

The Island Climate Update

Collaborators

Pacific Islands National
Meteorological Services

Australian Bureau of
Meteorology

Meteo France

NOAA National Weather
Service

NOAA Climate Prediction
Centre (CPC)

International Research
Institute for Climate and
Society

European Centre for
Medium Range Weather
Forecasts

UK Met Office

World Meteorological
Organization

MetService of
New Zealand

El Niño/Southern Oscillation (ENSO)

- Moderately strong El Niño conditions that existed in the equatorial Pacific earlier in the year are weakening. Many dynamical climate models project the continuation of El Niño through autumn 2010, and neutral conditions for austral winter.

Tropical cyclone summary

- A total of 10 storms occurred for the southwest Pacific during 2009/10, with 12 reported fatalities and a minimum of \$163M USD in damages.

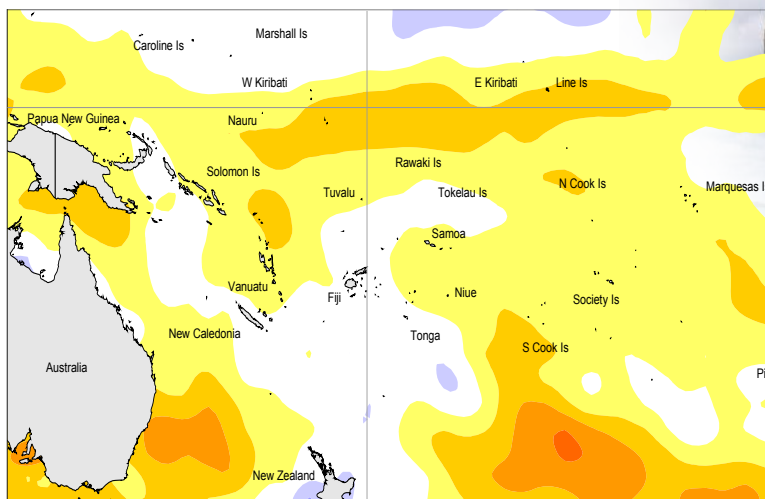
Multi-model Ensemble Tool for Pacific Island (METPI) rainfall and sea surface temperature forecasts

- Below normal rainfall is forecast for the Marquesas, while near normal or below normal is forecast for Vanuatu.
- Above normal rainfall is expected for Western Kiribati.
- Near normal or above normal SSTs are forecast for Papua New Guinea, Western Kiribati, the Northern Cook Islands, the Southern Cook Islands, Tuvalu, and Tokelau.



El Niño/Southern Oscillation (ENSO)

The current El Niño event has weakened considerably, and the tropical Pacific is expected to return to a neutral state by the end of May 2010. Oceanic conditions have eased gradually and NINO3 and NINO4 anomalies were both around +0.9°C for April (three-month averages of +0.8°C and +1.0°C, respectively). Upper-ocean equatorial heat content is now mostly negative, apart from the near-surface in the far eastern Pacific Ocean. In the atmosphere, recent changes have been more abrupt. The Southern Oscillation Index (SOI) rose to +1.7 in April (from below -1.0 in March), the first significant positive value for the monthly SOI for a year. The 3-month mean SOI was -0.5 at the end of April. Tropical outgoing longwave radiation last month showed enhanced convection over Indonesia and northern Australia and a north-south banded structure farther east, suggestive of an enhanced ITCZ in the NH and generally suppressed convection between the Equator and 15°S. Consistent with this pattern, the 30-day mean TRMM ENSO index was +0.1 in late April (values of +1.0 or more are typical of El Niño conditions). The trade winds were generally a little stronger than normal in April across most of the Equatorial Pacific. The MJO is very weak at present, but a convective pulse may develop during early May.



Sea surface temperature anomalies (°C) for May 2010

All the models NIWA monitor show ENSO-neutral conditions for the next 3 months, and about half the available models suggest development of a La Niña by austral spring 2010. The NCEP ENSO discussion of 8 April suggests ENSO-neutral conditions will be reached by mid-year. The IRI summary of 15 April indicates El Niño dissipation followed by a 35% chance of La Niña in late 2010.

Tropical Cyclone summary – 2009/10 season

During the 2009/10 Tropical Cyclone (TC) season, normal activity was forecast for most countries in the southwest Pacific. Two climate forecasts were made for the southwest Pacific by NIWA in conjunction with the Pacific Islands Meteorological Services; one preceding the start of the TC season (released in mid-October 2009) and an updated forecast for the late part of the season covering February – April 2010 was released in mid-February.

The overall TC activity was expected to be near normal, with 8 – 11 storms forecast for the 2009/10 season. Two or three storms were forecast to reach at least Category 3, and one storm was expected to reach at least Category 4, with mean wind speeds of at least 64 knots or 118 km/h.

Documentation of the TC activity during the 2009/10 season has been compiled from reports issued by the Regional Specialised Meteorological Centre in Nadi, Fiji, the Joint Typhoon Warning Centre at Pearl Harbour,

Hawaii, the Tropical Cyclone Warning Centre based at the New Zealand Meteorological Service in Wellington, and the Australia Bureau of Meteorology, and are tabulated below.

In the Southwest Pacific sector covered by the ICU forecast, 10 TCs were documented for the 2009/10 season. The onset of the season did not occur until early December 2009. All of the storms that occurred during the first two months of the season (about half of the total for 2009/10) achieved only a Category 1 or 2 status. In contrast, the back half of the TC season saw the development of four systems that reached or exceeded a Category 3 status. Two Category 4 storms had winds in excess of 160km/h (Oli and Rene), and one event had 10-minute sustained winds in excess of 200km/h (Ului).

The minimum estimated damage for the 2009/10 season was \$163M USD, and there were 12 fatalities reported for the region as a result of TC activity.

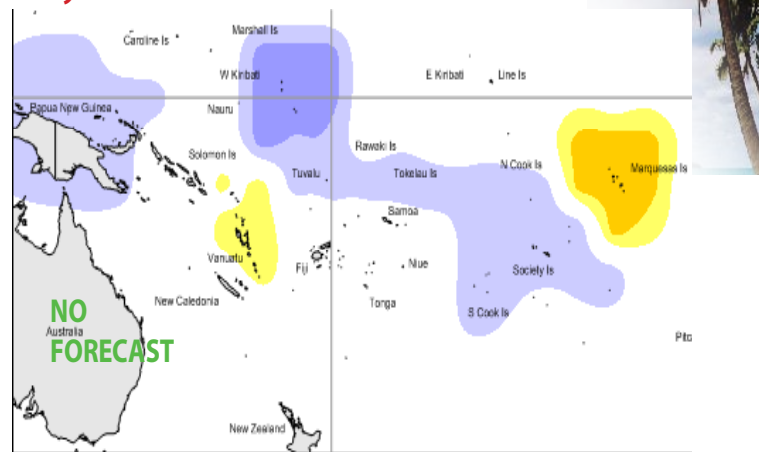
Tropical cyclone	Name	Category	Active dates	Island groups affected	Minimum low P (hPa)	Max.10-min. windspeed	Estimated damage	Fatalities
1	Mick	2	December 3–15, 2009	Fiji, Tonga	975	110 km/h	\$20M USD	4
2	Neville*	1	January 14–22	Australia	994	65 km/h	Not reported	
3	Olga**	2	January 18–30, 2010	Solomon Islands, Australia	983	100 km/h	Not reported	2
4	Nisha	1	January 27–31, 2010	Samoa	990	75 km/h	Not reported	
5	Oli	4	January 29–February 7, 2010	Fiji, Southern Cook Islands, Society Islands, Austral Islands	925	185 km/h	\$70M USD	1
6	Pat	3	February 6–11, 2010	Southern Cook Islands	960	155 km/h	\$10M USD	3
7	Rene	4	February 9–17, 2010	Samoa, Tonga	940	165 km/h	\$18M USD	
8	Sarah	1	February 20–March 3, 2010	Northern Cook Islands	995	65 km/h	Not reported	
9	Ului	5	March 9–14, 2010	Vanuatu, Solomon Islands, Australia	930	215 km/h	Not reported	
10	Tomas	4	March 9–18, 2010	Fiji	930	175 km/h	\$45M USD	2

Tropical rainfall and SST outlook: May to July 2010

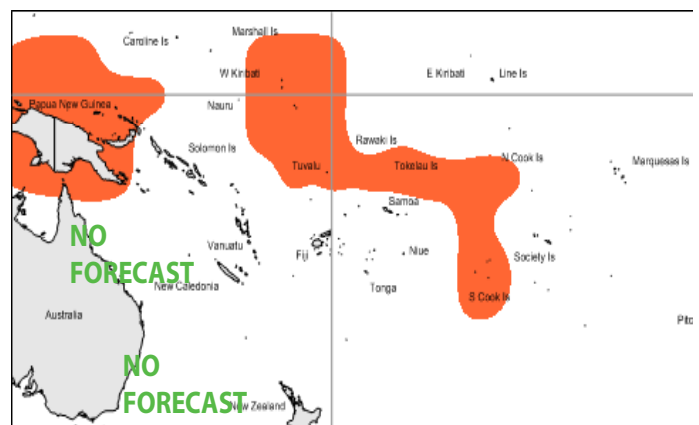
During May–July 2010, a region of suppressed convection is likely in the southwest Pacific encompassing Vanuatu and the Marquesas. Near or below and below average rainfall is expected for those island groups, respectively. Enhanced convection is likely along the Equator, and above average rainfall is expected for Western Kiribati. Near or above average rainfall is forecast for Papua New Guinea, the Northern Cook Islands, The Southern Cook Islands, Tuvalu, Tokelau, the Tuamotu Archipelago and the Society Islands. Near normal rainfall is forecast for the Solomon Islands, New Caledonia, Niue, Wallis & Futuna, the Austral Islands and Pitcairn Island. No clear precipitation guidance is offered for Tonga, Fiji, Samoa, or Eastern Kiribati.

Some of the global models have shown a shift in the near equatorial Pacific sea surface temperatures to cold anomalies east of Eastern Kiribati in the coming months. Cold anomalies that existed around Tonga and Niue in previous months have dissipated in nearly all of the models used in the ensemble. For May to July 2010, average or above average sea surface temperatures are forecast for Western Kiribati, Papua New Guinea, the Northern Cook Islands, the Southern Cook Islands, Tuvalu and Tokelau. No clear SST guidance is offered for Eastern Kiribati. Near normal SSTs are forecast for the remainder of the southwest Pacific.

The confidence in the multi-model ensemble forecast skill for this seasonal rainfall outlook is moderate to moderately high. In the past, the average region-wide hit rate for rainfall forecasts issued in May is 56%, 7% lower than the long-term average for all months combined. The SST forecast confidence is mostly moderately high, but the greatest uncertainty is localised around Eastern Kiribati, Fiji, Tonga and Samoa.



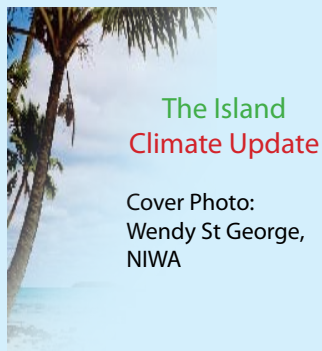
Rainfall outlook map for May to July 2010



SST outlook map for May to July 2010

NOTE: Rainfall and sea surface temperature estimates for Pacific Islands for the next three months are given in the tables below. The tercile probabilities (e.g., 20:30:50) are derived from the averages of several global climate models. They correspond to the odds of the observed rainfall or sea surface temperatures being in the lowest one third of the distribution, the middle one third, or the highest one third of the distribution. For the long term average, it is equally likely (33% chance) that conditions in any of the three terciles will occur. *If conditions are climatology, we expect an equal chance of the rainfall being in any tercile.

Island Group	Rainfall Outlook	Outlook confidence	Island Group	SST Outlook	Outlook confidence
Kiribati (Western)	20:35:45 (Above)	High	Cook Islands (Northern)	20:40:40 (Near or Above)	High
Cook Islands (Northern)	25:40:35 (Near or Above)	High	Kiribati (Western)	25:35:40 (Near or Above)	Moderate-High
Cook Islands (Southern)	25:40:35 (Near or Above)	Moderate-High	Cook Islands (Southern)	25:40:35 (Near or Above)	High
Papua New Guinea	25:40:35 (Near or Above)	Moderate-High	Papua New Guinea	25:40:35 (Near or Above)	Moderate-High
Society Islands	25:40:35 (Near or Above)	High	Tokelau	25:40:35 (Near or Above)	High
Tokelau	25:40:35 (Near or Above)	High	Tuvalu	25:40:35 (Near or Above)	High
Tuamotu Islands	25:40:35 (Near or Above)	High	Austral Islands	30:40:30 (Near normal)	Moderate-High
Tuvalu	25:40:35 (Near or Above)	High	Fiji	30:40:30 (Near normal)	High
Austral Islands	30:40:30 (Near normal)	High	Marquesas	30:40:30 (Near normal)	Moderate
New Caledonia	30:40:30 (Near normal)	High	New Caledonia	30:40:30 (Near normal)	High
Niue	30:40:30 (Near normal)	High	Niue	30:40:30 (Near normal)	Moderate-High
Pitcairn Island	30:40:30 (Near normal)	High	Pitcairn Island	30:40:30 (Near normal)	High
Solomon Islands	30:40:30 (Near normal)	Moderate-High	Samoa	30:40:30 (Near normal)	High
Wallis & Futuna	30:40:30 (Near normal)	Moderate-High	Society Islands	30:40:30 (Near normal)	High
Kiribati (Eastern)	30:35:35 (Climatology)	Moderate	Solomon Islands	30:40:30 (Near normal)	Moderate-High
Samoa	30:35:35 (Climatology)	Moderate	Tonga	30:40:30 (Near normal)	High
Fiji	35:35:30 (Climatology)	Moderate	Tuamotu Islands	30:40:30 (Near normal)	Moderate-High
Tonga	35:35:30 (Climatology)	Moderate	Vanuatu	30:40:30 (Near normal)	High
Vanuatu	40:35:25 (Near or Below)	Moderate-High	Wallis & Futuna	30:40:30 (Near normal)	High
Marquesas	45:35:20 (Below)	Moderate-High	Kiribati (Eastern)	35:35:30 (Climatology)	Moderate



The Island Climate Update

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Your comments and ideas about The Island Climate

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This summary is prepared as soon as possible following the end of the month, once the data and information are received from the Pacific Island National Meteorological Services (NMHS). Delays in data collection and communication occasionally arise. While every effort is made to verify observational data, NIWA does not guarantee the accuracy and reliability of the analysis and forecast information presented, and accepts no liability for any losses incurred through the use of this bulletin and its content.

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Requests for Pacific Island climate data should be directed to the Meteorological Services concerned.

Sources of South Pacific rainfall data

This bulletin is a multi-national project, with important collaboration from the following Meteorological Services: **American Samoa, Australia, Cook Islands, Fiji, French Polynesia, Kiribati, New Caledonia, New Zealand, Niue, Papua New Guinea, Pitcairn Island, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna.**

Web links to ICU partners:

South Pacific Meteorological Services:

Cook Islands
<http://www.cookislands.pacificweather.org/>

Fiji
<http://www.met.gov.fj>

Kiribati
<http://pi-gcos.org/index.php> (follow link to PI Met Services then Kiribati Met Service)

New Zealand
<http://www.metservice.co.nz/>

Niue
<http://pi-gcos.org/index.php> (follow link to to PI Met Services then Niue Met Service)

Papua New Guinea
<http://pi-gcos.org/index.php> (follow link to to PI Met Services then Papua New Guinea Met Service)

Samoa
<http://www.mnre.gov.ws/meteorology/>

Solomon Islands
<http://www.met.gov.sb/>

Tonga
<http://www.met.gov.to/>

Tuvalu
<http://tuvalu.pacificweather.org/>

Vanuatu
<http://www.meteo.gov.vu/>

International Partners

Meteo-France
New Caledonia: <http://www.meteo.nc/>
French Polynesia: <http://www.meteo.pf/>

Bureau of Meteorology (Australia)
<http://www.bom.gov.au/>

National Oceanographic and Atmospheric Administration (USA)
National Weather Service: <http://www.nws.noaa.gov/>
Climate Prediction Center: <http://www.cpc.noaa.gov/>

The International Research Institute for Climate and Society (USA):
<http://portal.iri.columbia.edu/portal/server.pt>

The UK Met Office
<http://www.metoffice.gov.uk/>

European Centre for Medium-term Weather Forecasts
<http://www.ecmwf.int/>