

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The tropical Pacific Ocean still exhibits slightly warmer than normal sea surface temperatures (SSTs) in the extreme west of the Pacific warm pool, while the central and eastern Pacific SSTs are slightly cooler than normal.
- Neutral ENSO conditions exist at present, and all oceanic and atmospheric indicators are close to the neutral range.
- The international consensus indicates that neutral ENSO conditions are likely to persist over the coming three months (April to June 2013).

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

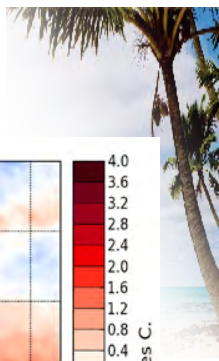
The South Pacific Convergence Zone (SPCZ)

- For the coming three months, the SPCZ is forecast to sit slightly south of its climatological position.

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

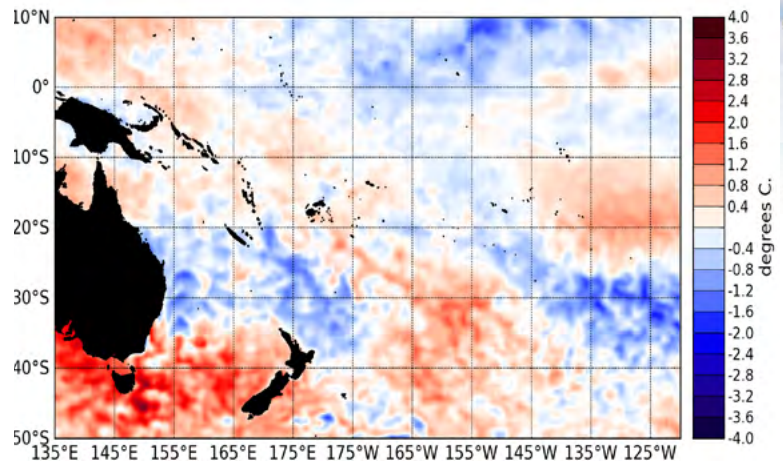
- Normal or below normal rainfall is forecast for the Austral Islands, the Northern Cook Islands, the Southern Cook Islands, Eastern Kiribati, Western Kiribati, Tuvalu, the Tuamotu Islands and Tokelau.
- Near normal rainfall is forecast for Papua New Guinea, the Solomon Islands and the Federated States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





El Niño/Southern Oscillation (ENSO)

The tropical Pacific remained in a neutral state (neither El Niño nor La Niña) in March 2013. Between February and March 2013, the pattern of anomalous sea surface temperatures (SSTs) with slightly warmer than normal SSTs in the West and cooler than normal SSTs in the east weakened. The region of warmer than normal SSTs south of Australia intensified and extended eastward towards the South Island of New Zealand (reaching more than +1.5°C). March NINO values are 0.03°C for NINO3.4 (up from -0.33°C in February 2013), 0.3°C for NINO3 (up from -0.06°C in February 2013) and -0.04°C for NINO4 (up from -0.09°C in February 2013). Warmer than normal subsurface temperatures still exist along the Equator at about 150m depth west of the Dateline. The trade winds are currently slightly stronger than normal in the central and west Pacific, and slightly weaker than normal in the eastern Pacific, but remain within the normal range. The Intertropical Convergence Zone (ITCZ) was close to its climatological position and intensity in March. The South Pacific Convergence Zone (SPCZ) was well defined, with more intense rainfall than normal west of the Dateline and a position well southwest of climatology east of the Dateline. The latest value for the TRMM ENSO index for the 30 days to April 2nd is 0.22 (on El Niño side of neutral) and the monthly SOI for March is +1. The Madden –

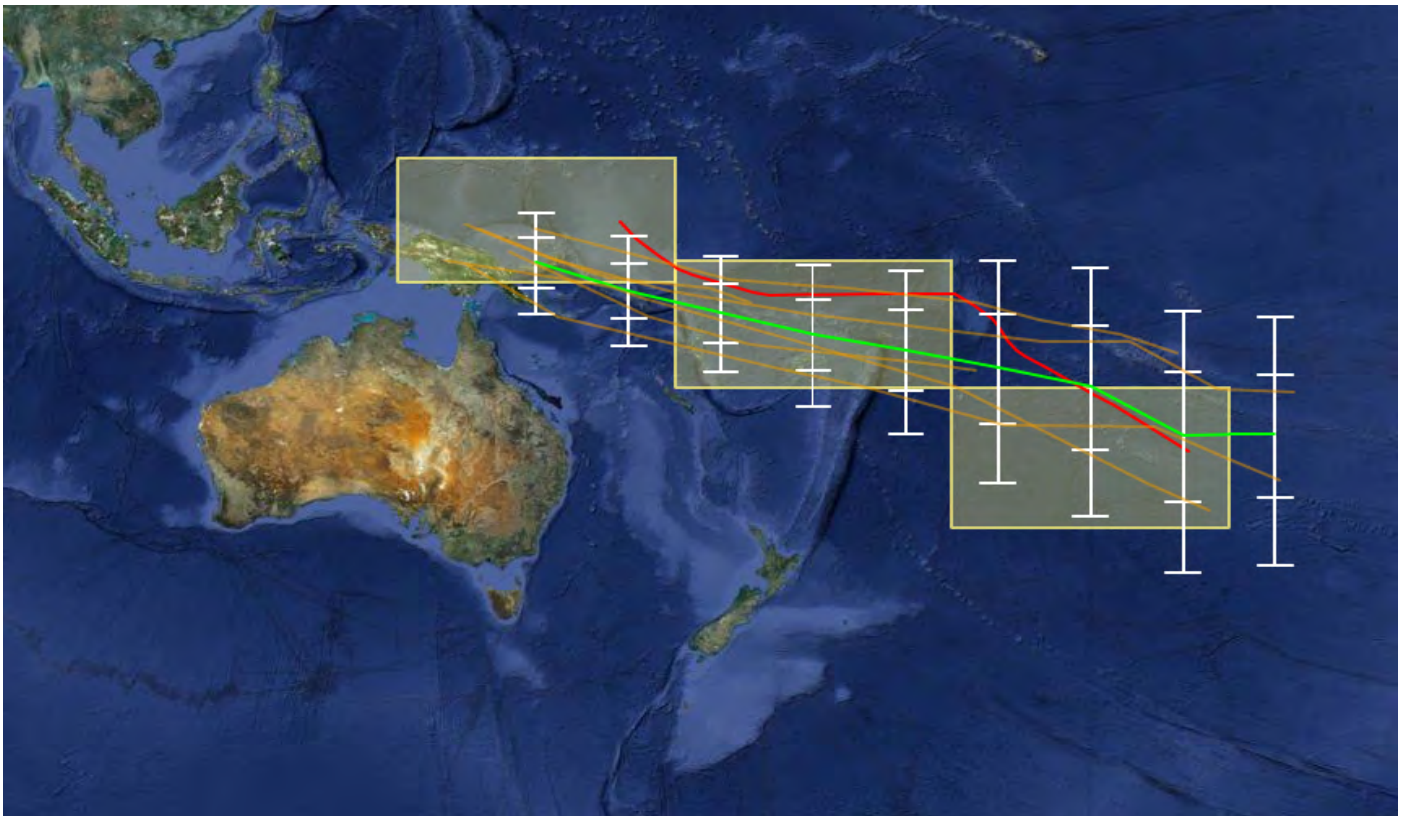


Surface temperature anomalies (°C) for March 2013, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres>).

Julian Oscillation was positioned over West Africa in March and is forecast to slowly move eastward over the coming two weeks, it is not expected to bring enhanced convective activity over the region in the coming weeks. The international consensus indicates that neutral ENSO conditions are very likely to persist over the April – June 2013 period.

South Pacific Convergence Zone forecast April to June 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.



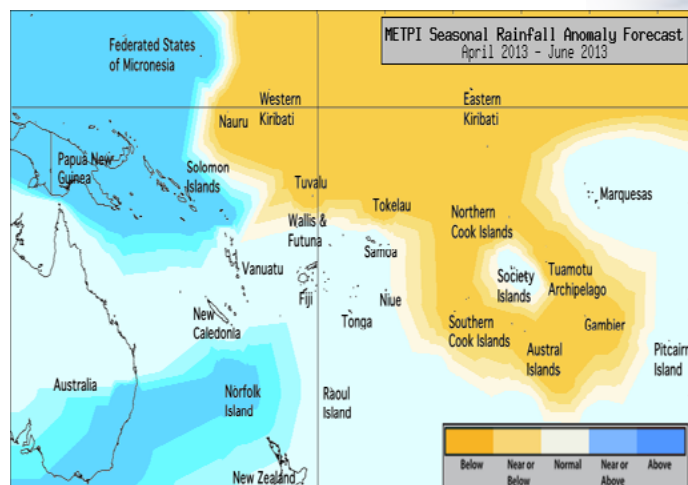
For April – June 2013, the multi model ensemble indicates that the SPCZ will sit slightly south of normal (climatology). Model uncertainty is largest to the east of the Dateline.

Tropical rainfall and SST outlook: April to June 2013

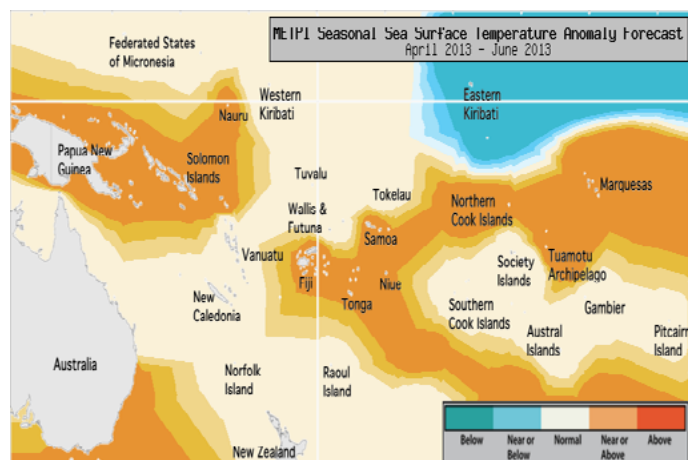
The tropical Pacific remains in a neutral ENSO state. The weak SST anomalies that were present in February along the Equator, with slightly warmer than normal temperatures to the west and cooler than normal SSTs to the east has weakened further in March. The dynamical models indicate that the SPCZ will be situated slightly south of its climatological position during April – June 2013. Near or above normal rainfall is forecast for Papua New Guinea, the Solomon Islands and the Federated States of Micronesia. Normal or below normal rainfall is forecast for the Austral Islands, the Northern Cook Islands, the Southern Cook Islands, Eastern Kiribati, Western Kiribati, Tuvalu, the Tuamotu Islands and Tokelau. Near normal rainfall is expected for Fiji, New Caledonia, Niue, Pitcairn Island, Samoa, the Society Islands, Tonga, Vanuatu, Wallis & Futuna and the Marquesas

The SSTs forecasts from the global models generally agree to predict relatively warmer than normal SSTs in the southeast of the Pacific at subtropical and mid-latitude, while anomalies in the tropical domain are forecast to be weak. Near normal or above normal SSTs are forecast for Fiji, the Northern Cook Islands, the Marquesas, Niue, Papua New Guinea, Samoa, the Solomon Islands, Tonga and the Tuamotu Islands. Near normal or below normal SSTs are forecast for Eastern Kiribati. 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 57 %, five points lower than the long-term average for all months combined. The SST forecast confidence is high across the region except for the Marquesas, the Austral Islands and Eastern Kiribati, where uncertainty is greater.



Rainfall anomaly outlook map for April to June 2013



SST anomaly outlook map for April to June 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)	Moderate-High
Solomon Islands	25:40:35 (Normal or Above)	High
FSM	25:40:35 (Normal or Above)	Moderate-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
Marquesas	30:40:30 (Near normal)	Moderate-High
Austral Islands	35:40:25 (Normal or Below)	High
Cook Islands (Northern)	35:40:25 (Normal or Below)	Moderate-High
Cook Islands (Southern)	35:40:25 (Normal or Below)	High
Kiribati (Eastern)	35:40:25 (Normal or Below)	High
Kiribati (Western)	35:40:25 (Normal or Below)	High
Tuvalu	35:40:25 (Normal or Below)	High
Tuamotu Islands	40:35:25 (Normal or Below)	High
Tokelau	40:35:25 (Normal or Below)	High

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



The Island Climate Update

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Wendy St George,
NIWA

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Your comments and ideas about The Island Climate Update are welcome. Please contact:

Dr Nicolas Fauchereau, NIWA,
41 Market Place, Auckland, New Zealand
E-mail: Nicolas.Fauchereau@niwa.co.nz

Forecasts:

Dr. Andrew Lorrey and Dr. Nicolas Fauchereau (South Pacific rainfall and SST forecasts) and the NIWA National Climate Centre (ENSO wrap)

ICU Editorial team:

Nicolas Fauchereau:
Nicolas.Fauchereau@niwa.co.nz
Andrew Lorrey: a.lorrey@niwa.co.nz
Petra Chappell: p.chappell@niwa.co.nz

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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/>