

# The Island Climate Update

## El Niño/Southern Oscillation (ENSO)

- The Tropical Pacific Ocean is still slightly cooler than normal along the Equator to the east of the Dateline, and warmer than normal in the Western Pacific Warm Pool, but the amplitude of the anomalies has weakened compared to last month.
- Neutral ENSO conditions exist at present, and all oceanic and atmospheric indicators are close to normal.
- The international consensus is for neutral ENSO conditions to persist over the coming three months (March to May 2013).

## The South Pacific Convergence Zone (SPCZ)

- For the coming three months, the SPCZ is forecast to sit slightly south of normal to the west of the Dateline, while east of the Dateline it will be in a near-normal position.

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

- Normal or below normal rainfall is forecast for the Austral Islands, the Northern Cook Islands, Eastern Kiribati and Western Kiribati, the Marquesas, Tokelau and Tuvalu.
- Near or above normal rainfall is forecast for Papua New Guinea, Tonga, New Caledonia, Niue, the Solomon Islands and the Federated States of Micronesia.
- Near normal or above normal SSTs are forecast for Papua New Guinea, the Solomon Islands, Fiji, Niue and Tonga.

### 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

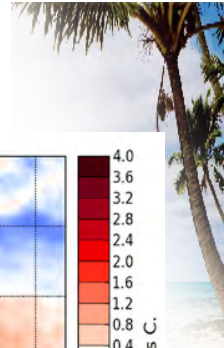
European Centre for  
Medium Range Weather  
Forecasts

UK Met Office

World Meteorological  
Organization

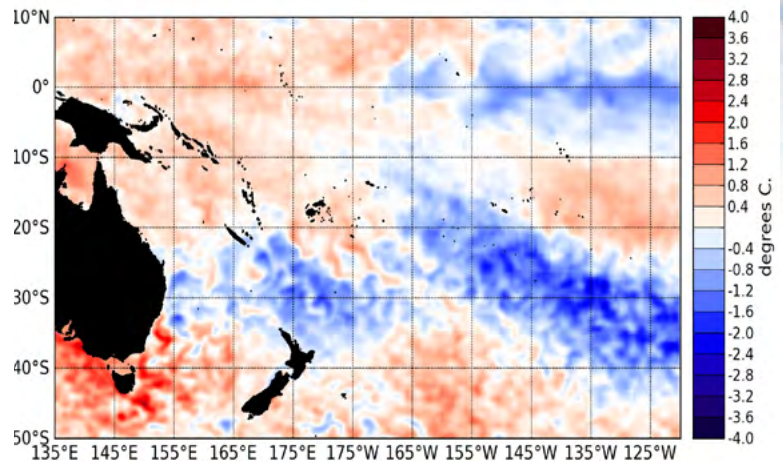
MetService of  
New Zealand





## El Niño/Southern Oscillation (ENSO)

The conditions in the tropical Pacific remain neutral (neither El Niño nor La Niña). All atmospheric and oceanic indicators are in the neutral range. Between January and February 2013, the cold anomalies that were present in the eastern equatorial Pacific have weakened, while the region of colder than normal SSTs in the southeast Pacific has extended westward. SSTs around Australia are currently much warmer than normal (reaching more than +1°C). February NINO values are -0.33°C for NINO3.4 (down from -0.2°C in January 2013), -0.06°C for NINO3 (up from -0.3°C in January 2013) and -0.09°C for NINO4 (was +0.2°C in January 2013). Warmer than normal subsurface temperatures still exist along the Equator at about 150m depth west of the Dateline, while cooler than normal temperatures are present east of the Dateline, but the amplitude of the anomalies has diminished in the past couple of weeks. The trade winds are currently slightly stronger than normal in the central and west Pacific, but close to climatological values elsewhere. Convection in February was intensified along and north of the Equator, to the west of the Dateline, and the South Pacific Convergence Zone was not very coherent spatially. The latest value for the TRMM ENSO index for the 30 days to March 3<sup>rd</sup> is -0.91 (on La Niña side of neutral) and the monthly SOI for February is -0.5. An

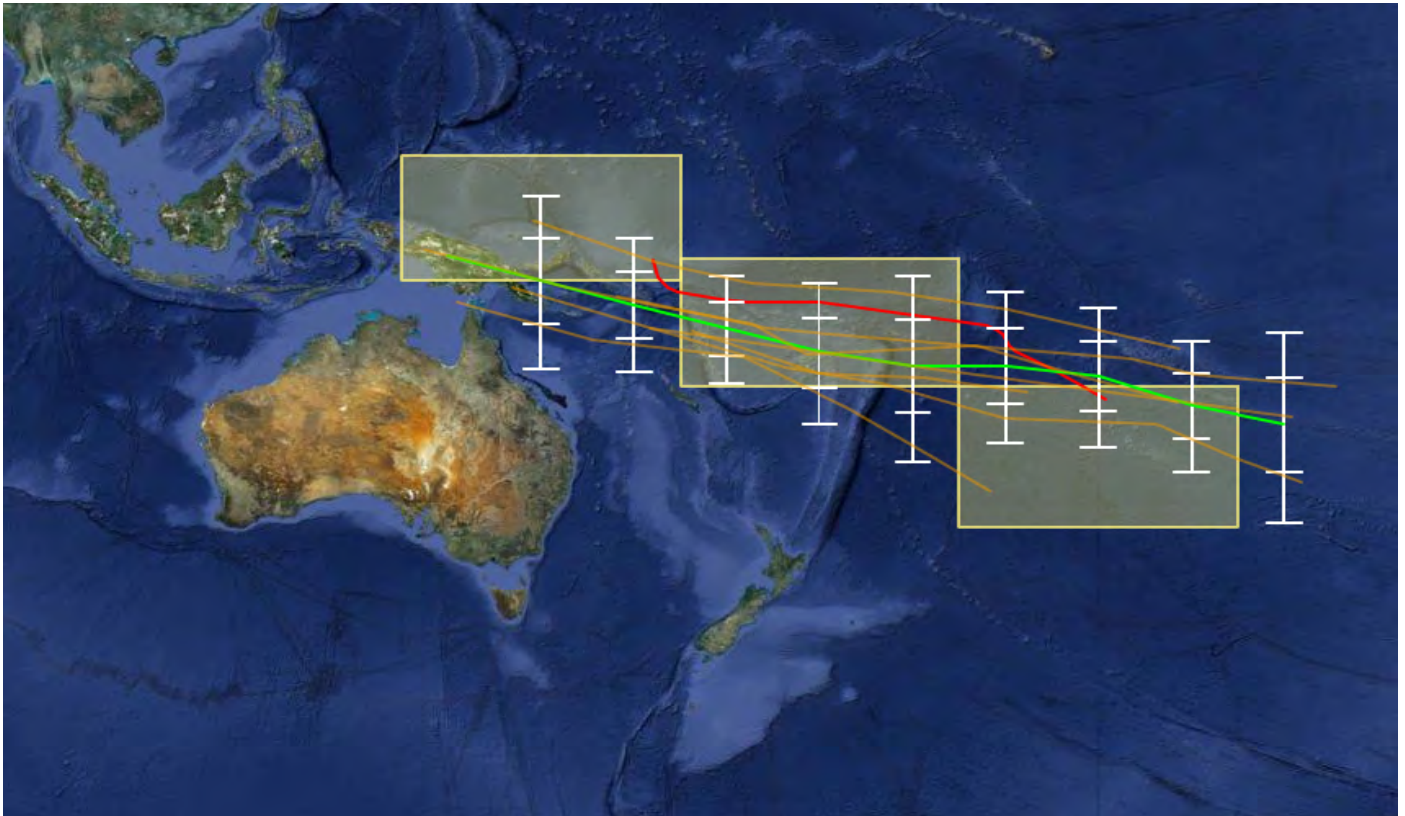


Surface temperature anomalies (°C) for February 2013, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres>).

active Madden – Julian Oscillation moved into Australian longitudes over the last two weeks of February and is forecast to slowly move eastward over the coming two weeks. All the climate models that NIWA monitors are in agreement and indicate that neutral ENSO conditions are very likely to persist over the coming 3 months (March - May 2013), with sea surface temperatures along the equator close to climatological values.

## South Pacific Convergence Zone forecast March to May 2013

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 March-May 2013, the multi model ensemble indicates that the SPCZ will sit slightly south of normal (climatology) to the west of the Dateline, while east of the Dateline it will be in a near-normal position. Model uncertainty is largest near Papua New Guinea, Tonga and in the Tuamotu Archipelago region.

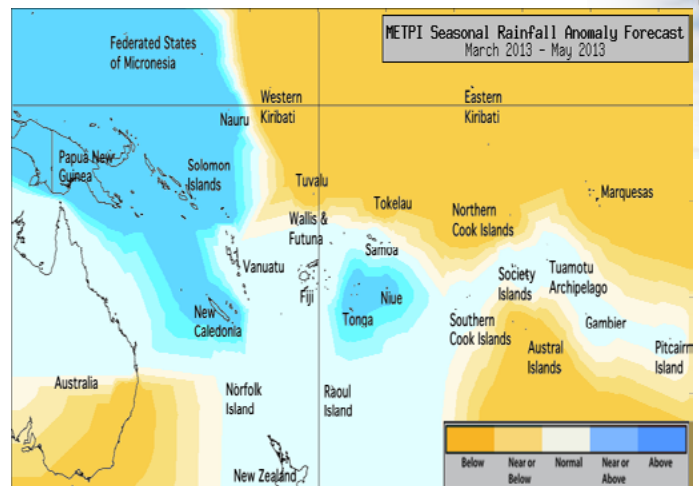


# Tropical rainfall and SST outlook: March to May 2013

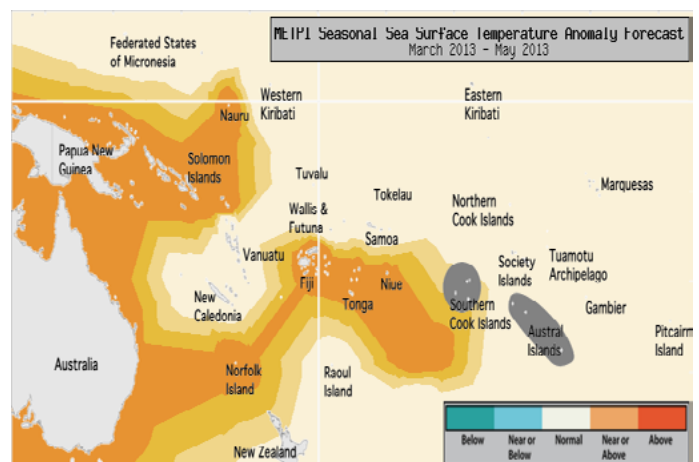
The tropical Pacific is still slightly cooler than normal along the Equator to the east of the Dateline, and warmer to the west, but the amplitude of the anomalies has weakened compared to last month. The dynamical models indicate that the SPCZ will be situated slightly south of normal to the west of the Dateline in March – May 2013, while east of the Dateline it will be in a near-normal position. Near or above normal rainfall is forecast for Papua New Guinea, Tonga, New Caledonia, Niue, the Solomon Islands and the Federated States of Micronesia. Normal or below normal rainfall is forecast for the Austral Islands, the Northern Cook Islands, Eastern Kiribati and Western Kiribati, the Marquesas, Tokelau and Tuvalu. Near normal rainfall is expected for Fiji, the Southern Cook Islands, Pitcairn, Samoa, the Society Islands, the Tuamotu Archipelago, Vanuatu and Wallis & Futuna.

The weak La Niña pattern that was evident in the SST forecasts from the global models last month is no longer present, but generally warmer than normal SSTs are forecast for the western Pacific. Near normal or above normal SSTs are forecast for Papua New Guinea, the Solomon Islands, Fiji, Niue and Tonga. No clear guidance is offered for the Austral Islands and the Southern Cook Islands. Normal sea surface temperatures are expected elsewhere.

The confidence for the rainfall outlook is moderate to high. The average region-wide hit rate for rainfall forecasts issued in March is 62%, one point lower than the long-term average for all months combined. The SST forecast confidence is high across the region except for the Marquesas, Eastern Kiribati and the Marquesas, where uncertainty is greater.



Rainfall anomaly outlook map for March to May 2013



SST anomaly outlook map for March to May 2013

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

Island Group	SST Outlook	Confidence
Fiji	25:40:35 (Normal or Above)	High
Niue	25:40:35 (Normal or Above)	High
Papua New Guinea	25:40:35 (Normal or Above)	High
Solomon Islands	25:40:35 (Normal or Above)	High
Tonga	25:40:35 (Normal or Above)	High
Austral Islands	30:35:35 (Climatology)	Moderate
Cook Islands (Southern)	30:35:35 (Climatology)	High
Cook Islands (Northern)	30:40:30 (Near normal)	High
Kiribati (Eastern)	30:40:30 (Near normal)	Moderate
Kiribati (Western)	30:40:30 (Near normal)	High
Marquesas	30:40:30 (Near normal)	Moderate
New Caledonia	30:40:30 (Near normal)	High
Pitcairn Island	30:40:30 (Near normal)	High
Samoa	30:40:30 (Near normal)	High
Society Islands	30:40:30 (Near normal)	High
Tokelau	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
FSM	30:40:30 (Near normal)	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/>