

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The Tropical Pacific Ocean is slightly cooler than normal along the Equator to the east of the Dateline, and warmer than normal in the Western Pacific Warm Pool.
- Atmospheric circulation is close to normal for this time of year, and neutral ENSO conditions exist at present.
- The international consensus is for neutral ENSO conditions to persist throughout the Southern Hemisphere autumn.

The South Pacific Convergence Zone (SPCZ)

- For the coming three months, the SPCZ is forecast to be slightly south of normal for most of the southwest Pacific.

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

- Below normal rainfall is forecast for the Marquesas and the Northern Cook Islands.
- Normal or below normal rainfall is forecast the Tuamotu archipelago, Tuvalu, Eastern Kiribati and Western Kiribati and Tokelau.
- Near or above normal rainfall is forecast for the Federated States of Micronesia, Pitcairn Island and Tonga.
- Sea surface temperatures are forecast to be cooler than normal for Eastern Kiribati and the Marquesas.

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

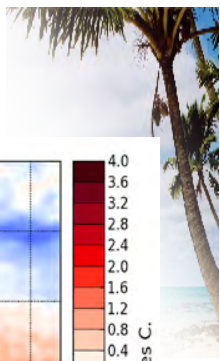
European Centre for
Medium Range Weather
Forecasts

UK Met Office

World Meteorological
Organization

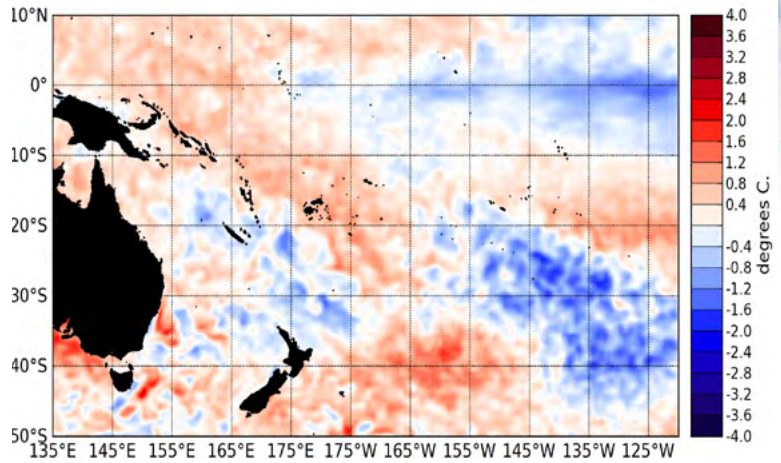
MetService of
New Zealand





El Niño/Southern Oscillation (ENSO)

The conditions in the tropical Pacific are neutral (neither El Niño nor La Niña). While the equatorial Sea Surface Temperatures (SSTs) in the eastern Pacific are currently slightly cooler than normal, they fall within the neutral range. All atmospheric indicators are close to their climatological values. Between December 2012 and January 2013, the main changes in SSTs have been a further cooling of the Pacific equatorial waters to the east of the Dateline as well as a cooling of the subtropical eastern Pacific Ocean (east of 155°W). January NINO values are -0.2°C for NINO3.4 (down from -0.08°C in December 2012) and -0.3°C for NINO3 ($+0.06^{\circ}\text{C}$ in December 2012) and $+0.2^{\circ}\text{C}$ for NINO4 ($+0.5^{\circ}\text{C}$ in December 2012). Warmer than normal subsurface temperature exist along the Equator at about 100m depth west of the Dateline, while cooler than normal temperatures exist east of the Dateline. Surface winds along the Equator are close to climatology. Convection has intensified along the Equator, to the west of the Dateline, indicating an ITCZ south of normal. The latest value for the TRMM ENSO index for the 30 days to February 2nd is -0.84 (on La Niña side of neutral) and the monthly SOI for January is -0.1 . A strong Madden – Julian Oscillation moved into Australasian longitudes over the last two weeks of January and is forecast to remain

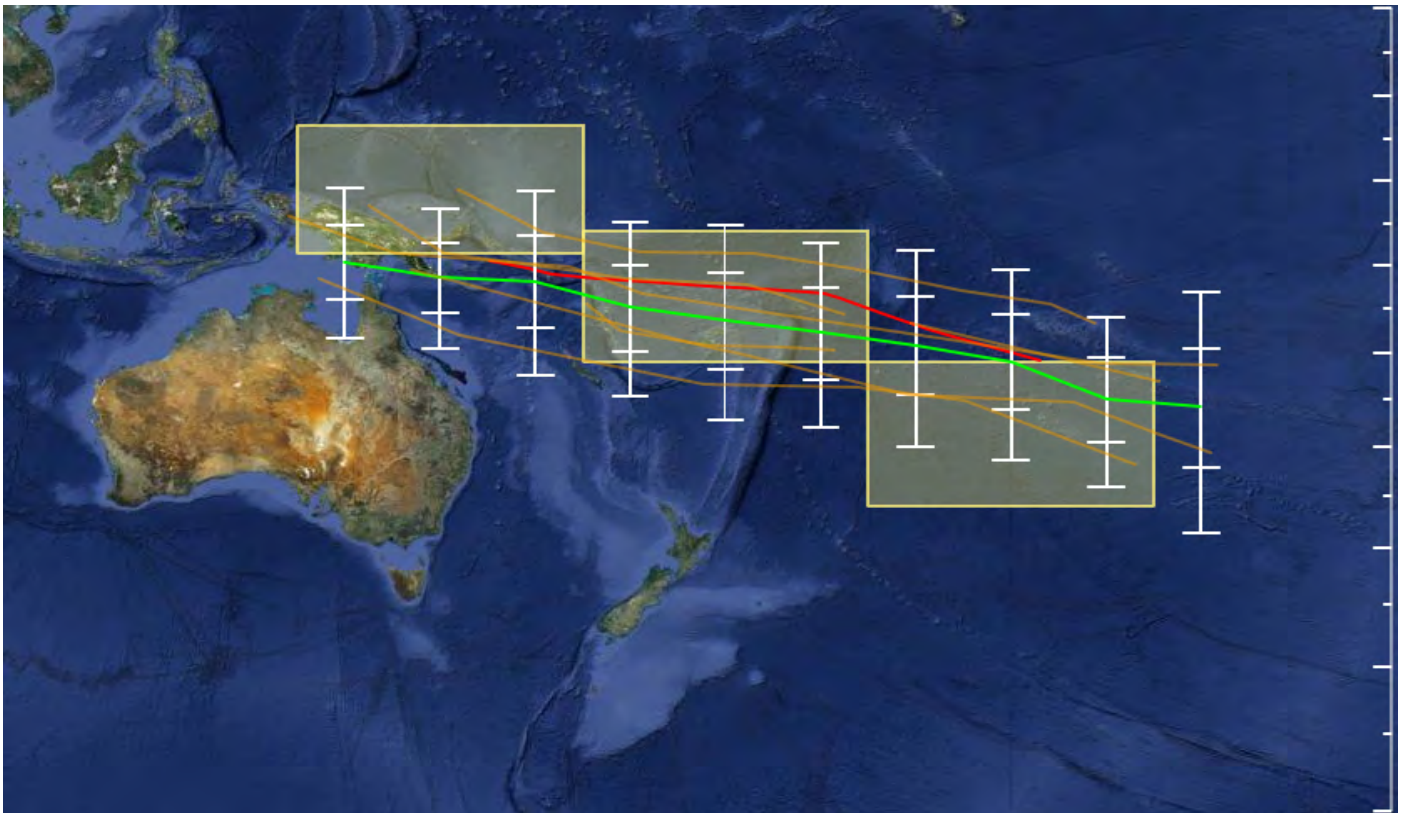


Surface temperature anomalies ($^{\circ}\text{C}$) for January 2013, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres>).

stationary and weaken over the coming two weeks. All the climate models that NIWA monitors indicate a very high likelihood for neutral ENSO conditions to persist throughout the first quarter of 2013, with sea surface temperatures remaining generally warmer than average along the Equator west of the Dateline and cooler further east.

South Pacific Convergence Zone forecast February to April 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 the coming three months, the dynamical models indicate that the South Pacific Convergence Zone (SPCZ) is likely to sit slightly south of its climatological position over the southwest Pacific. The uncertainty in the SPCZ location for the forecast period is high, especially to the east of the Dateline.

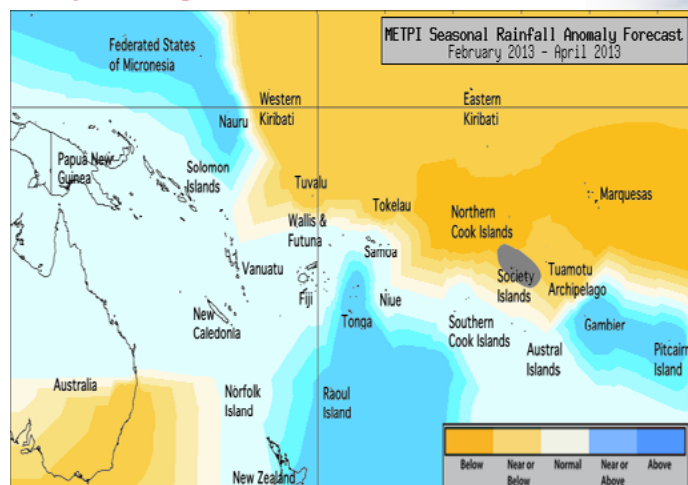
Tropical rainfall and SST outlook: February to April 2013

The tropical Pacific is currently slightly cooler than normal along the Equator to the east of the Dateline, and warmer to the west. The dynamical models indicate that both the ITCZ and the SPCZ will be situated south of their climatological positions for February 2012 – April 2013. Slightly drier than normal conditions are likely to affect areas south of the Equator to the east of the Dateline, while wetter than normal conditions are likely in the western equatorial Pacific. Near or above normal rainfall is forecast the Federated States of Micronesia, Pitcairn Island and Tonga. Near normal rainfall is expected for the Austral islands, the Southern Cook Islands, Fiji, New Caledonia, Niue, Papua New Guinea, Samoa, the Solomon Islands, Wallis & Futuna and Vanuatu. Normal or below normal rainfall is forecast the Tuamotu archipelago, Tuvalu, Eastern Kiribati and Western Kiribati and Tokelau. Below normal rainfall is forecast for the Northern Cook Islands and the Marquesas. No clear guidance is available for the Society Islands.

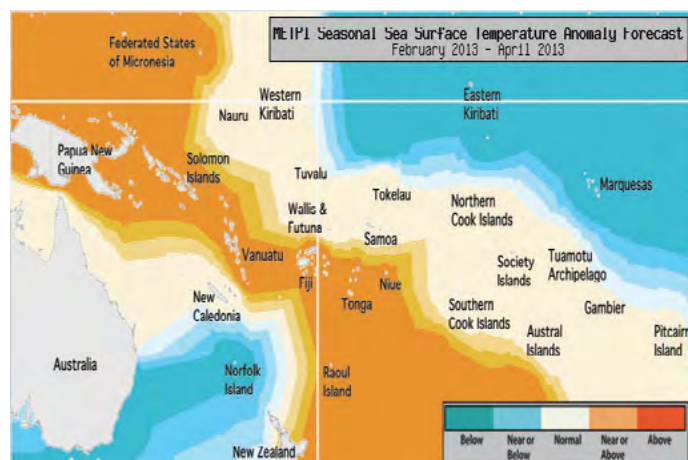
The global model ensemble shows patterns similar to a weak La Niña in the SST field along the Equator. Cooler than normal SST are forecast the eastern Pacific Ocean while warmer than normal SSTs are expected west of the Dateline. Near normal or above normal SSTs are forecast for Papua New Guinea, the Solomon Islands, Fiji, Niue, Tonga and Vanuatu. Near normal or below normal SSTs are forecast for the Marquesas and eastern Kiribati. Normal SSTs are forecast elsewhere.

The confidence for the rainfall outlook is moderate to high. The average region-wide hit rate for rainfall forecasts issued in February is 66%, three points higher than the long-term average for all months combined. The SST forecast confidence is high across the region except for the Marquesas and Eastern Kiribati, where uncertainty is greater.

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.



Rainfall anomaly outlook map for February to April 2013



SST anomaly outlook map for February to April 2013

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

Island Group	SST Outlook	Confidence
Papua New Guinea	25:35:40 (Normal or Above)	High
Solomon Islands	25:35:40 (Normal or Above)	High
Fiji	25:40:35 (Normal or Above)	High
Niue	25:40:35 (Normal or Above)	High
Tonga	25:40:35 (Normal or Above)	High
Vanuatu	25:40:35 (Normal or Above)	High
Austral Islands	30:40:30 (Near normal)	High
Cook Islands (Northern)	30:40:30 (Near normal)	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
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
Wallis & Futuna	30:40:30 (Near normal)	High
FSM	30:40:30 (Near normal)	High
Marquesas	35:40:25 (Normal or Below)	Moderate
Kiribati (Eastern)	40:35:25 (Normal or Below)	Moderate



The Island Climate Update

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Visit The Island Climate Update at:
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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/>