



# Tonga Ocean Outlook

## July to September 2024

Issue: 6

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**TONGA METEOROLOGICAL SERVICE**

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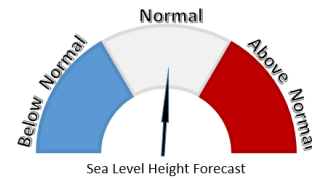
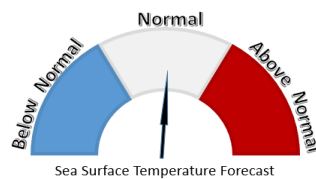
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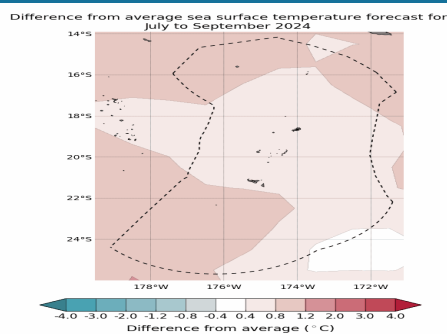
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- There are some early signs that a La Niña might form in the Pacific Ocean later in 2024.
- Sea surface temperatures (SSTs) forecast for Tonga is around 0.4 to 0.8°C above average.
- Sea level is forecast for below average over the Niuaus and above average in the south during the forecast period.
- The fisheries convergence zone is predicted to be further north of the Niuaus waters in the next few months.

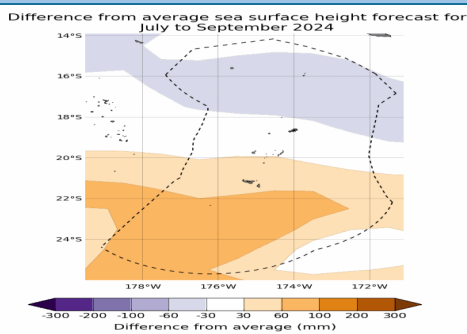


### Sea Surface Temperature Forecast



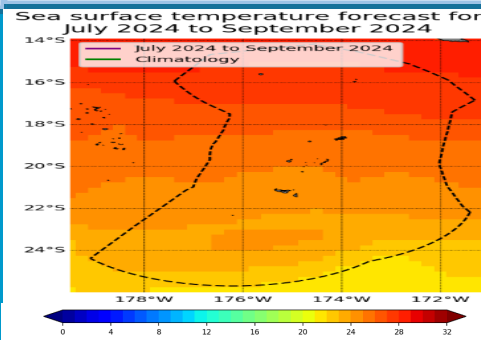
Base period: 1981-2018  
Model: ACCESS-S2  
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Model run: 03/06/2024  
Issued: 09/06/2024

### Sea-level Forecast



Base period: 1981-2018  
Model: ACCESS-S2  
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Model run: 03/06/2024  
Issued: 09/06/2024

### Nutrient Zone Forecast



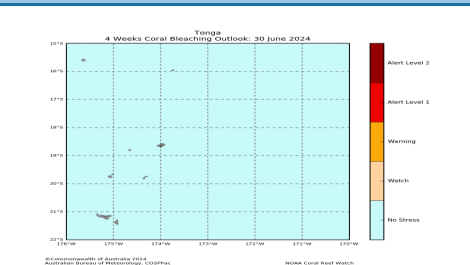
© Commonwealth of Australia 2024  
Model: ACCESS-S2  
Base Period: 1981-2018  
Model run: 09/03/2024  
Issued: 13/03/2024

Sea surface temperature forecast for July to September 2024 shows 0.4 to 0.8°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 shows 30-100mm above average sea level height over southern Tonga waters, average across central Tonga waters and 30 to 60mm below average sea level in northern Tonga. Stakeholders can use this forecast to make decisions about the protection of communities and infrastructure against coastal inundation.

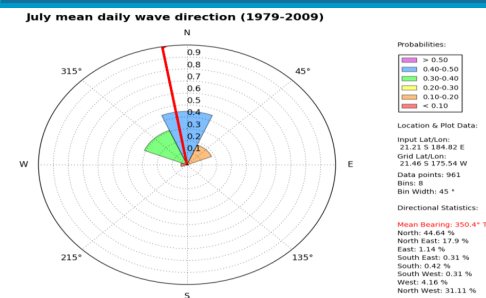
The boundary between warm and cold ocean water is rich in nutrients and attracts Tuna. This convergence zone is normally located to the far north of Niuafo'ou waters but in June, it is displaced a bit south. This information can be used by stakeholders to know where tuna can be found during this time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

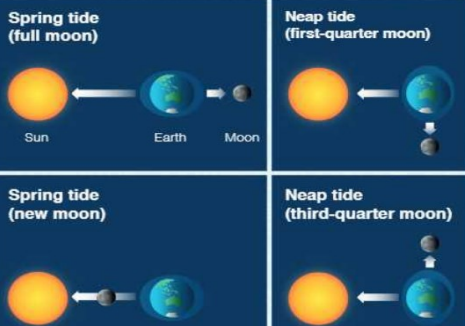


Nuku'alofa wave climate for July shows majority of the waves to come from the south direction toward the north direction. This has been the average direction for the past 30 years. The average wave height for this location in July is 2.6 m with the possibility of waves reaching as high as 4.9m.

### 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 24<sup>th</sup> July with the highest tide of 1.72m at 9.25am and 0.29m at 3.45pm. 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 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 July to September 2024

|                         |                     |
|-------------------------|---------------------|
| 14 July (first quarter) | 21 July (full moon) |
| 28 July (last quarter)  | 5 Aug (new moon)    |
| 13 Aug (first quarter)  | 20 Aug (full moon)  |
| 26 Aug (last quarter)   | 3 Sep (new moon)    |
| 11 Sep (first quarter)  | 18 Sep (full moon)  |
| 25 Sep (last quarter)   |                     |