



TONGA METEOROLOGICAL SERVICE



Climate Update

February—April 2021 Rainfall Outlook:

(According to the Tongan Calendar, these months are part of Lihamui, Vaimu'a and Vaimui, Faka'afu Mo'ui).

Issued: 16 February 2021

La Niña likely past peak but influence continues.

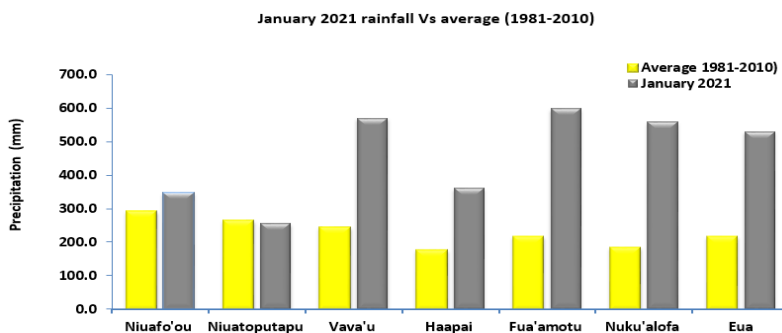
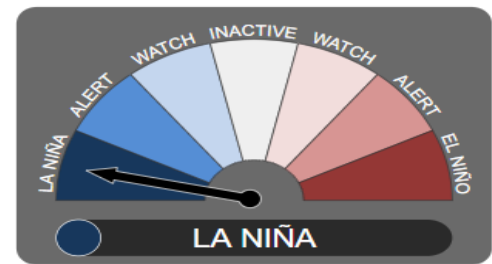
El Niño—Southern Oscillation (ENSO) status

The 2020–21 La Niña is likely to have peaked with respect to atmospheric and oceanic patterns in the tropical Pacific. However impacts associated with La Niña, such as above average rainfall, are expected to persist into early March to May, with rainfall outlooks indicating above average rainfall is likely for most of the country. Model outlooks indicate a return to neutral conditions (neither El Niño nor La Niña) around March to May. La Niña possibly increases the chance of receiving above average rainfall during the wet season across Tonga.

Recent

January 2021:

Extremely high rainfall recorded in Tongatapu, Ha'apai and Vava'u in January. Fua'amotu recorded the highest rainfall (598.3mm) and this is its highest January rainfall since its record started. Nuku'alofa too recorded its 2nd highest rainfall in January with 559.2mm. The rest of Tonga all recorded average to above average rainfall, (see graph below). The mean temperature was 26.8°C which was 0.1°C cooler than average. Highest maximum temperature was 32.2°C on the 21st in Fua'amotu. The lowest minimum temperature was 21.2°C in 'Eua on the 3rd.



Rainfall totals for November 2020— January 2021 (mm)			
	November	December	January
Niuafu'ou	130.9	472.6	346.5
Niutoputapu	183.1	540.1	256.1
Vava'u	380.9	347.5	527.4
Ha'apai	48.3	247.5	417.1
Fua'amotu	58.8	132	598.3
Nuku'alofa	65.7	118.7	559.2
'Eua	66.0	197.5	559.2
	Below average	Average (usual)	Above average

Forecast

Rainfall outlook for Feb—Apr 2021

Rainfall is forecast to be above average or average across the country.

Rainfall outlook for May—July 2021

Rainfall is forecast to be above average across the country.

	Feb - April 2021 (%) chance	May-Jul 2021 (%) chance
Niuafu'ou	38	39
Niutoputapu	42	39
Vava'u	45	40
Ha'apai	44	36
Fua'amotu & 'Eua	48	48
Nuku'alofa	44	40

Note:

The Wet season or Warm season which is also known as the Cyclone season started on the 1st November 2020 until the end of April 2021. La Niña has reached its peak in the Pacific but its influence still persists.

Given current La Niña status, the public are advised to be aware of the current climate status and collect water when it rains. Stay alert at all times to forecasts and warnings provided from the Met service. It is advisable to seek advice from relevant authorities of sensitive sectors, e.g. Agriculture, Water, Health and the National Emergency Management Office (NEMO) on the best practices to save lives and property and minimize the effects of natural disaster.

Traditional knowledge indicators for Tropical cyclone forecasting.

- Fruit trees unusually bearing plenty of fruits especially mangoes and breadfruit indicates alert people of a possible cyclone to happen that year. Currently, fruits are hardly bearing fruits.
- Bees nesting lower near the ground and inside empty cocoon shells to hide from cyclones. Currently, bees are seen to nest in the open, meaning no sign of cyclone yet.
- Spiders normally nest in closed areas where it is safe, as seen now spiders are making their web in the open meaning no sign yet of a coming cyclone.
- Young shoots of banana leaves bending is a sign to alert people of a possible cyclone. This sign is not seen yet.
- Frigate birds hunting inland but it is not normal for them to come inland, this is a sign that usually alert people of a possible cyclone. We have not seen flock of frigate birds inland these days.

The next Climate update will be issued early February 2021

Tongan Calendar and traditional knowledge:

Parts of Lihamui, Vaimu'a, Vaimui and Faka'afumu'ui (February-April)

This is part of Lihamui is the time of the month when flowering of the fruits in season (January and February). Vaimu'a (February & March) and Vaimui (Part of March & April) means rain and also the time when cyclones occurs. This is still consistent with the current situation. Faka'afumu'ui (Part of April and May). Yam crops start producing secondary tubers, which are good planting materials. Season is still very active in terms of food from the plantation and cyclones and is the part of the season where people live in fear of cyclones.

Disclaimer:

This summary is prepared as soon as possible following the end of the month, once climate data is received from recording stations around Tonga. Delays in data collection, communication and processing occasionally arise. While every effort is made to verify observational data, the Tonga Meteorological Service makes no statements, representations, or warranties about the accuracy or completeness of, and you should not rely on, any information contained in this report. Despite our best efforts, TMS makes no warranties that the information in this publication is free of numerical errors. TMS disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you might incur as a result of the information being inaccurate or incomplete in any way, and for any reason. This information should be used as a guidance only. For further information about this forecast should be directed to the Director of the Tonga Meteorological Service, at P.O. Box 1380, Nuku'alofa. Or email at metstaff@met.gov.to Tel: (676) 35 123/7400062 or our website; <http://www.met.gov.to> for more information.



Fakamatala fakamuimui taha ki he tu'unga e 'Ea



Fakafuofua kihe lahi e 'uha ki Fepueli—'Epeleli 2021:

(Ngaahi mahina fakatonga felave'i: Konga 'o Lihamui, Vaimu'a, Vaimui, Faka'afumo'ui)

Tukuatu: 16 Sanuali 2021

Kuo mavahe atu 'ae malohi taha e faha'i ta'u La Nina ka ko 'ene uesia 'oku kei tolonga pe.

Tu'unga lolotonga e faha'i ta'u:

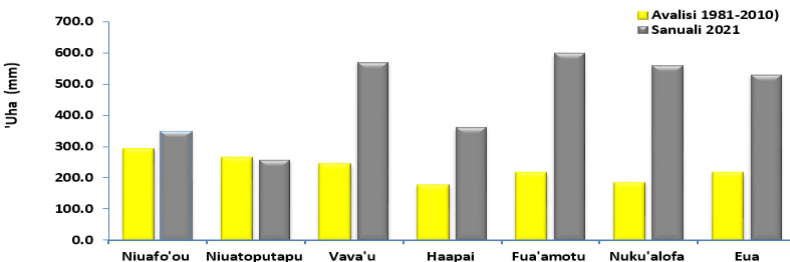
Koe malohi taha 'oe ngaahi faka'ilonga 'oe faha'ita'u La Nina 2021 kuo mavahe atu 'o fakatatau kihe ngaahi tu'unga 'oe 'atimosifia moe 'oseni. Ka neongo eni, 'oku kei taka holo pe 'ae ngaahi faka'ilonga moe uesia 'oe La Nina 'o hange koe 'uha 'o ma'olunga he 'avalisi 'e a'u pe ki Ma'asi ki Me 'oe ta'u ni. Ko e ngaahi fakafuofua kuo tuku mai he ngaahi me'afua 'oku fakafuofua koe 'osi 'ae faha'ita'u La Nina pea 'e 'ikai ke 'iai ha faha'i 'e to kiai e fakafuofua kihe faka'osinga o Ma'asi ki Me 2021. Koe fakafuofua 'oku fenapasi pe ia moe faha'i ta'u La Nina kuo tau fononga ai 'aia 'oku fakafuofua 'e lahi ange 'ae 'uha he 'avalisi. Koe faha'ita'u La Nina 'oku anga maheni 'aki ke ne 'omai 'ae 'uha 'oku lahi ange 'i he 'avalisi anga maheni lolotonga 'ae taimi mafana 'a Tonga pe faha'i ta'u 'uha.

Mahina kuohili

Sanuali 2021

Na'e lahi 'aupito e 'uha 'i Sanuali pea na'e lekooti 'ae 'uha lahi taha 'i Fua'amotu koe 598.3mm pea koe 'uha lahi taha ia kuo lekooti i Sanuali 'i Fua'amotu talu e kamata 'ene lekooti 'uha. Na'e lekooti foki moe 'uha lahi 'i Nuku'alofa koe 559.2mm pea koe fika 2 ia he lahi taha e 'uha kuo lekooti 'i Sanuali 'ihe lekooti 'uha 'a Nuku'alofa. vakai kihe kalafi pea moe tepile 'i to'omata'u). Ko e 'avalisi e mafana e 'Ea na'e 26.8°C 'a ia na'e mokomoko 'aki 'a e 0.1°C 'ihe 'avalisi. Koe ma'olunga taha e mafana 'o e 'ea na'e 32.2°C ihe 'aho 21 'i Fua'amotu pea koe ma'olalo taha na'e 21.2°C 'ihe 'aho 3 'i 'Eua.

'Uha 'o Sanuali 2021 'i hono fakaho moe 'avalisi (1981-2010)



Fakafuofua kihe 'uha

Fakafuofua kihe lahi e 'uha mei Fepueli—'Epeleli 2021.

Koe fakafuofua 'e ma'olunga 'ihe 'avalisi angamaheni ae 'uha pe 'i he 'avalisi 'ihe 'otu Tonga.

Fakafuofua kihe lahi e 'uha mei Me—Siulai 2021.

Koe fakafuofua 'e ma'olunga 'i he 'avalisi pe 'e 'ihe 'avalisi 'a e 'uha 'ihe 'o e 'otu Tonga. (vakai kihe Tepile 1).

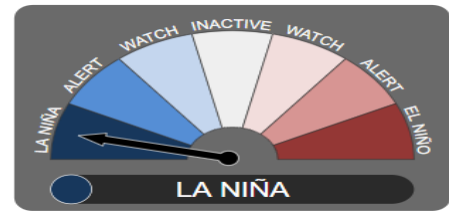
	Fepueli—'Epeleli 2021 (% 'oe fainga-malie ke hoko)	Me—Siulai 2021 (% 'oe faingamalie ke hoko)
Niufo'ou	38	39
Niuatoputapu	42	39
Vava'u	45	40
Ha'apai	44	36
Fua'amotu & 'Eua	48	48
Nuku'alofa	44	40

Tepile 1: Fakafuofua kihe 'uha 'ihe mahina 'e 3 kihe 6 ka hoko.

Koe ngaahi faka'ilonga tu'ufonua 'e to mai ha matangi pe afa.

Koe faha'ita'u afa eni pea koe ngaahi faka'ilonga eni na'e fa'a ngaue'aki ke tokateu ki ha afa pea 'oku mahu'inga pe ke fakatokanga'i;

- Fua to'ulu e 'akau fua tautefito kihe mei moe mango ko e faka'ilonga tokateu. Ko e vakavakai holo he taimi ni 'oku 'ikai ke to'ulu e fua e mei mo e mango.
- Fa'u pununga e fanga pii 'ihe ngaahi feitu'u 'oku malu mei he afaa. 'Oku fakatokanga'I 'oku kamata ke 'asi holo ke fa'u pununga e pii 'I he ngaahi feitu'u 'oku 'ataa pe 'ikai ke malu.
- Koe inisekite koe hina 'oku ne manako ke tau matakupenga he ngaahi feitu'u malu ko ha'ane tokateu ki he afaa. 'Oku fakatokanga'I holo he taimi ni 'oku lahi 'e ngaahi mata kupenga 'o e hina he ngaahi feitu'u 'oku 'ikai ke malu.
- Mapelu e ngaahi fo'i muka mohemohe 'oe fusi ko e faka'ilonga ia ki ha tokateu ki he afa. Ko e faka'ilonga ni 'oku te'eki ke 'asi he taimi ni.
- Fangota 'uta 'ae Lofa, 'uhinga eni 'e 'asi e lofa 'i lotofonua koe kumi me'akai ka 'oku 'ikai ke angamaheni 'a 'ene ha'u ki lotofonua. 'Oku te'eki ke loko fakatokanga'I e ngaahi faka'ilonga ni he taimi ni.



'Uha 'o Novema-Sanuali 2021 (mm)

	Novema	Tisema	Sanuali
Niufo'ou	130.9	472.6	346.5
Niuatoputapu	183.1	540.1	256.1
Vava'u	380.9	347.5	527.4
Ha'apai	48.3	247.5	417.1
Fua'amotu	58.8	132	598.3
Nuku'alofa	65.7	118.7	559.2
'Eua	66.0	197.5	559.2

Ma'olalo 'ihe 'avallisi Avalisi angamaheni Ma'olunga 'i he 'avalisi

Ngaahi me'a ke Fakatokanga'i

'Oku tau lolotonga 'ihe faha'ita'u mafana 2020/2021 'aia 'oku 'iloa koe faha'ita'u 'uha pea toe 'iloa foki koe faha'ita'u afaa 'aia na'e kamata 'ihe 'aho 1 Novema kihe 'aho faka'osi o 'Epeleli 2021. Kuo a'u 'ae faha'i ta'u La Nina ki hono malohi taha ka 'e kei uesia pe kitautolu 'e he ngaahi 'elementi 'oe La Nina o hange koha ngaahi 'uha lahi.

Fakatatau kihe ngaahi fakamatala kuo tukuatu 'i 'olunga moe tu'unga lolotonga 'oku tau 'iai 'aia koe La Nina. 'Oku mahu'inga 'aupito ke tanaki e vai ke lahi he taimi 'oku 'uha ai pea fakapapu'i 'oku ma'u ae ngaahi fakamatala meihe va'a Fakamatala 'Ea pea moe ngaahi fale'i meihe ngaahi kupu fekau'aki tautefito kihe ngaahi va'a 'oku tu'u lavea ngofua kihe fakatamaki fakaenatula o hange koe Ngoue, Mo'ui, Vai moe fakatamaki fakaenatula ke malu'i ho'o mo'ui mo ho'o koloa pea faka si'isi'i 'ae uesia moe maumau 'e ala hoko tupu meiha fakatamaki 'e hoko.

Mahina fakatonga moe 'ilo tu'u fonua:

Koe konga 'o Lihamui, Vaimu'a, Vaimui mo Faka'afumo'ui (Fepueli- 'Epeleli).

Koe konga eni 'o Lihamui (Fepueli) Lihamui tokua koe lau kihe fisi 'ae to'ukai toka mui. Vaimu'a 'oku 'uhinga kihe 'uha tokamu'a 'oku fa'a hoko he taimi peheni moe ngaahi matangi malohi. Vaimui koe konga 'o Ma'asi mo 'Epeleli pea koe taimi pe 'oe 'uha moe ngaahi matangi pea 'oku kei hoko tatau pe he ngaahi 'aho ni. Ko Faka'afumo'ui koe konga pe ia o Ma'asi ki 'Epeleli pea 'oku kei longomo'ui 'ae 'ea kihe to'ukai pea pehe kihe matangi moe afaa 'o fa'a manavahe'ia.

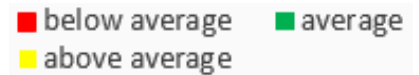
Koe fakamatala 'ea hoko 'e 'oatu fakafuofua kihe kamata'anga 'o 'Epeleli 2021

Fakatokanga'i ange.

Koe fakamatala ni 'oku fa'u ia 'i he 'osi pe 'ae mahina kotoa hili hano tanaki mai e fakamatala mei he ngaahi 'ofisi vakai matangi 'I he 'otu Tonga ni. Lolotonga hono fakahoko 'ehe Potungae 'a hono 'anlaiso mo fakapapu' 'ae ngaahi fakamatala kuo tanaki ke fa'u 'aki 'ae fakamatala ni, 'oku 'ikai ke fakapapu atu 'ae Potungae kihe kakato moe tonu 'ae fakamatala ni pea 'oku 'ikai ke totonu keke falala kakato kihe ngaahi fakamatala ni. Koe ngaahi fakamatala ni 'oku 'oatu pe ke tokoni ki ho'o fai tu'utu'uni. He 'ikai ke 'iai ha kaunga 'ae Potungae ki ha'o faitu'utu'uni pe ko ha mole, mau mau pe mo'ua 'e hoko tupu mei ha'o ngaue'aki 'oe fakamatala ni. Ki ha'o toe faka'eke'eke fekau'aki moe fakamatala ni pea ke kataki 'o fetu'utaki mai ki he talekita 'oe Potungae Vakai Matangi 'I he metstaff@met.gov.to pe koe puha 1380 pe koe telefoni: (676)35123, 35355 ki ha toe fakaiiki.

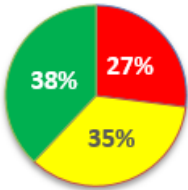
Another way of presenting the

Rainfall outlook February– April 2021



Niuafu'ou:

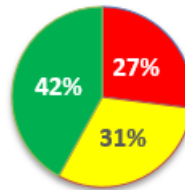
The forecast is biased towards "above-normal" to "normal" Rainfall conditions for February through to the end of April for Niuafu'ou. The probability of "above-normal" conditions occurring is 38% and the probability of "normal" conditions occurring is 35%. The chance of "below-normal" Rainfall occurring is least likely at 27%.



Note: "Below-normal" Rainfall for the February to April period at Niuafu'ou includes Rainfall less than 723.0mm. "Above-normal" Rainfall is that which is greater than 937.7mm. "Normal" Rainfall lies between 723.0 and 937.7mm

Niutopotapu:

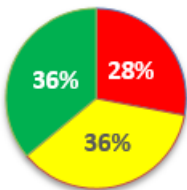
The forecast is biased towards "normal" Rainfall conditions for February through to the end of April for Niutopotapu, with a forecast probability of 42%. The chance of "above-normal" Rainfall occurring is 31% while the chance of "below-normal" Rainfall is 27%.



Note: "Below-normal" Rainfall for the February to April period at Niutopotapu includes Rainfall less than 695.6mm. "Above-normal" Rainfall is that which is greater than 838.6mm. "Normal" Rainfall lies between 695.6 and 838.6mm.

Vava'u:

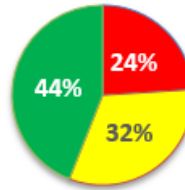
The forecast is biased towards "above-normal" to "normal" Rainfall conditions for February through to the end of April for Vava'u. The probability of "above-normal" conditions occurring is 36% and the probability of "normal" conditions occurring is 36%. The chance of "below-normal" Rainfall occurring is least likely at 28%.



Note: "Below-normal" Rainfall for the February to April period at Vava'u includes Rainfall less than 716.8mm. "Above-normal" Rainfall is that which is greater than 957.2mm. "Normal" Rainfall lies between 716.8 and 957.2mm.

Ha'apai:

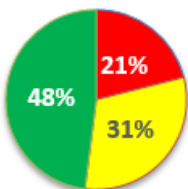
The forecast is biased towards "above-normal" Rainfall conditions for February through to the end of April for Ha'apai, with a forecast probability of 44%. The chance of "below-normal" Rainfall occurring is 24% while the chance of "normal" Rainfall is 32%.



Note: "Below-normal" Rainfall for the February to April period at Ha'apai includes Rainfall less than 544.0mm. "Above-normal" Rainfall is that which is greater than 725.0mm. "Normal" Rainfall lies between 544.0 and 725.0mm.

Fua'amotu & 'Eua

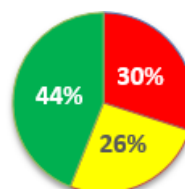
The forecast is biased towards "above-normal" Rainfall conditions for February through to the end of April for Fua'amotu, with a forecast probability of 48%. The chance of "below-normal" Rainfall occurring is 21% while the chance of "normal" Rainfall is 31%.



Note: "Below-normal" Rainfall for the February to April period at Fua'amotu includes Rainfall less than 470.5mm. "Above-normal" Rainfall is that which is greater than 688.0mm. "Normal" Rainfall lies between 470.5 and 688.0mm

Nuku'alofa:

The forecast is biased towards "above-normal" Rainfall conditions for February through to the end of April for Nuku'alofa, with a forecast probability of 44%. The chance of "below-normal" Rainfall occurring is 30% while the chance of "normal" Rainfall is 26%.



Note: "Below-normal" Rainfall for the February to April period at Nuku'alofa includes Rainfall less than 552.0mm. "Above-normal" Rainfall is that which is greater than 717.9mm. "Normal" Rainfall lies between 552.0 and 717.9mm.

Rainfall summary and Forecast verification for November 2020 - January 2021

Island Station (Year record start— present)	November 2020– January 2021				Rank	November 2020– January 2021 Forecast probabilities (%)			Verification: Correct, Near correct, Incorrect
	Observed rainfall (mm)		Rainfall Forecast range (mm)			Below average	Average	Above average	
Niuafu'ou (1971-2020)	950.0	Normal	699.0	996.0	29/44	21	37	42	Near Correct
Niuatoputapu (1947-2020)	979.3	Above normal	618.2	847.3	58/69	25	28	47	Correct
Vava'u (1947-2020)	1255.8	Above normal	465.0	807.0	70/74	16	37	47	Correct
Ha'apai (1947-2020)	713.3	Above normal	306.0	570.3	62/74	14	40	46	Correct
Fua'amotu (1979-2020)	789.1	Above normal	392.0	615.8	35/41	14	34	52	Correct
Nuku'alofa (1944-2020)	743.6	Above normal	317.0	568.0	64/77	12	39	49	Correct