

# The Island Climate Update

## El Niño/Southern Oscillation (ENSO)

- The Equatorial Pacific Ocean is currently in a neutral ENSO state, and is forecast to remain so over the forecast period, with indications of possible transition towards El Niño in August.

## The South Pacific Convergence Zone

- The South Pacific Convergence Zone is forecast to be slightly southwest of normal for the next three months.
- Relative to past months, the SPCZ is expected to move northward under ENSO neutral conditions.

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

- Normal or below normal rainfall is forecast for Tuvalu, Samoa, Tokelau, the Northern Cook Islands and the Society Islands and Wallis & Futuna.
- Near normal rainfall is expected for the Solomon Islands, Vanuatu, New Caledonia, Fiji, the Southern Cook Islands, the Tuamotu Archipelago, the Marquesas, the Austral Islands and Pitcairn.
- Normal or above normal rainfall is forecast for Western and Eastern Kiribati, Tonga, Niue and Papua New Guinea.
- The sea surface temperature anomalies associated with La Niña are muted relative to prior months, and the METPI guidance indicates warm anomalies will develop along the Equator east of the Dateline.

### 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

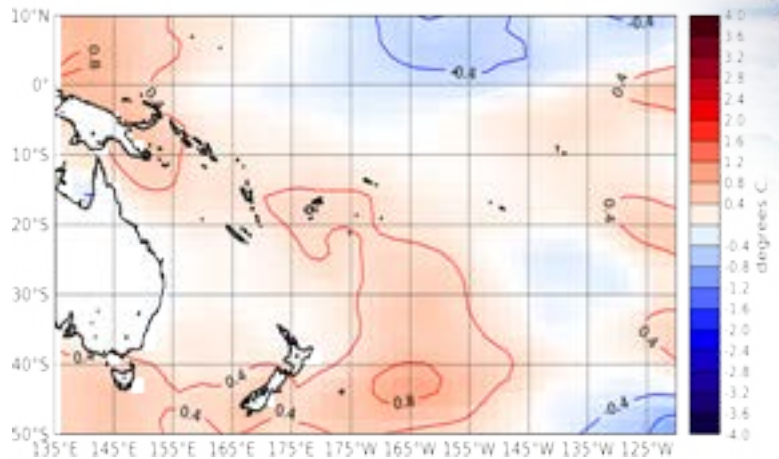
MetService of  
New Zealand



## El Niño/Southern Oscillation (ENSO)

Tropical Pacific conditions are in the neutral range, after the end of the 2011/12 La Niña event. The SOI value for May (and the 3 month mean) was  $-0.3$  standard deviations. The trade winds have weakened slightly over the western and central tropical Pacific during the past two weeks, while conversely the TRMM ENSO index strengthened to  $-1.51$  for the 30 days to 27 May. The OLR pattern across the Equatorial Pacific remains patchy (having lost the La Niña signal). Eastern–central tropical Pacific SSTs are now very close to the exact climatological average (the weekly NINO3.4 SST anomaly is  $0.0$  °C), but SSTs are above normal along the South American coastline for the second month running. There are volumes of subsurface water more than  $2$  °C warmer than usual in both the western and far eastern equatorial Pacific, although the warm anomaly focus is somewhat deeper in the western Pacific. The Madden–Julian Oscillation (MJO) has not contributed significantly to tropical convection for most of May. It is forecast to remain weak for the next two weeks. The SPCZ is currently lying close to its climatological position.

International guidance is in consensus that the tropical Pacific Ocean is likely to warm further over the next six months. All seven models that the Bureau of

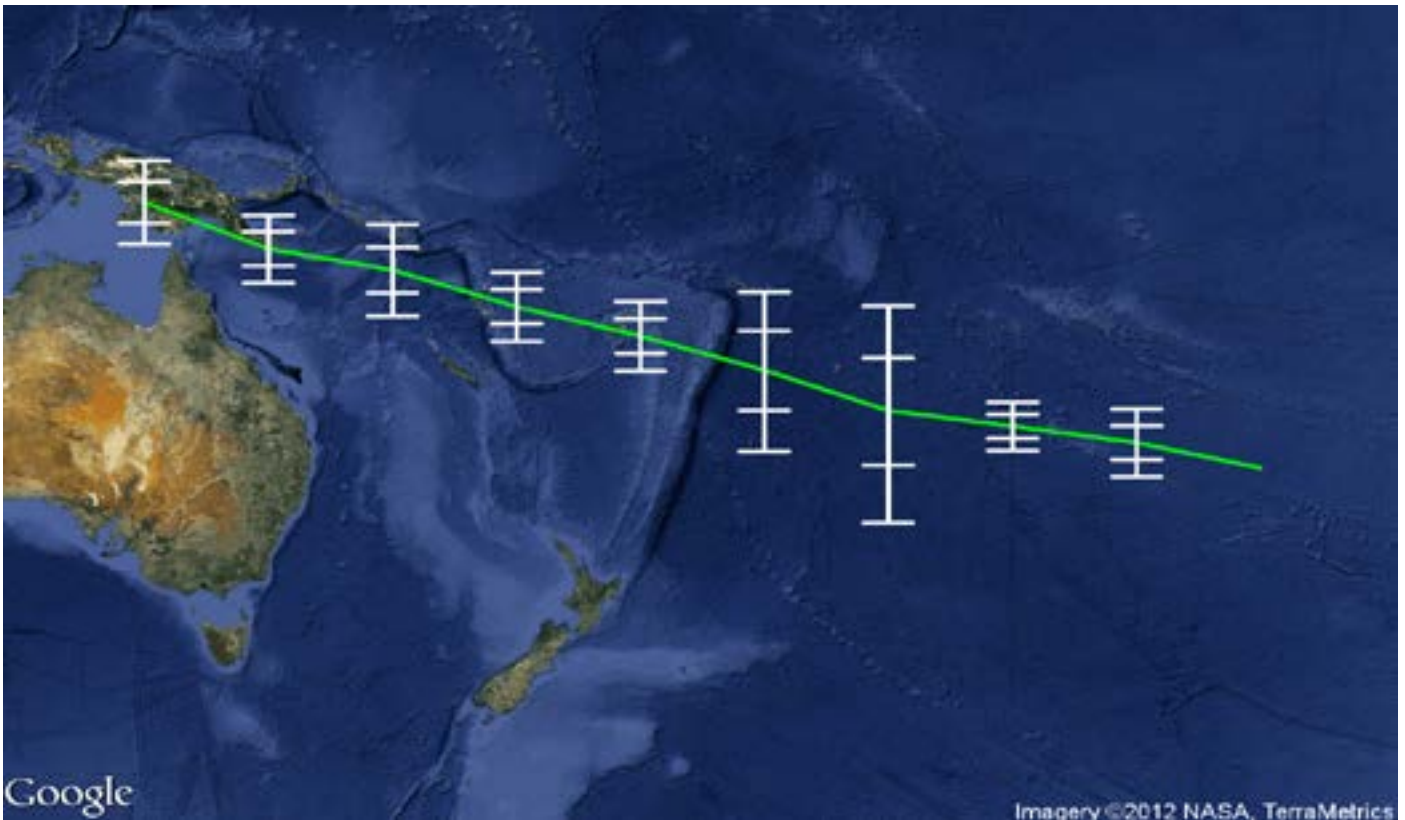


Surface temperature anomalies (°C) for May 2012

Meteorology surveys indicate conditions are likely to approach, or possibly exceed, El Niño thresholds during the second half of the year. This suggests an enhanced risk of El Niño conditions developing during 2012. No climate models favour a return to La Niña.

## South Pacific Convergence Zone (SPCZ) forecast June to August 2012

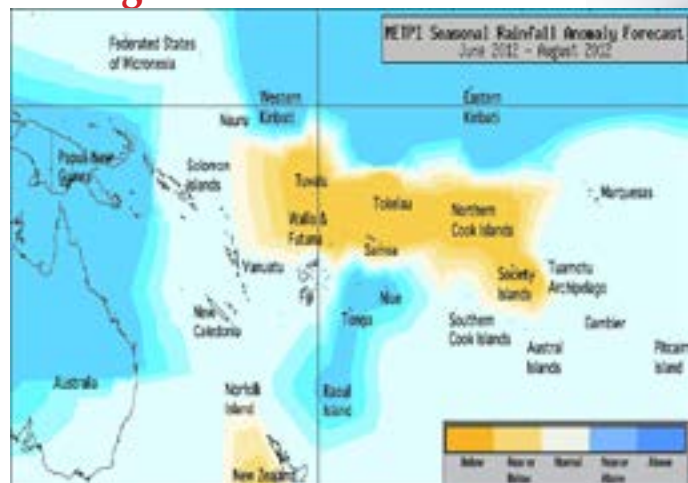
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of 8 climate models. The white vertical bars and 'whiskers' indicate the one and two standard deviations between the model projections of the SPCZ position every 5 degrees of longitude.



For the coming three months, the models are in agreement about the SPCZ position being displaced slightly southwest of normal, with the rainfall band being situated over southern Papua New Guinea, Northern Vanuatu, Samoa, and the Society Islands. Relative to past months, the SPCZ is expected to move northward under ENSO neutral conditions. The areas of greatest uncertainty are to the east of the Dateline near Samoa and the Southern Cook Islands, and the best model agreement is near French Polynesia, Fiji, and Papua New Guinea.

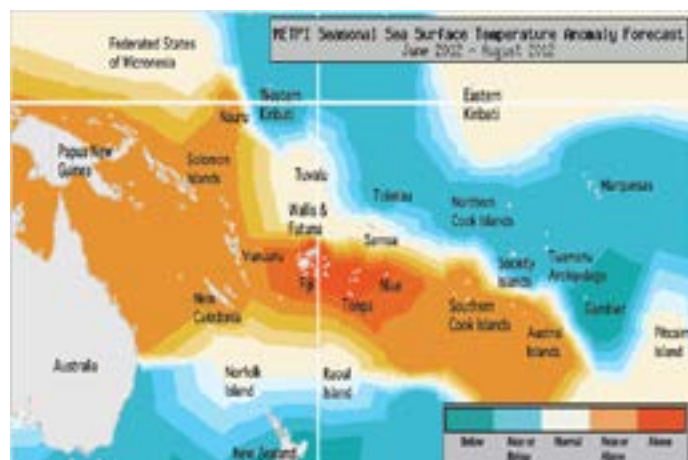
## Tropical rainfall and SST outlook: June to August 2012

The Pacific is currently in an ENSO-neutral state and is forecast to remain so, or transition towards El Niño conditions, over the next three months. Precipitation anomalies experienced over the past three months are easing off. However rainfall amounts for June–August are still expected to be higher than normal over the Equator, as well as – to a lesser extent – in the southern part of the southwest Pacific, over and South of Tonga. Lower than normal rainfall could still affect the region extending from Tuvalu to the Society Islands. Near or above normal rainfall is forecast for Western and Eastern Kiribati, Tonga, Niue and Papua New Guinea. Near normal rainfall is expected for the Solomon Islands, Vanuatu, New Caledonia, Fiji, the Southern Cook Islands, the Tuamotu Archipelago, the Marquesas and Pitcairn. Normal or below normal rainfall is expected for Tuvalu, Samoa, Tokelau, the Northern Cook Islands, the Society Islands and Wallis & Futuna.



Rainfall anomaly outlook map for June to August 2012

The global model ensemble shows sea surface temperature signals that indicate the development of El Niño conditions, with warm anomalies in the equatorial region to the east of the Dateline. Normal or below normal SSTs are forecast for Western Kiribati, the Tuamotu Archipelago, the Society Islands, the Northern Cook Islands, Tokelau, and the Marquesas. Above normal SSTs are expected for Fiji, Niue and Tonga. Near normal or above normal sea surface temperatures are forecast for Papua New Guinea, the Solomon Islands, New Caledonia, Vanuatu, the Austral Islands and the Southern Cook Islands. Near normal SSTs are forecast for Eastern Kiribati, Pitcairn Island, Wallis & Futuna, Tuvalu, and Samoa.



SST anomaly outlook map for June to August 2012

The confidence for the rainfall outlook is moderate to high. The average region-wide hit rate for rainfall forecasts issued in June is 63%, equal with the long-term average for all months combined. The SST forecast confidence is moderate to high across the region, and uncertainty is greatest near the

Marquesas and the Solomon Islands.

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



## The Island Climate Update

Cover Photo:  
Wendy St George,  
NIWA

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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 Oceanic 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/>