

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- Sea surface temperatures anomalies in the Equatorial Pacific are maximum around the international Dateline and reflect weak El Niño conditions in March 2015.
- Regional atmospheric patterns are also consistent with weak El Niño conditions.
- Probability for El Niño during April – June 2015 is about 60 %.

The South Pacific Convergence Zone (SPCZ)

- The SPCZ is expected to be positioned close to climatology for the coming three months.

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

- Below normal rainfall is forecast for Fiji, the Marquesas, Papua New Guinea and Vanuatu. Normal or below normal rainfall is forecast for the Society Islands, the northern Cook Islands, the southern Cook Islands, New Caledonia, Niue, the Solomon Islands, Tonga and the Tuamotu archipelago.
- Above normal rainfall is forecast for western Kiribati and Tuvalu. Normal or above normal rainfall is forecast for eastern Kiribati, the Austral Islands and Samoa.
- Above normal SSTs are forecast for eastern and western Kiribati. Normal or above normal SSTs are forecast for Tokelau and Tuvalu.

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

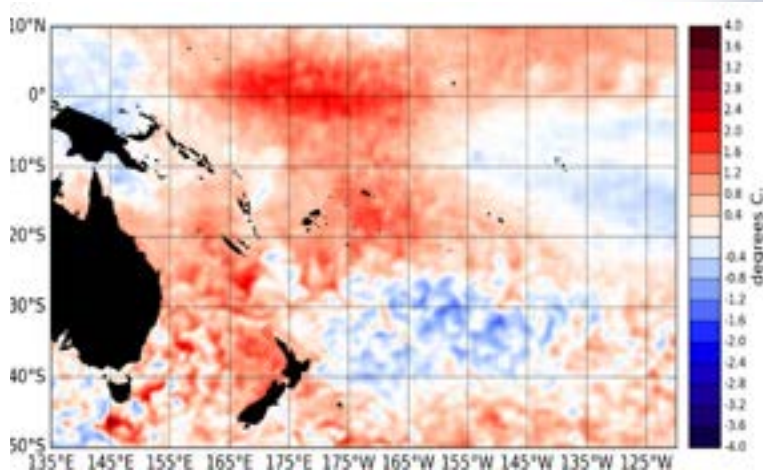
World Meteorological
Organization

MetService of
New Zealand



El Niño/Southern Oscillation (ENSO)

Sea surface temperature (SST) anomalies in the Tropical Pacific intensified significantly around the international Dateline during March 2015 and are currently showing a pattern consistent with weak 'central Pacific' or 'Modoki' El Niño conditions. The latest monthly anomaly values for the NINO SST indices are: +0.55°C for NINO3.4 (was +0.43°C in February), +0.26°C for NINO3 (was +0.18°C last month) and +1.05°C for NINO4 (was +0.87°C last month). Sub-surface ocean temperature anomalies in the central Pacific at about 150m depth have increased to reach up to +5°C. Positive anomalies have also propagated further eastward in the upper Ocean (~50m) off the South American coast and reach about +3°C. Positive upper ocean heat content anomalies (upper 300m of the Ocean) have intensified just east of the international Dateline and now reach above +2°C. The Southern Oscillation Index (SOI) was negative at -1.1 in March 2015, and convection and rainfall was more intense than normal in the central Pacific. The latest value for the TRMM ENSO index for the 30 days to 30 March is +0.87 (on the El Niño side of neutral). Together these signals indicate a weak coupling between the ocean and the atmosphere. An exceptionally strong burst in Madden-Julian Oscillation (MJO) convective activity has been observed in the western Pacific over

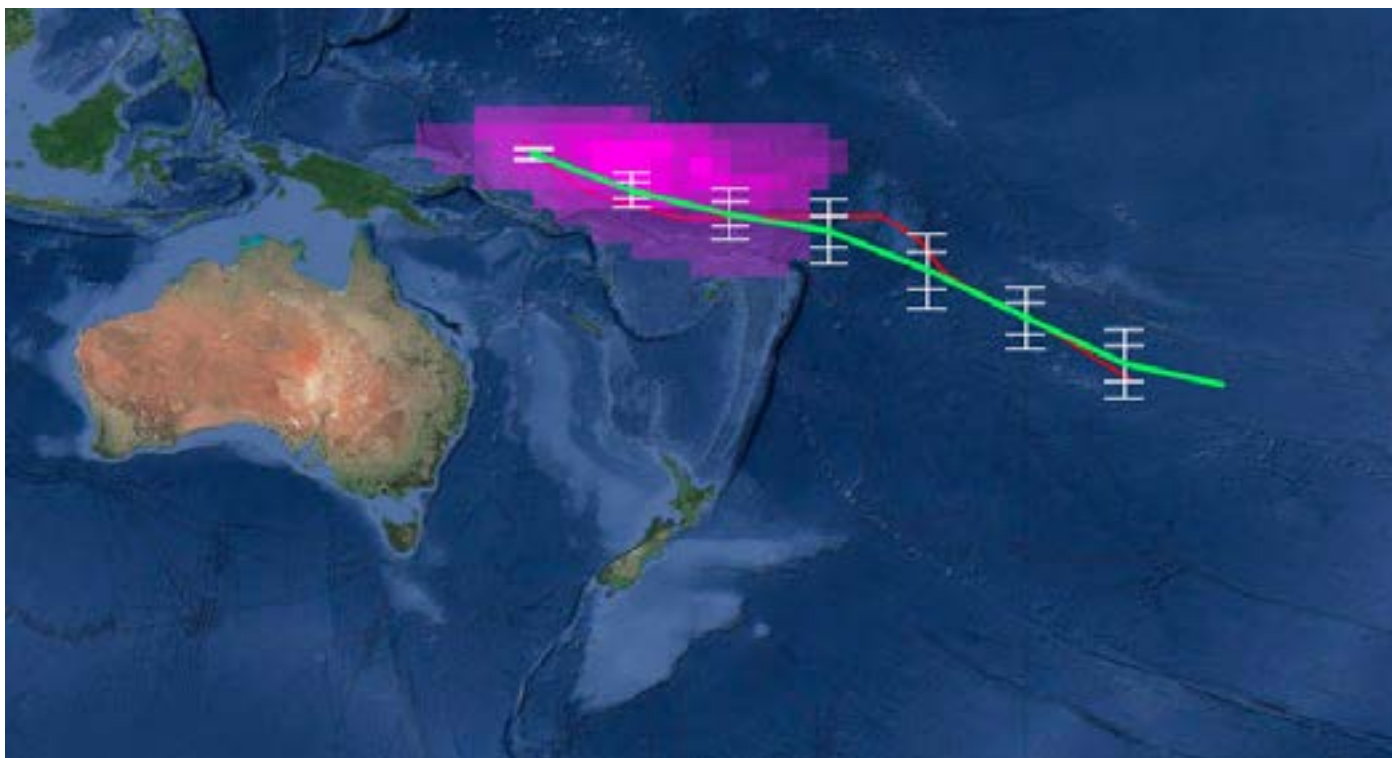


Surface temperature anomalies (°C) for March 2015, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres/>).

the first half of March 2015. At the forecast horizon of 14 days, both the dynamical and statistical CPC forecasts indicate that the MJO activity will weaken in the western Pacific. The consensus ENSO forecast from the IRI/CPC places the chance of conventional El Niño threshold being crossed over the April – June 2015 period at about 60%. The likelihood increases later during the year to reach ~70% in July - September 2015.

South Pacific Convergence Zone forecast April to June 2015

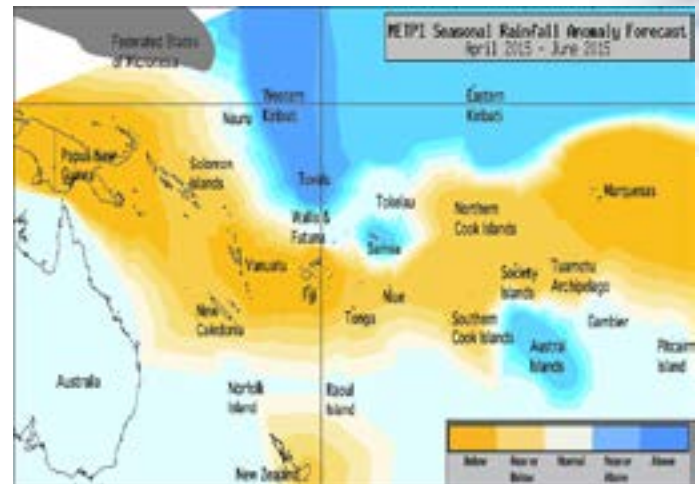
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of eight climate models. The white vertical bars and 'whiskers' indicate the one and two standard deviations between the model projections of the SPCZ position every five degrees of longitude. The purple shading is proportional to the probability of intense convection developing within the SPCZ.



During the April to June 2015 period, the South Pacific Convergence Zone (SPCZ) is forecast to be close to its climatological position. Areas of higher than normal convective activity are expected in the root zone of the SPCZ extending towards the International Dateline. Confidence in the SPCZ position forecast is generally higher in the western than in the eastern Pacific.

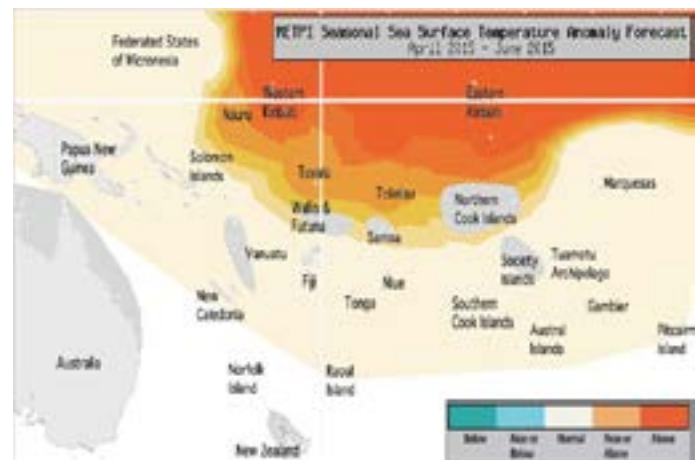
Tropical rainfall and SST outlook: April to June 2015

The dynamical model forecasts indicate that the central equatorial Pacific is likely to experience above normal rainfall in April – June 2015. In contrast, regions in the western Pacific south of the Equator, as well as the south eastern Pacific are expected to experience reduced rainfall. Below normal rainfall is forecast for Fiji, the Marquesas, Papua New Guinea and Vanuatu. Normal or below normal rainfall is forecast for the Society Islands, the northern Cook Islands, the southern Cook Islands, New Caledonia, Niue, the Solomon Islands, Tonga and the Tuamotu archipelago. Near normal rainfall is expected for Pitcairn Island, Tokelau and Wallis and Futuna. Normal or above normal rainfall is forecast for eastern Kiribati, the Austral Islands and Samoa. Above normal rainfall is forecast for western Kiribati and Tuvalu. No clear guidance is available this month for the Federated States of Micronesia.



Rainfall anomaly outlook map for April - June 2015

The global model ensemble forecast for SSTs indicates higher than normal SSTs over the equatorial Pacific, with maximum anomalies positioned over and east of the International Dateline. Above normal SSTs are forecast for Western Kiribati and Eastern Kiribati. Normal or above normal SSTs are forecast for Tokelau and Tuvalu. Near normal SSTs are forecast for the Austral Islands, Fiji, the Marquesas, the Federated States of Micronesia, New Caledonia, Niue, Pitcairn Island, Papua New Guinea, the Solomon Islands, the southern Cook Islands, Tonga and the Tuamotu archipelago. No guidance is available this month for the northern Cook Islands, Samoa, the Society Islands, Vanuatu and Wallis & Futuna.



SST anomaly outlook map for April - June 2015

The confidence for the rainfall outlooks is generally high. The average region-wide hit rate for rainfall forecasts issued for the April – June season is about 57 %, six points less than the average for all months combined. The confidence for the SSTs forecasts is generally high. Note that climatological forecasts

are typically associated with moderate confidence.

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
Kiribati (Western)	20:35:45 (Above)	High
Tuvalu	20:35:45 (Above)	High
Kiribati (Eastern)	25:35:40 (Normal or Above)	Moderate-High
Austral Islands	25:40:35 (Normal or Above)	High
Samoa	25:40:35 (Normal or Above)	High
Pitcairn Island	30:40:30 (Near normal)	Moderate-High
Tokelau	30:40:30 (Near normal)	Moderate-High
Wallis & Futuna	30:40:30 (Near normal)	High
FSM	33:33:33 (Climatology)	Moderate
Society Islands	40:35:25 (Normal or Below)	High
Cook Islands (Northern)	40:35:25 (Normal or Below)	High
Cook Islands (Southern)	40:35:25 (Normal or Below)	High
New Caledonia	40:35:25 (Normal or Below)	Moderate-High
Niue	40:35:25 (Normal or Below)	High
Solomon Islands	40:35:25 (Normal or Below)	High
Tonga	40:35:25 (Normal or Below)	High
Tuamotu Islands	40:35:25 (Normal or Below)	High
Fiji	45:35:20 (Below)	High
Marquesas	45:35:20 (Below)	High
Papua New Guinea	45:35:20 (Below)	High
Vanuatu	45:35:20 (Below)	High

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



The Island Climate Update

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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.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