast for Tonga is around 0.4 to 0.6°C above average.
- Sea level is forecast to be 30—60mm above average over southern Tonga waters during the forecast period.
- The fisheries convergence zone is predicted to north of the Niuaus waters in the next few months.

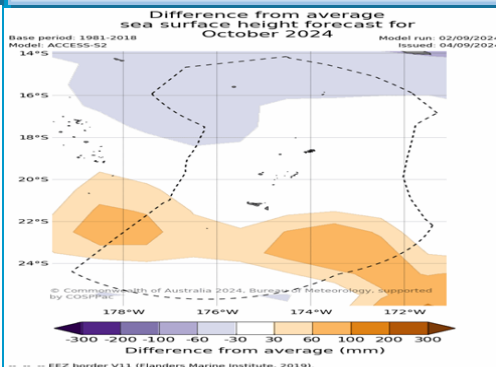


Sea Surface Temperature Forecast



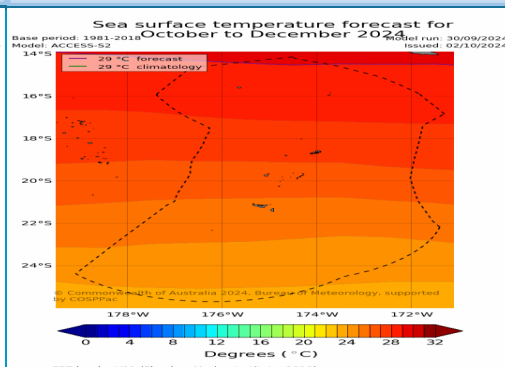
Sea surface temperature forecast for October to December 2024 shows 0.4 to 0.6 °C above average for Tonga. Presence of warmer or cooler waters than usual is useful because it indicates whether El Niño or La Niña like pattern is likely during the forecast period.

Sea-level Forecast



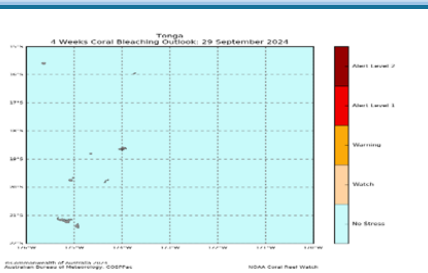
Sea level forecast shows 30-100mm above average sea level height over southern Tonga waters, average across central to northern Tonga waters. Stakeholders can use this forecast to make decisions about the protection of communities and infrastructure against coastal inundation.

Nutrient Zone Forecast



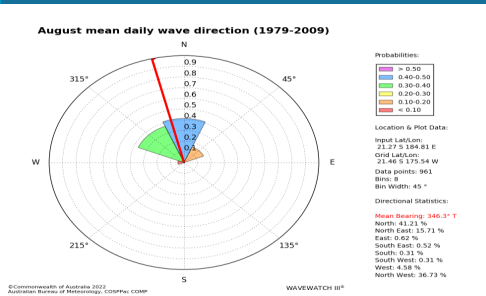
The boundary between warm and cold ocean water is rich in nutrients and attracts Tuna. This convergence zone is normally located to the far north of Samoa waters but in August to October, it is displaced a bit south and north of Niuafo'ou. This information can be used by stakeholders to know where tuna can be found during this time period.

Coral Bleaching



Coral bleaching is at the No Stress level across Tonga waters. Bleaching is a common stress response of corals, caused by warmer sea temperatures. During periods of unusually high sea temperatures, corals can bleach and may eventually die if the heat stress is intense and sustained over several weeks. This information is very useful for tourists and related stakeholders.

Monthly Wave direction



Nuku'alofa wave climate for August shows majority of the waves to come from the southern going toward the northern direction. This has been the average direction for the past 30 years. The average wave height for this location in August is 2.5 m with the possibility of waves reaching as high as 4.4m.

The highest & Lowest tides predicted for 2024

10 highest tides for 2024			10 lowest tides for 2024		
Date	Time	Height (m)	Date	Time	Height (m)
11-Feb	20:41	1.88	20-Oct	3:14	0.24
13-Mar	9:45	1.88	19-Oct	2:20	0.25
12-Mar	8:54	1.88	18-Nov	2:55	0.26
12-Feb	21:34	1.87	21-Oct	4:07	0.26
10-Apr	8:28	1.87	21-Aug	14:34	0.26
11-Mar	20:22	1.87	17-Nov	2:03	0.26
10-Feb	19:47	1.86	21-Sep	3:32	0.27
10-Mar	19:29	1.85	22-Aug	15:22	0.27
18-Oct	19:59	1.85	22-Sep	4:27	0.28
09-Apr	7:37	1.85	19-Nov	3:47	0.28

Tidal predictions show the highest tides of the year for Nuku'alofa. The next highest and lowest tide coming up on the 18 October with the highest tide of 1.85m and the lowest tide on the 20th at 0.24m. This information is very useful to everyone who wants to know these events especially to those stakeholders and people who are interested in tide predictions for guidance. Process of watering and soaking of the beach hibiscus fibre (fau) for making waist mats.

Spring tide (full moon)



Neap tide (first-quarter moon)



Spring tide (new moon)



Neap tide (third-quarter moon)



Spring and Neap Tides

Spring and neap tides occur every month and correspond with the phase of the moon. They usually occur twice per month. **Spring tides** are very high tides that occur during full and new moon phases, when the gravitational forces of the sun and moon combine to exert a stronger pull on the oceans. **Neap tides** are lower high tides and higher low tides that occur during the moon's quarter phases, when the gravitational forces between the sun and moon are not aligned.

Moon Phases for October to December

3 Oct (new moon)	●	11 Oct (first quarter)	☾
17 Oct (full moon)	☉	24 Oct (last quarter)	☾
2 Nov (new moon)	●	9 Nov (first quarter)	☾
16 Nov (full moon)	☉	23 Nov (last quarter)	☾
1 Dec (new moon)	●	9 Dec (first quarter)	☾
15 Dec (full moon)	☉	23 Dec (last quarter)	☾