

# The Island Climate Update

## El Niño/Southern Oscillation (ENSO)

- Sea surface temperatures are slightly cooler than average in the eastern equatorial Pacific, but close to normal elsewhere along the Equator.
- All oceanic and atmospheric ENSO indicators are in the neutral range.
- The international consensus indicates that neutral ENSO conditions will persist for the coming three months (June to August 2013).

## The South Pacific Convergence Zone (SPCZ)

- For the coming three months, the SPCZ is forecast to be positioned near normal or just south of normal for this time of year.

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

- Normal or below normal rainfall is forecast for Tokelau, Tuvalu, Eastern Kiribati and Western Kiribati and the Federated States of Micronesia.
- Near or above normal rainfall is forecast for Papua New Guinea, the Marquesas, the Solomon Islands and the Tuamotu archipelago.
- Near normal or above normal sea surface temperatures are forecast for Vanuatu, Fiji, the Southern Cook Islands and the Austral Islands.

### 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

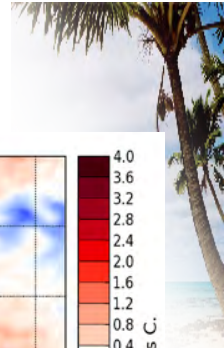
European Centre for  
Medium Range Weather  
Forecasts

UK Met Office

World Meteorological  
Organization

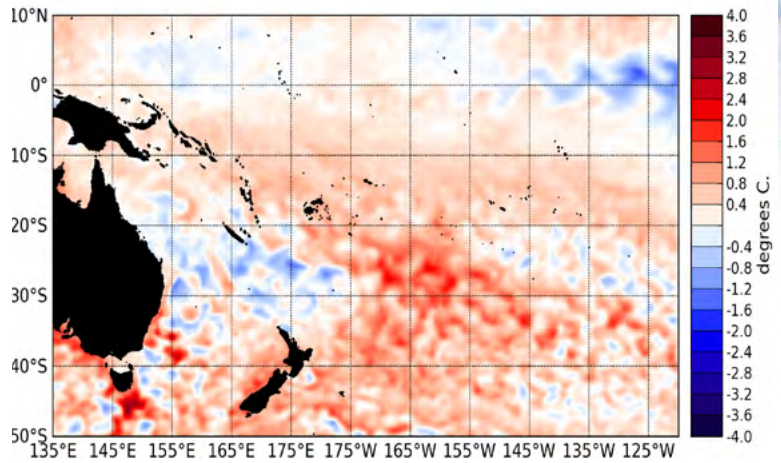
MetService of  
New Zealand





## El Niño/Southern Oscillation (ENSO)

The tropical Pacific remained in a neutral state (neither El Niño nor La Niña) in May 2013. Since April, slightly cooler than normal sea surface temperatures (SSTs) have developed in the eastern equatorial Pacific. The region of warmer than normal SSTs that extended from Tasmania to New Zealand in previous months has weakened this month. May NINO values estimates are + 0°C for NINO 3.4, - 0.3°C for NINO 3 and 0.1°C for NINO 4. Higher than normal subsurface temperatures still exist along the Equator at about 150m depth west of the Dateline, while lower than normal temperatures are present east of the Dateline at similar depths. The thin warm surface layer that existed in the eastern Pacific in April has vanished, allowing the surface expression of the deeper cool anomalies. Equatorial oceanic integrated heat content (0 – 300 m) is currently slightly warmer than normal in the West and cooler in the East. The trade winds remained slightly stronger than normal in the western Pacific. The Intertropical Convergence Zone (ITCZ) was north of normal in the eastern Pacific. The South Pacific Convergence Zone (SPCZ) was positioned south of normal in May in the western Pacific. The latest value for the TRMM ENSO index for the 30 days to 3 June is - 1.68 (on La Niña side of neutral) and the monthly SOI for May is 0.6. The Madden – Julian Oscillation (MJO) was mostly

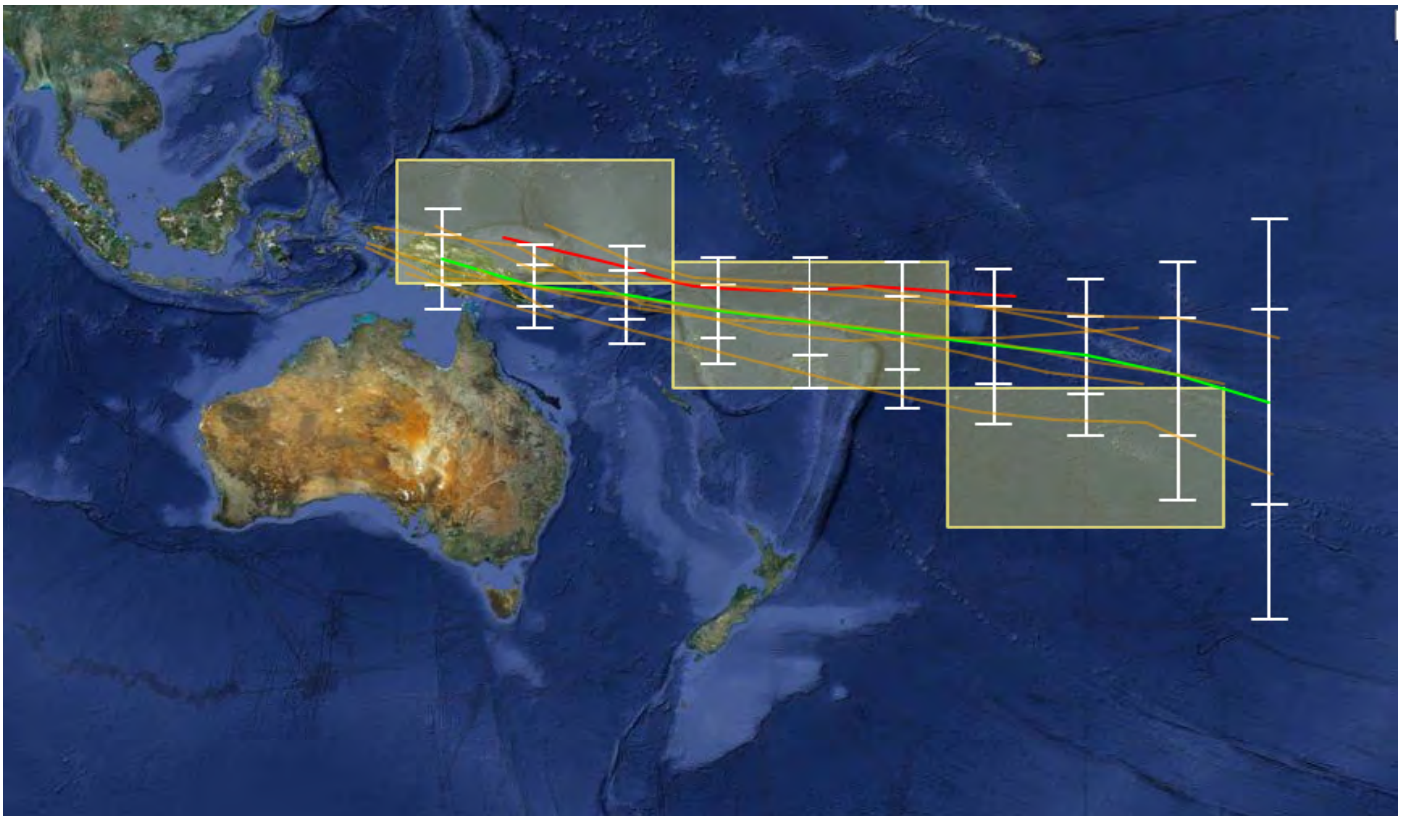


Surface temperature anomalies (°C) for May 2013, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres>).

inactive over the region in May and is forecast to remain weak over the coming two weeks. The ensemble of dynamical and statistical climate forecast models that NIWA monitors indicates that neutral ENSO conditions are likely to persist over the June – August 2013 period, with 67 % chance, versus 26 % for La Niña and 7 % chance El Niño (percentages are from the latest IRI/CPC statement).

## South Pacific Convergence Zone forecast June to August 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.



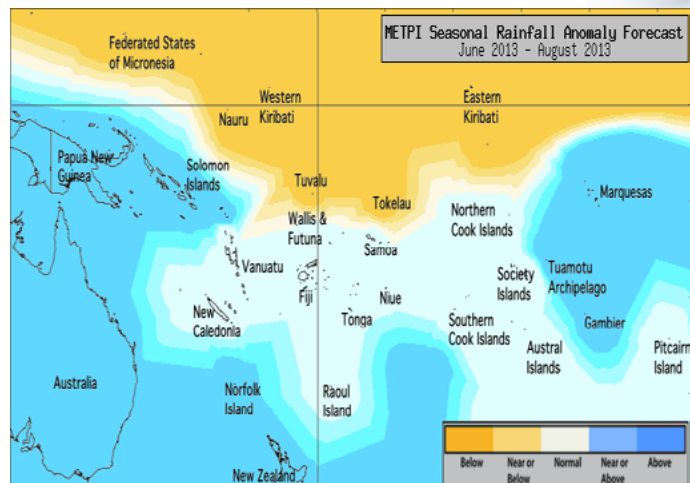
For June – August 2013, the forecast indicates the SPCZ will be positioned near normal or just south of normal for this time of year. Uncertainty is greatest to the east of the Dateline.

# Tropical rainfall and SST outlook: June to August 2013

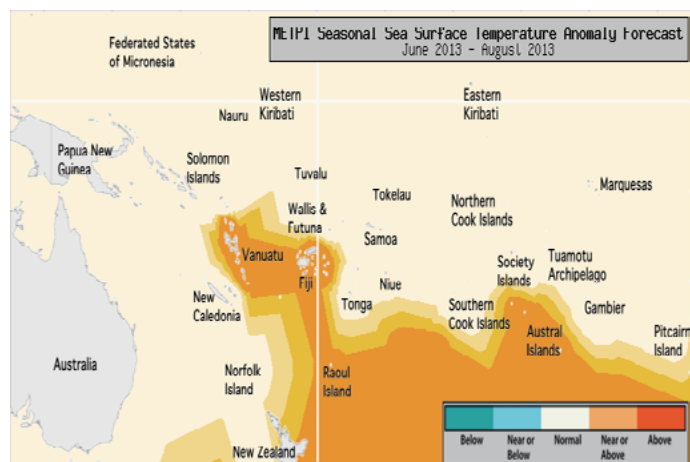
The dynamical models indicate that the SPCZ will be situated close to or slightly south of its climatological position during June – August 2013. Near or above normal rainfall is forecast for Papua New Guinea, the Marquesas, the Solomon Islands and the Tuamotu archipelago. Near normal rainfall is expected for the Northern Cook Islands and the Southern Cook Islands, Fiji, New Caledonia, Niue, Pitcairn Island, Samoa, the Society Islands, Tonga, Vanuatu, Wallis & Futuna and the Austral Islands. Normal or below normal rainfall is forecast for Tokelau, Tuvalu, Eastern Kiribati and Western Kiribati and the Federated States of Micronesia.

The global model ensemble shows close to normal SST anomalies forecasts across the southwest Pacific region. A diagonal band of slightly above normal SSTs are shown in some models for the region between Papua New Guinea and the Austral Islands. Only one model indicates slightly below normal SSTs in the NINO3.4 region. Near normal or above normal SSTs are forecast for Vanuatu, Fiji, the Southern Cook Islands and the Austral Islands. Normal sea surface temperatures are expected elsewhere.

The confidence for the rainfall outlook is generally high, except for Eastern Kiribati, where uncertainty is greater. The average region-wide hit rate for rainfall forecasts issued in June is 63 %, similar to the long-term average for all months combined. The SST forecast confidence is high across the region except for Eastern Kiribati and the Marquesas, where uncertainty is greater.



Rainfall anomaly outlook map for June to August 2013



SST anomaly outlook map for June to August 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
Marquesas	25:40:35 (Normal or Above)	High
Solomon Islands	25:40:35 (Normal or Above)	High
Tuamotu Islands	25:40:35 (Normal or Above)	High
Cook Islands (Northern)	30:40:30 (Near normal)	High
Cook Islands (Southern)	30:40:30 (Near normal)	High
Fiji	30:40:30 (Near normal)	High
New Caledonia	30:40:30 (Near normal)	High
Niue	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
Tonga	30:40:30 (Near normal)	High
Vanuatu	30:40:30 (Near normal)	High
Wallis & Futuna	30:40:30 (Near normal)	High
Austral Islands	30:40:30 (Near normal)	High
Tokelau	35:40:25 (Normal or Below)	High
Tuvalu	35:40:25 (Normal or Below)	High
Eastern Kiribati	40:35:25 (Normal or Below)	Moderate-High
Western Kiribati	40:35:25 (Normal or Below)	High
FSM	40:35:25 (Normal or Below)	High

Island Group	SST Outlook	Confidence
Austral_Islands	25:35:40 (Normal or Above)	High
Cook Islands (Southern)	25:40:35 (Normal or Above)	High
Fiji	25:40:35 (Normal or Above)	High
Vanuatu	25:40:35 (Normal or Above)	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
Niue	30:40:30 (Near normal)	High
Papua New Guinea	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
Solomon Islands	30:40:30 (Near normal)	High
Tokelau	30:40:30 (Near normal)	High
Tonga	30:40:30 (Near normal)	High
Tuamotu Islands	30:40:30 (Near normal)	High
Tuvalu	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, Federated States of Micronesia, 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