

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The tropical Pacific remains in a neutral ENSO state.
- Sea surface temperatures (SSTs) have warmed up in the central and eastern Pacific during March 2014.
- International climate forecasts indicates that neutral ENSO conditions are likely (78 % chance) to persist for April – June 2014. Chances of El Niño increase in the following months.

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

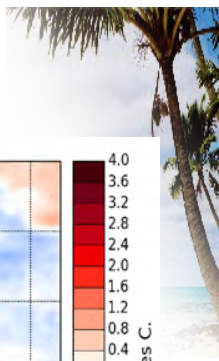
The South Pacific Convergence Zone (SPCZ)

- The SPCZ is expected to be positioned slightly south of normal for the coming three months near and west of the international Dateline.

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

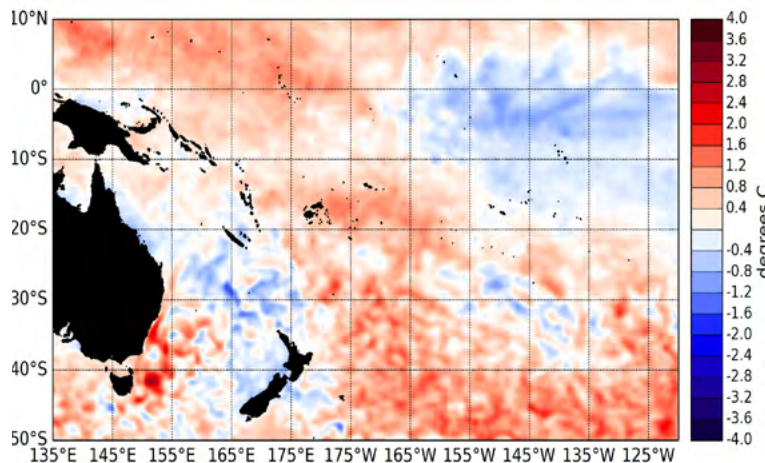
- Normal or below normal rainfall is forecast for the Northern Cook Islands, Samoa, the Society Islands, Tokelau, the Tuamotu archipelago, Tuvalu and Wallis and Futuna. Below normal rainfall is forecast for the Marquesas.
- Near or above normal rainfall is forecast for the Austral Islands, Eastern Kiribati and Western Kiribati, the Federated States of Micronesia, Niue and the Southern Cook Islands.
- Near or above normal SSTs are forecast for Western Kiribati. Normal SSTs are generally expected elsewhere.





El Niño/Southern Oscillation (ENSO)

The tropical Pacific Ocean remained in a neutral state (neither El Niño nor La Niña) in March 2014. However several indicators ventured over or close to El Niño thresholds in the last days of the month. The central and eastern Pacific cool anomalies have weakened in March compared to February, and warmer than normal sea surface temperatures (SSTs) have emerged off the South American coast along the Equator. The NINO3.4 index value for March is -0.05°C , but the latest weekly value (to 30 April) is now positive (0.27°C). The NINO3 index values are respectively 0.02°C and 0.44°C for March as a whole and the last week of the month. Subsurface waters remain much warmer (up to $+5^{\circ}\text{C}$) than normal in the central Pacific at about 150m, and warm subsurface anomalies have appeared in eastern Pacific at around 50m. depth. The Pacific Ocean is currently storing a large amount of anomalous heat. Convection and rainfall was suppressed in the western part of the Intertropical Convergence Zone (ITCZ). The South Pacific Convergence Zone was intensified and shifted northeast of normal. The latest value for the TRMM ENSO index for the 30 days to 3 April is 0.46. The Southern Oscillation Index (SOI) is negative at -1.7 for March 2014, following a dramatic drop in the index over the course of the month. The Madden – Julian Oscillation (MJO) has been mostly

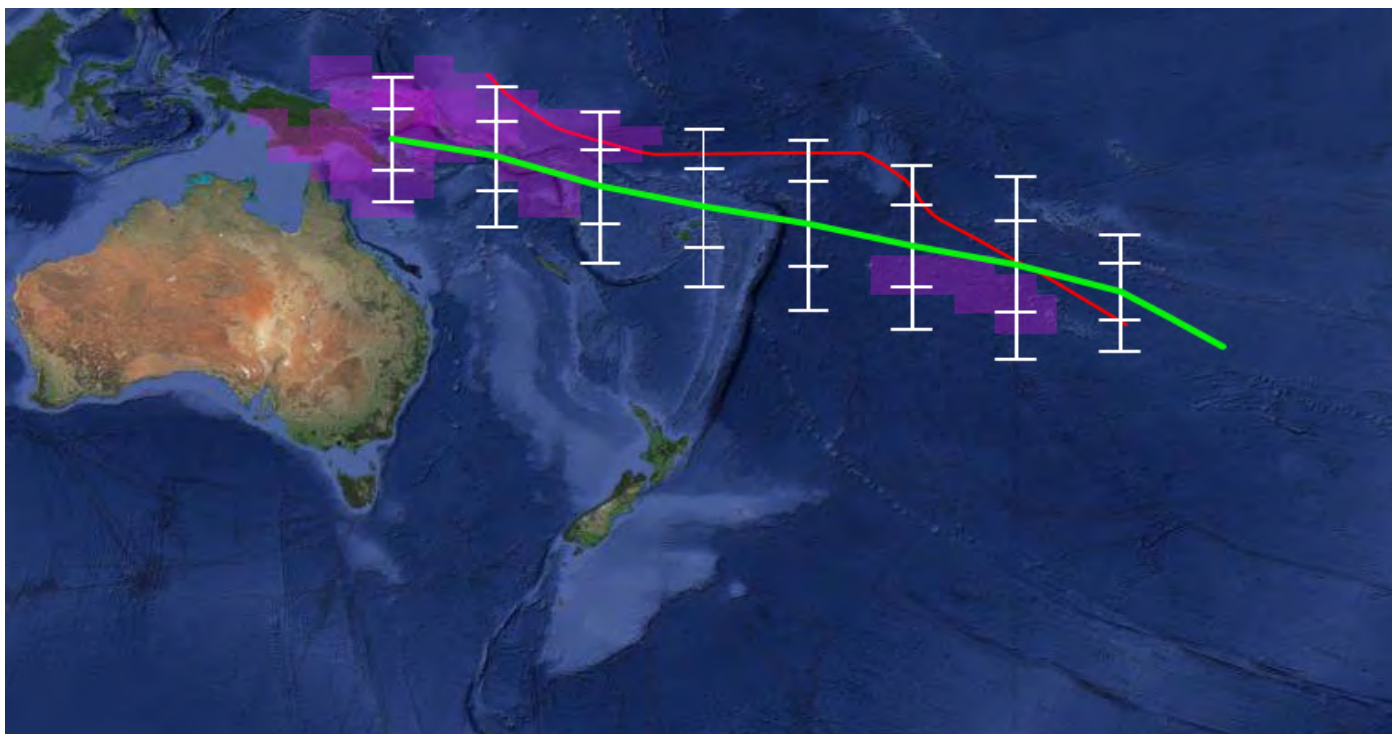


Surface temperature anomalies ($^{\circ}\text{C}$) for March 2014, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres/>).

inactive in the last two weeks, and the forecasts indicate reduced intra-seasonal convective activity associated with the MJO over the next two weeks. The consensus forecast from IRI / CPC indicates that neutral ENSO conditions are likely to persist over the April – June 2014 period, with 78 % chance, versus 5 % for La Niña and 17 % for El Niño. Probabilities of El Niño increase over the following seasons to reach $\sim 50\%$ in June – August 2014.

South Pacific Convergence Zone forecast April to June 2014

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. The purple shading is proportional to the probability of intense convection developing within the SPCZ.



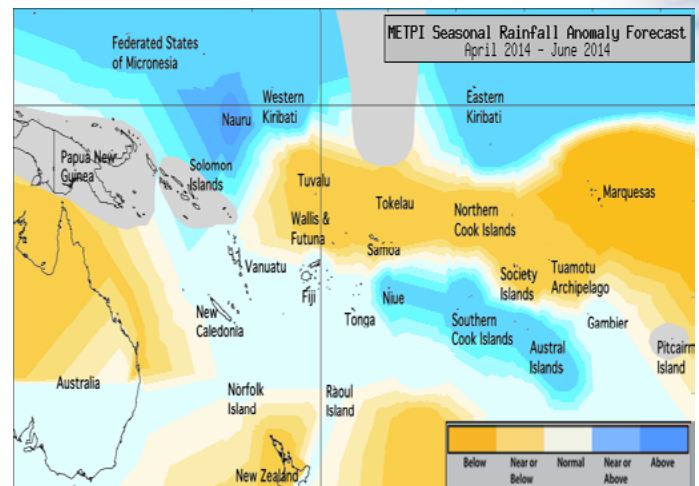
The ensemble of dynamical forecasts indicates that the SPCZ is expected to sit slightly south of normal for this time of year near and west of the International Dateline. In general, the models indicate weak SPCZ activity with the transition into winter, with some localized convection near eastern Papua New Guinea and the Solomon Islands.

Tropical rainfall and SST outlook: April to June 2014

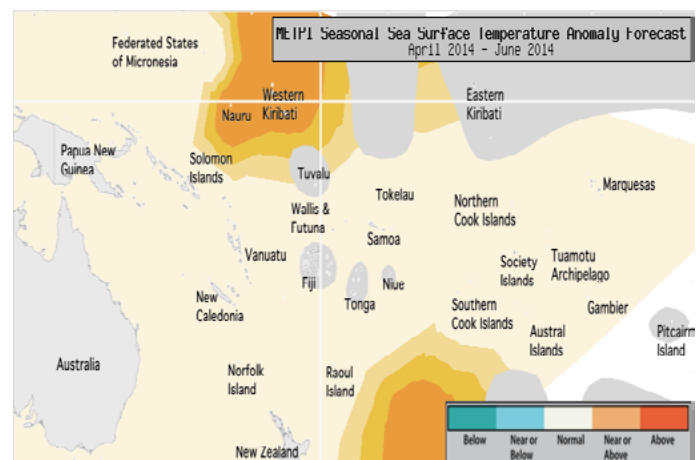
The dynamical forecast models continue to indicate drier conditions than normal for the April to June 2014 period in the central and eastern Pacific south of the Equator. Wetter than normal conditions are expected on average along the Equator as well as from Niue southeast to the Austral Islands. Near or above normal rainfall is forecast for the Austral Islands, Eastern Kiribati and Western Kiribati, the Federated States of Micronesia, Niue and the Southern Cook Islands. Near normal rainfall is expected for Fiji, New Caledonia, Tonga and Vanuatu. Normal or below normal rainfall is forecast for the Northern Cook Islands, Samoa, the Society Islands, Tokelau, the Tuamotu archipelago, Tuvalu and Wallis and Futuna. Below normal rainfall is forecast for the Marquesas. No clear guidance is available this month for Papua New Guinea, the Solomon Islands and Pitcairn Island.

The global model ensemble forecast for SST indicates warmer than normal SSTs in the central Equatorial Pacific as well as to the east of New Zealand, where warmer than normal sea surface temperatures have persisted for more than 14 months now. Near normal or above normal SSTs are forecast for Western Kiribati. Near normal SSTs are forecasts for the Federated States of Micronesia, Papua New Guinea, the Solomon Islands, Vanuatu, New Caledonia, Wallis and Futuna, Samoa, Tokelau, the Northern Cook Islands, the Southern Cook Islands, the Society Islands, the Tuamotu Archipelago, the Marquesas and the Austral Islands. No clear guidance is provided for Eastern Kiribati, Tuvalu, Fiji, Tonga, Niue and Pitcairn Island. The confidence for the rainfall outlook is generally moderate to high, uncertainty is greater for Niue, the Southern Cook Islands, Fiji and the Tuamotu archipelago. The average region-wide hit rate for rainfall forecasts issued in April is 58 %, 5 points lower than the average for all months combined. Confidence for the SST forecasts is high.

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 April - June 2014



SST anomaly outlook map for April - June 2014

Island Group	Rainfall Outlook	Outlook confidence
Austral Islands	25:35:40 (Normal or Above)	Moderate
Eastern Kiribati	25:35:40 (Normal or Above)	Moderate-high
Western Kiribati	25:35:40 (Normal or Above)	Moderate-high
FSM	25:35:40 (Normal or Above)	High
Niue	25:35:40 (Normal or Above)	Moderate
Cook Islands (Southern)	25:35:40 (Normal or Above)	Moderate
New Caledonia	30:40:30 (Near normal)	Moderate-high
Fiji	30:40:30 (Near normal)	Moderate
Tonga	30:40:30 (Near normal)	High
Vanuatu	30:40:30 (Near normal)	Moderate-high
Pitcairn	33:33:33 (Climatology)	Moderate
PNG	33:33:33 (Climatology)	Moderate
Solomon Islands	33:33:33 (Climatology)	Moderate
Cook Islands (Northern)	40:35:25 (Normal or Below)	Moderate-high
Samoa	40:35:25 (Normal or Below)	Moderate-high
Society Islands	40:35:25 (Normal or Below)	High
Tokelau	40:35:25 (Normal or Below)	Moderate-high
Tuamotu Islands	40:35:25 (Normal or Below)	Moderate
Tuvalu	40:35:25 (Normal or Below)	Moderate-high
Wallis & Futuna	40:35:25 (Normal or Below)	High
Marquesas	50:30:20 (Below)	High

Island Group	SST Outlook	confidence
Kiribati West	25:35:40 (Normal or Above)	High
Austral Islands	30:40:30 (Near normal)	High
Marquesas	30:40:30 (Near normal)	High
Micronesia	30:40:30 (Near normal)	High
New Caledonia	30:40:30 (Near normal)	High
Cook Islands (Northern)	30:40:30 (Near normal)	High
PNG	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
Cook Islands (Southern)	30:40:30 (Near normal)	High
Tokelau	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
Fiji	33:33:33 (Climatology)	Moderate
Eastern Kiribati	33:33:33 (Climatology)	Moderate
Niue	33:33:33 (Climatology)	Moderate
Pitcairn	33:33:33 (Climatology)	Moderate
Tonga	33:33:33 (Climatology)	Moderate
Tuvalu	33:33:33 (Climatology)	Moderate



The Island Climate Update

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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.com/>

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