## Pacific Islands - Online Climate Outlook Forum (OCOF) No. 160

## Country: Tonga

## TABLE 1: Monthly Rainfall

| Station (include data period) | Oct-2020 | Nov-2020 | Dec-2020 | | | | |
|---|---|---|---|---|---|---|---|
| | | | Total (mm) | 33%tile | 67%tile | Median | Rank |
| | Total (mm) | Total (mm) | Rainfall (mm) | | | | |
| ***Northern Division*** | | | | | | | |
| Niuafo'ou (1971-2020) | 399.0 | 130.9 | 472.6 | 225.3 | 361.7 | 283.0 | 42/48 |
| Niuatoputapu (1947-2020) | 374.7 | 183.1 | 540.1 | 172.7 | 281.3 | 245.5 | **66/69** |
| ***Central Division*** | | | | | | | |
| Vava'u (1947-2020) | 265.6 | 380.9 | 347.5 | 122.4 | 231.0 | 164.5 | 58/74 |
| Ha'apai (1947-2020) | 315.6 | 48.3 | 247.9 | 66.0 | 156.0 | 119.0 | 59/74 |
| ***Southern Division*** | | | | | | | |
| Fua'amotu (1979-2020) | 243.5 | 58.8 | 132.0 | 133.0 | 197.0 | 157.5 | 14/41 |
| Nuku'alofa (1944-2020) | 184.0 | 61.5 | 118.7 | 76.0 | 167.0 | 126.0 | 36/77 |

## TABLE 2: Three-month Rainfall for October to December 2020

| Station | Three-month Total | | 33%tile | 67%tile | Median | Rank | SCOPIC forecast probabilities based on NINO3.4 July-August 2020 | | | | Verification: Consistent, Near-consistent, Inconsistent? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rainfall (mm) | | | | | | B-N | N | A-N | LEPS | |
| ***Northern Division*** | | | | | | | | | | | |
| Niuafo'ou (1971-2020) | 1002.5 | Above normal | 638.7 | 855.0 | 711.0 | 38/46 | 30 | 34 | **36** | 1 | Consistent |
| Niuatoputapu (1947-2020) | 1097.9 | Above normal | 533.0 | 742.7 | 619.0 | **66/69** | 30 | 33 | **37** | 6 | Consistent |
| ***Central Division*** | | | | | | | | | | | |
| Vava'u (1947-2020) | 994.0 | Above normal | 378.0 | 613.0 | 499.5 | **71/74** | 26 | 36 | **38** | 20 | Consistent |
| Ha'apai (1947-2020) | 611.8 | Above normal | 246.0 | 421.0 | 336.0 | 64/74 | 26 | 36 | **38** | 18 | Consistent |
| ***Southern Division*** | | | | | | | | | | | |
| Fua'amotu (1979-2020) | 434.3 | Normal | 309.0 | 444.7 | 371.5 | 25/41 | 8 | 45 | **47** | 26 | Near-consistent |
| Nuku'alofa (1944-2020) | 364.2 | Normal | 281.0 | 421.0 | 346.3 | 45/77 | 17 | **43** | 40 | 29 | Consistent |

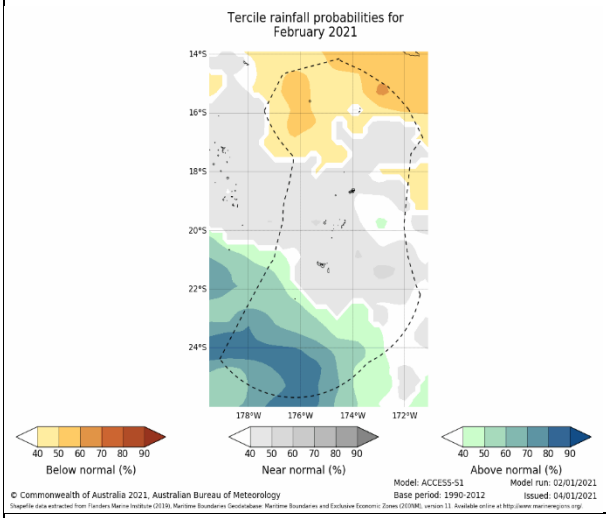
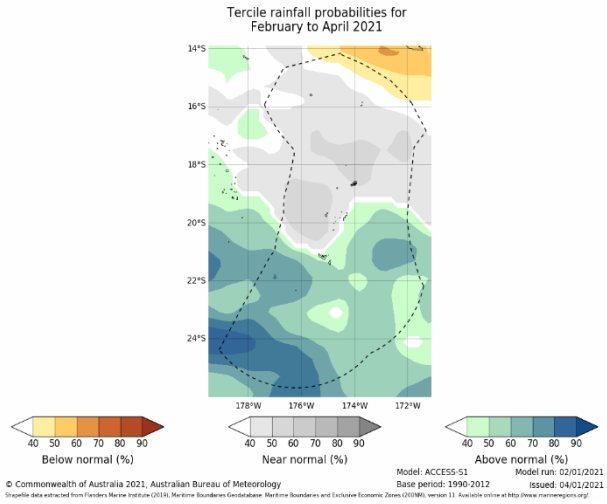
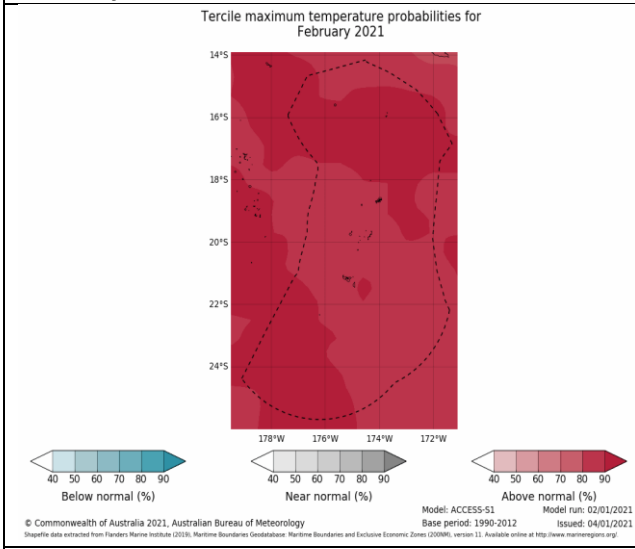
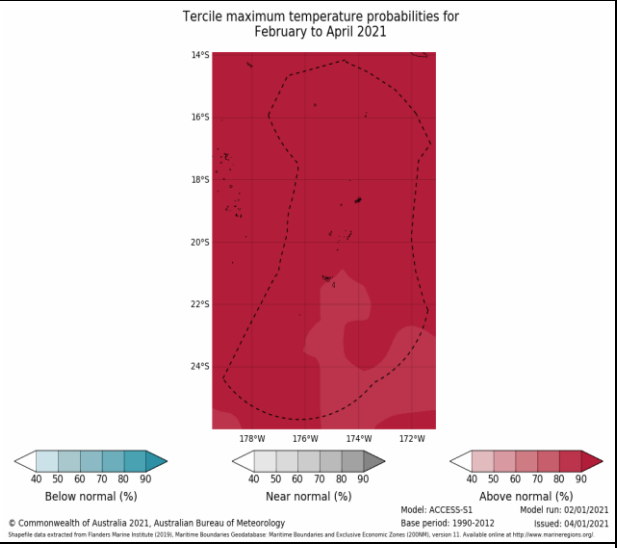
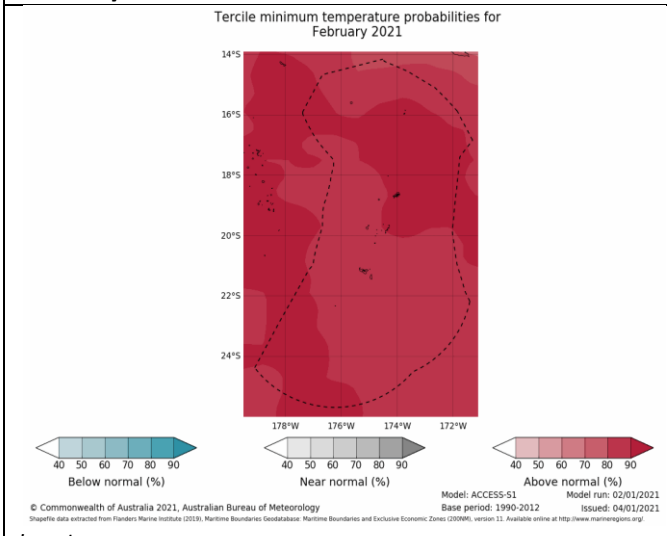
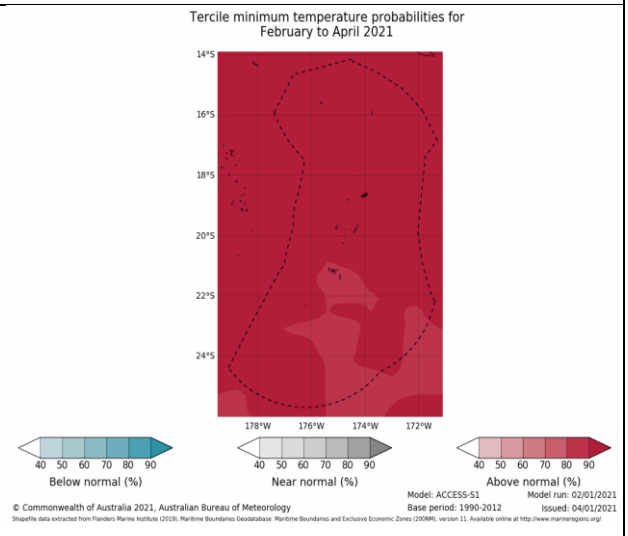
## TABLE 3: Seasonal Climate Outlooks using SCOPIC for February to April 2021

**Predictor and Period used: NINO3.4 for November to December 2020**

| Station | Below Median (prob) | Median Rainfall (mm) | Above Median (prob) | | LEPS (%) [whole numbers] | Hit-rate (%) [whole numbers] |
|---|---|---|---|---|---|---|
| ***Northern Division*** | | | | | | |
| Niuafo'ou (1971-2020) | 39 | 885.7 | 61 | | 3 | 58 |
| Niuatoputapu (1947-2020) | 42 | 772.5 | 58 | | 1 | 55 |
| ***Central Division*** | | | | | | |
| Vava'u (1947-2020) | 43 | 837.0 | 57 | | 0 | 56 |
| Ha'apai (1947-2020) | 35 | 652.8 | 65 | | 6 | 59 |
| ***Southern Division*** | | | | | | |
| Fua'amotu (1979-2020) | 36 | 531.0 | 64 | | 5 | 63 |
| Nuku'alofa (1944-2020) | 45 | 624.5 | 55 | | -1 | 54 |

| Station | Below Normal (prob) | 33%ile Rainfall (mm) | Normal (prob) | 67%ile Rainfall (mm) | Above Normal (prob) | LEPS (%) [whole numbers] | Hit-rate (%) [whole numbers] |
|---|---|---|---|---|---|---|---|
| ***Northern Division*** | | | | | | | |
| Niuafo'ou (1971-2020) | 26 | 723.0 | 35 | 937.7 | 39 | -1 | 31 |
| Niuatoputapu (1947-2020) | 23 | 695.6 | 44 | 838.6 | 33 | 0 | 42 |
| ***Central Division*** | | | | | | | |
| Vava'u (1947-2020) | 26 | 716.8 | 37 | 957.2 | 37 | 1 | 37 |
| Ha'apai (1947-2020) | 22 | 544.0 | 31 | 725.0 | 47 | 7 | 40 |
| ***Southern Division*** | | | | | | | |
| Fua'amotu (1979-2020) | 19 | 470.5 | 31 | 688.0 | 50 | 8 | 42 |
| Nuku'alofa (1944-2020) | 30 | 552.0 | 25 | 717.9 | 45 | 1 | 44 |

# TABLE 4: Monthly and Seasonal Climate Outlooks using ACCESS-S for February to April 2021

| Monthly rainfall | Seasonal rainfall |
|---|---|
|  |  |
| **Monthly Tmax** | **Seasonal Tmax** |
|  |  |
| **Monthly Tmin** | **Seasonal Tmin** |
|  <br>*Insert map* |  |

## Summary Statements

**Rainfall for December 2020:**

Above normal rainfall was recorded in the Northern and Central Divisions, while in the Southern Division Nuku'alofa recorded normal rainfall, and Fua'amotu below normal rainfall.

Niuatoputapu recorded its fourth wettest December on record while Niuafo'ou recorded its seventh wettest.

**Accumulated rainfall for October to December 2020, including outlook verification:**

Rainfall was above normal in the Northern and Central Divisions, and normal in the Southern Division. Niuatoputapu and Vava'u recorded their fourth wettest October-December periods on record.

The verification of the outlook issued in September was consistent at most sites, apart from Fua'amotu whose outlook was near-consistent.

**Outlooks for February to April 2021:**

**1. SCOPIC:**

The outlook shows above normal as the most likely or favoured outcome at Niuafo'ou, Ha'apai, Fua'amotu, and Nuku'alofa, with normal generally the next most likely.

At Niuatoputapu, the outlook shows normal rainfall as the most likely, with above normal the next most likely. Below normal is the least likely.

At Vava'u, the outlook shows equal chances of normal and above normal rainfall, with below normal the least likely.

2. **ACCESS-S:**

**Monthly rainfall:**

Near-normal rainfall is favoured for February 2021 across most of the central one-third of the country, including Nuku'alofa, Fua'amotu, Ha'apai and Vava'u. Below normal rainfall is favoured across the north, including Niuafo'ou and Niuatoputapu, while above normal falls are favoured over the southern one-third of the EEZ.

**Monthly maximum temperature:**

Above normal temperatures are favoured across the country for February 2021.

**Seasonal rainfall:**

Above normal rainfall is favoured in February to April 2021 across the southern half of the country, including Nuku'alofa, Fua'amotu, while near-normal is the most likely over the northern half, including Ha'apai, Vava'u, Niuafo'ou, and Niuatoputapu.

**Seasonal maximum temperature:**

Above normal temperatures are favoured across the country for February to April 2021.

**NB: The X LEPS % score has been categorised as follows:**

Very Low: X < 0.0 Low: 0 ≤ X < 5 Moderate 5 ≤ X < 10 Good: 10 ≤ X < 15 High: 15≤ X < 25

Very High: 25 ≤X < 35 Exceptional: X ≥ 35

## TABLE 5: Stakeholder Engagement- Evaluations of how effective NMS engage with stakeholders

| Product | Date: November 2020 | Stakeholder | Total Number of Participants | Number of male | Number of female |
|---|---|---|---|---|---|
| Climate Bulletin | | | | | |
| EAR Watch | | | | | |
| Monthly Climate Briefing | | | | | |
| Ocean Bulletin | | | | | |
| | | **Total** | | | |