

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 gone. Many dynamical climate models project neutral ENSO conditions for austral winter and development of La Niña by spring.

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.

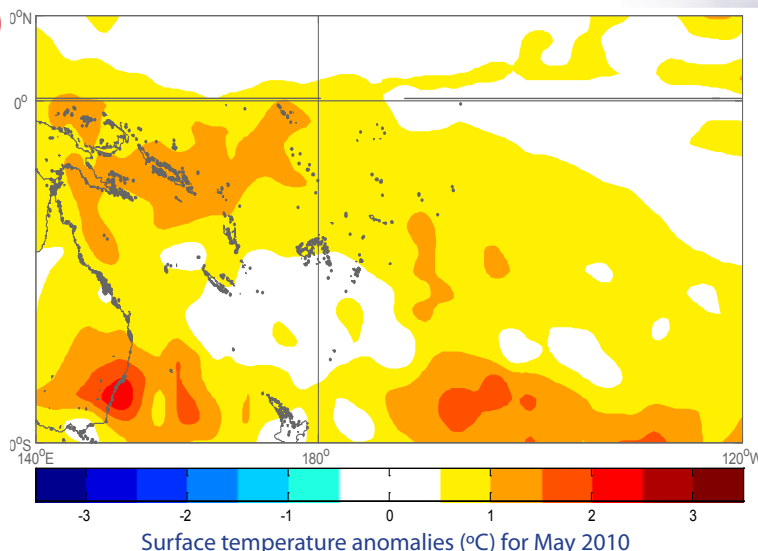
Multi-model Ensemble Tool for Pacific Island (METPI) rainfall and sea surface temperature forecasts

- Near or below normal rainfall is forecast for the Marquesas, Fiji, Pitcairn Island and Eastern Kiribati.
- Above normal rainfall is expected for Papua New Guinea, the Solomon Islands, and Samoa.
- Near or below normal sea surface temperatures are forecast for Eastern Kiribati.



El Niño/Southern Oscillation (ENSO)

The recent El Niño event has ended, and the tropical Pacific is now in an ENSO-neutral state. Cool anomalies have now appeared at the surface in the equatorial mid-Pacific, and the NINO3 and NINO4 regions have eased to around +0.7°C and +0.5°C, respectively, for May (MAM averages of +0.8°C and +0.9°C, respectively). A large cool region has developed in sub-surface waters east of the Dateline, of at least 3°C colder than normal. The only warmer-than-normal waters in the equatorial Pacific are shallow surface layers around and west of the Dateline and near South America. Clear changes are also apparent in the atmosphere. The SOI has maintained a positive value at +1.0 for May, after its abrupt rise to +1.7 in April from previous negative values. The running 3-month mean SOI is now positive for the first time since July 2009. Tropical OLR anomalies for May showed enhanced convection near Indonesia and northern Australia, and an expanded area of suppressed convection near the Dateline. The 30-day mean TRMM ENSO index at 25-May was -0.6 (values of -1.0 or less are typical of La Niña conditions). The trade winds were generally near normal or slightly stronger than normal in May across most of the Equatorial Pacific. The MJO was weak at the end of May.



All the models NIWA monitor forecast the tropical Pacific to continue to cool over coming months, with 7 out of 10 dynamical models suggesting La Niña will develop by Austral spring (SON 2010). The NCEP ENSO discussion of 6 May suggests ENSO-neutral conditions through the Austral winter season. The IRI summary of 20 May indicates the probability of La Niña will increase from 13% for May-July to 42% for the period August-October.

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.

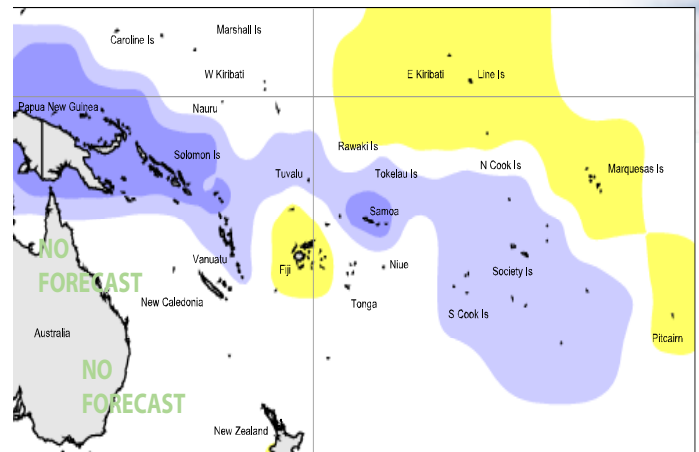
Tropical cyclone	Name	Category	Active dates	Island groups affected	Minimum low P (hPa)	Max.10-min. windspeed	Estimated damage	Fatalities
1	Mick	2	December 3–15, 2009	Fiji, Tonga	975	110 km/h	\$20M USD	4
2	Neville*	1	January 14–22	Australia	994	65 km/h	Not reported	
3	Olga**	2	January 18–30, 2010	Solomon 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: June to August 2010

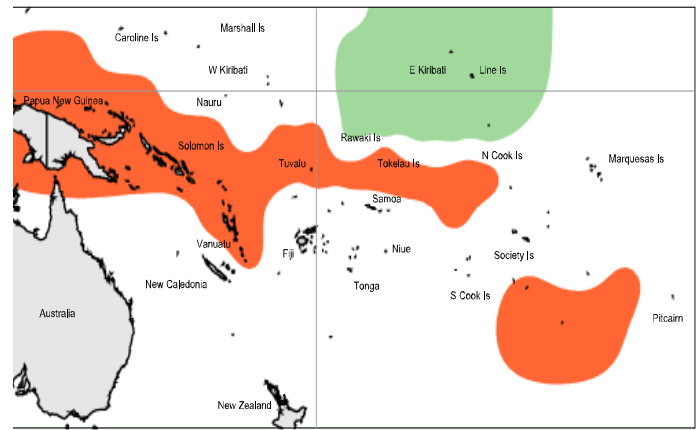
During June – August 2010, a region of suppressed convection is likely in the southwest Pacific encompassing Eastern Kiribati, the Marquesas, Pitcairn Island and Fiji. Near or below average rainfall is expected for those island groups, respectively. Enhanced convection is likely along the region close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

Most global models have shown a shift in the near equatorial Pacific sea surface temperatures to cold anomalies near Eastern Kiribati in the coming months. In a comparison to last months forecast information, the equatorial surface water cold tongue has extended from east to west, and is encroaching on or crossing the Dateline in some models. For June to August 2010, average or above average sea surface temperatures are forecast for Papua New Guinea, the Solomon Islands, Vanuatu, the Northern Cook Islands, The Austral Islands, Tuvalu and Tokelau. No clear SST guidance is offered for The Southern Cook Islands. 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 June is 60%, 1% 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 Western Kiribati and Eastern Kiribati.



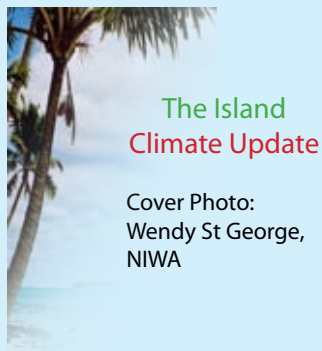
Rainfall outlook map for June to August 2010



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



The Island Climate Update

Cover Photo:
Wendy St George,
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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/>