

# The Island Climate Update

## El Niño/Southern Oscillation (ENSO)

- El Niño conditions continued to strengthen during July 2015.
- Sea Surface Temperatures (SSTs) and precipitation anomalies continued to intensify in the eastern Pacific.
- El Niño is virtually certain (97% chance) to continue in August–October 2015.

Collaborators

Pacific Islands National  
Meteorological Services

Australian Bureau of  
Meteorology

Meteo France

NOAA National Weather  
Service

NOAA Climate Prediction  
Center (CPC)

International Research  
Institute for Climate and  
Society

European Centre for  
Medium Range Weather  
Forecasts

UK Met Office

World Meteorological  
Organisation

MetService of New  
Zealand

## The South Pacific Convergence Zone

- The SPCZ is expected to be positioned north of climatology.

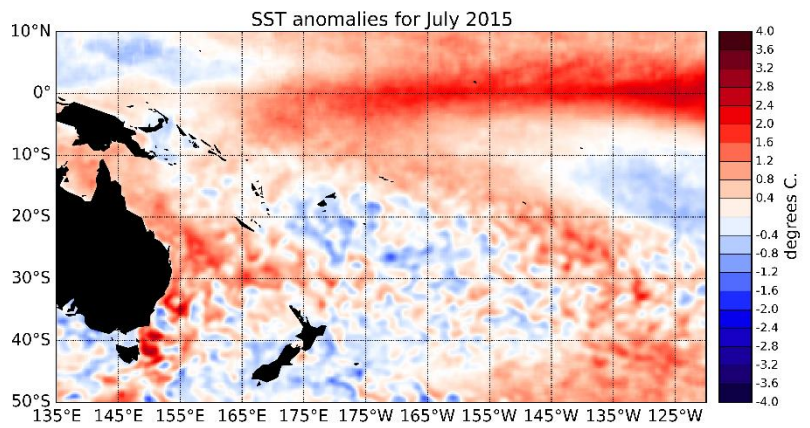
## Multi-model Ensemble Tool for Pacific Island (METPI) rainfall and sea surface temperature forecasts

- Below normal rainfall is forecast for Vanuatu, Fiji, New Caledonia, Niue, Tonga and Papua New Guinea. Normal or below normal rainfall is forecast for the Marquesas, Wallis and Futuna, the Northern Cooks Islands and the Southern Cook Islands, Samoa, the Society Islands, the Solomon Islands and Tuamotu.
- Above normal rainfall is forecast for Tuvalu, Western Kiribati and Eastern Kiribati. Normal or above normal rainfall is forecast for Pitcairn Island and Tokelau.
- Above normal SSTs are forecast for western Kiribati and eastern Kiribati. Below normal SSTs are forecast for Fiji and Tonga.



# El Nino/Southern Oscillation (ENSO)

Sea Surface Temperatures (SSTs) have continued to increase in the central and eastern Pacific. The Southern Oscillation Index (SOI) has also remained strongly negative and is at -1.5 for July 2015 as a whole. Consistent with patterns typically seen during El Niño, convection and rainfall were suppressed in the western Pacific and over the Maritime Continent (west of the International Dateline), while the Intertropical Convergence Zone (ITCZ) was much more intense than normal in the eastern Pacific. The South Pacific Convergence Zone (SPCZ) adopted a more zonal position in the western Pacific. The ENSO Precipitation Index (ESPI) reflects strong El Niño conditions with a value of +2.64 (value to the 5th of August). SST anomalies this month are again above the 1°C mark in all of the NINO regions: The NINO3.4 index value is +1.48°C, NINO4 (in the west-central Pacific) is currently at +1.1°C and the NINO3 index (in the eastern Pacific) continued to increase during July 2015, and now reaches +1.89°C above normal. Sub-surface ocean temperature anomalies in the eastern Pacific persisted (exceeding +5C between 50 and 100m depth), while cooler than normal ocean subsurface temperatures that were present in the western Pacific intensified between 100 and 200m. Positive upper ocean heat content anomalies (upper 300m of the Ocean) still exceed +2°C in the central and eastern Pacific.

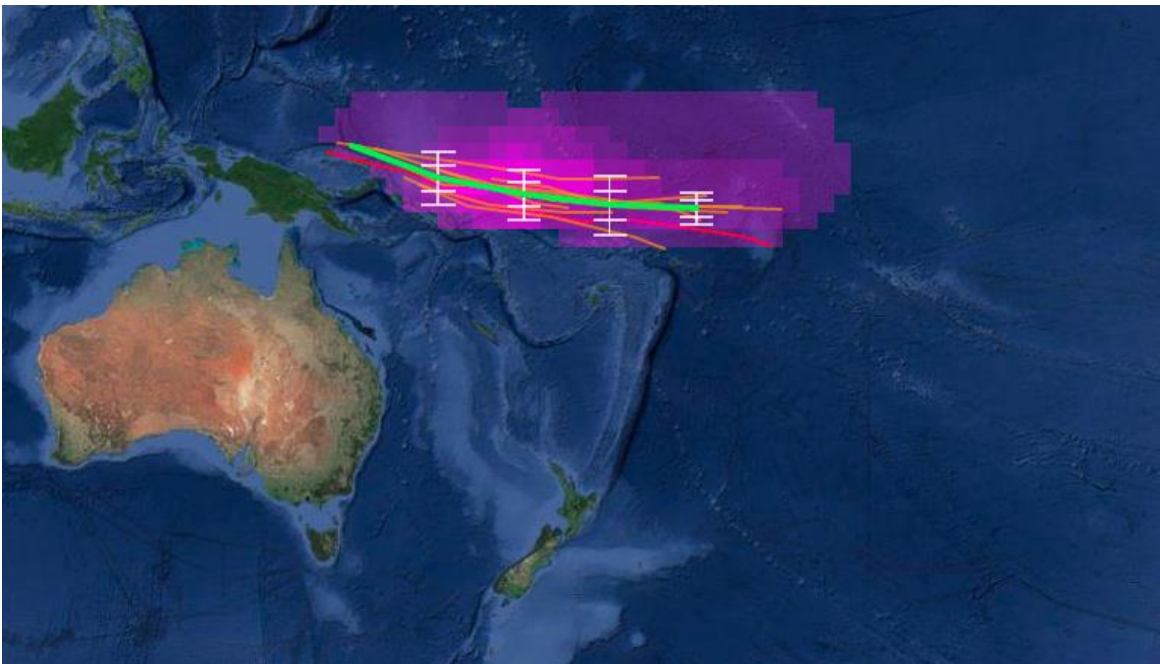


Surface temperature anomalies (°C) for July 2015, data is from the NOAA OISST Version 2 dataset, available at NOAA's Climate Data Center (<ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.hires/>)

The Madden-Julian Oscillation (MJO) was associated with suppressed intra-seasonal convective activity in the western Pacific during the past two weeks. At the forecast horizon of 14 days, both the dynamical and statistical CPC forecasts indicate slightly reduced intra-seasonal convective activity over the Maritime Continent and the far western Pacific. International guidance indicates that El Niño is virtually certain (97% probability) to continue over the next three months (August – October 2015) and extremely likely (> 90% probability) to persist into the summer 2015/2016.

## South Pacific Convergence Zone forecast August to October 2015

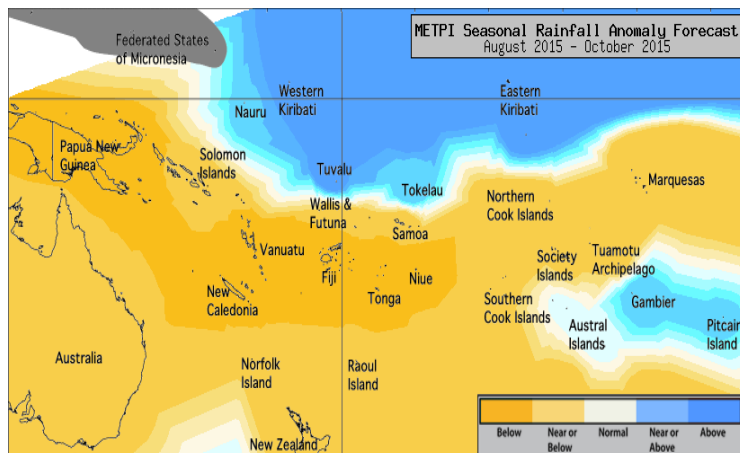
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates that average SPCZ position for the forecast period based on the average of eight climate models. The white vertical bars and '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.



For the August - October 2015 forecast period, the South Pacific Convergence Zone (SPCZ) is expected to be situated north of its climatological position. Areas of higher than normal convective activity associated with the SPCZ are expected in the central Pacific just south of the Equator and in the Intertropical Convergence Zone east of the international dateline.

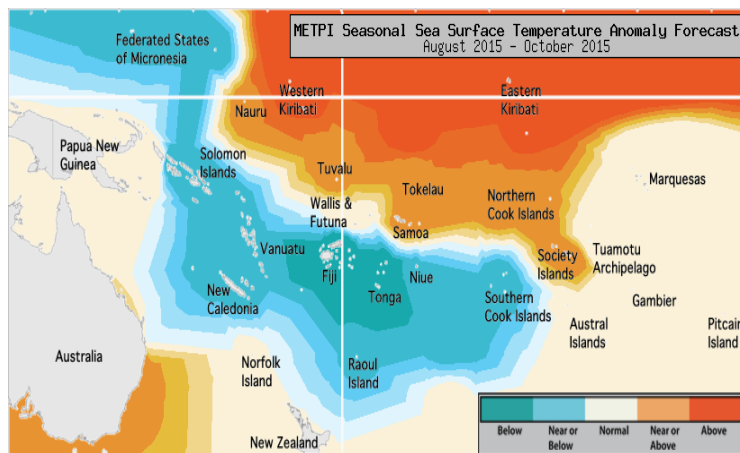
# Tropical rainfall and SST outlook: August to October 2015

The dynamical models are all in agreement to forecast continuing El Niño conditions over the August-October 2015 period. As a consequence, rainfall totals for the coming seasons are expected to be higher than normal along the Equator in the central and eastern Pacific, while many regions of the southwest Pacific are forecast to experience a drier than normal August-October season. Below normal rainfall is forecast for Vanuatu, Fiji, New Caledonia, Niue, Tonga and Papua New Guinea. Normal or below normal rainfall is forecast for the Marquesas, Wallis and Futuna, the Northern and Southern Cook Islands, Samoa, the Society Islands, the Solomon Islands and Tuamotu. Near normal rainfall is expected for the Austral Islands. Normal or above normal rainfall is forecast for Pitcairn Island and Tokelau. Above normal rainfall is forecast for Tuvalu, Western Kiribati and Eastern Kiribati. No clear guidance was available for the Federated States of Micronesia.



Rainfall anomaly outlook map for August – October 2015

The global model ensemble forecast for SSTs indicates persistence of the higher than normal SSTs currently present in the central and eastern equatorial Pacific, while the large region of cooler than normal SSTs in the southwest Pacific is forecast to expand. Above normal SSTs are forecast for western Kiribati and eastern Kiribati. Normal or above normal SSTs are forecast for Tuvalu, the Society Islands, the Northern Cook Islands, Tokelau and Samoa. Near normal SSTs are forecast for the Austral Islands, the Marquesas, Pitcairn Island, Papua New Guinea, Tuamotu and Wallis Futuna. Normal or below normal SSTs are forecast for Federated States of Micronesia, New Caledonia, Niue, Solomon Islands, the Southern Cook Islands and Vanuatu. Below normal SSTs are forecast for Fiji and Tonga.



SST anomaly outlook map for August – October 2015

The confidence for the rainfall outlooks is generally high. The average region-wide hit rate for rainfall forecasts issued for the August-October season is about 60%, three points lower than the average for all months combined. The confidence for the SST forecasts is moderate to high.

The tercile probabilities (e.g. 20:30:50) 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 climatological, we expect an equal chance of the rainfall being in any tercile.

Island Group	Rainfall Outlook	Outlook Confidence	Island Group	SST Outlook	Outlook Confidence
Kiribati (Eastern)	20:30:50 (Above)	High	Kiribati (Eastern)	20:30:50 (Above)	High
Kiribati (Western)	20:30:50 (Above)	High	Kiribati (Western)	20:30:50 (Above)	High
Tuvalu	20:30:50 (Above)	High	Cook Islands (Northern)	25:35:40 (Normal or Above)	Moderate
Pitcairn Island	25:35:40 (Normal or Above)	Moderate-High	Samoa	25:35:40 (Normal or Above)	Moderate
Tokelau	25:35:40 (Normal or Above)	Moderate-High	Society Islands	25:35:40 (Normal or Above)	High
Austral Islands	30:40:30 (Normal)	Moderate-High	Tokelau	25:35:40 (Normal or Above)	Moderate
FSM	35:35:30 (Climatology)	Moderate-High	Tuvalu	25:35:40 (Normal or Above)	Moderate
Marquesas	35:40:25 (Normal or Below)	Moderate-High	Marquesas	30:40:30 (Normal)	Moderate-high
Cook Islands (Northern)	40:35:25 (Normal or Below)	Moderate-High	Pitcairn Island	30:40:30 (Normal)	Moderate-high
Samoa	40:35:25 (Normal or Below)	High	Papua New Guinea	30:40:30 (Normal)	Moderate-high
Society Islands	40:35:25 (Normal or Below)	High	Tuamotu	30:40:30 (Normal)	Moderate-high
Solomon Islands	40:35:25 (Normal or Below)	Moderate-High	Wallis and Futuna	30:40:30 (Normal)	Moderate
Tuamotu Islands	40:35:25 (Normal or Below)	High	Austral Islands	30:40:30 (Normal)	Moderate
Wallis & Futuna	40:35:25 (Normal or Below)	Moderate-High	FSM	40:35:25 (Normal or Below)	Moderate
Cook Islands (Southern)	40:35:25 (Normal or Below)	High	New Caledonia	40:35:25 (Normal or Below)	Moderate-high
Vanuatu	50:35:20 (Below)	High	Niue	40:35:25 (Normal or Below)	Moderate-high
Fiji	45:35:20 (Below)	Moderate-High	Solomon Islands	40:35:25 (Normal or Below)	Moderate
New Caledonia	45:35:20 (Below)	High	Cook Islands (Southern)	40:35:25 (Normal or Below)	Moderate-high
Niue	45:35:20 (Below)	High	Vanuatu	40:35:25 (Normal or Below)	Moderate
Tonga	45:35:20 (Below)	High	Fiji	50:30:20 (Below)	High
Papua New Guinea	50:30:20 (Below)	High	Tonga	50:30:20 (Below)	High



## The Island Climate Update

Cover Photo:  
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Requests for Pacific Island climate data should be directed to the Meteorological Sources 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 & 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 PI Met Services then Niue Met Service)

Papua New Guinea  
<http://pi.gcos.org/index.php> (follow link 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>