

# The Island Climate Update

## El Niño/Southern Oscillation (ENSO)

- The Tropical Pacific Ocean is still warmer than normal, but surface and subsurface anomalies have weakened over the past few weeks.
- The probability of El Niño development is diminishing. If an event develops over the forecast period, it is likely to be weak and short-lived.

### 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

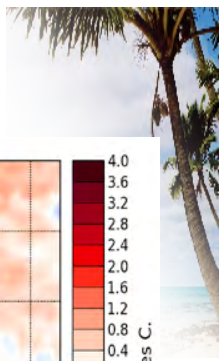
## The South Pacific Convergence Zone

- The South Pacific Convergence Zone was well organized and situated south of its climatological position in September. For the coming three months, the SPCZ is forecast to mostly sit in a position near or slightly north of normal for this time of the year.

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

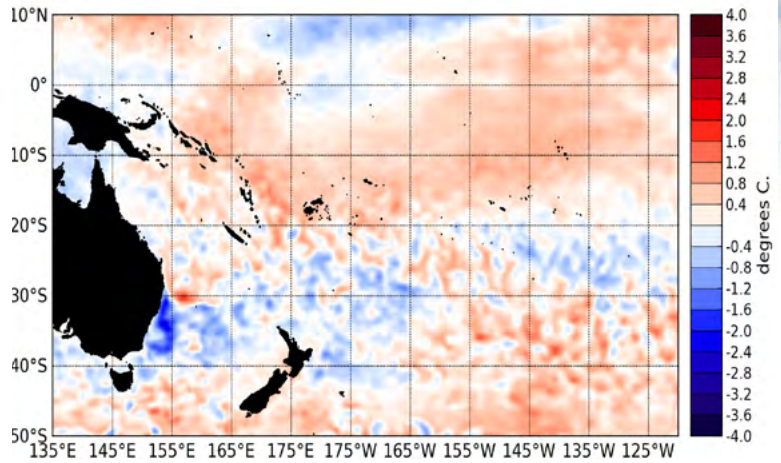
- Normal or below normal rainfall is forecast for the Southern Cook Islands, New Caledonia, Papua New Guinea, Vanuatu, Samoa, Tonga and Wallis & Futuna.
- Normal or above normal rainfall is forecast for Eastern Kiribati and Western Kiribati, the Northern Cook Islands, the Solomon Islands, Tuvalu, the Federated States of Micronesia and Tokelau.
- Sea surface temperatures are still expected to be warmer than normal along the Equator to the east of the Dateline.





## El Niño/Southern Oscillation (ENSO)

The equatorial Pacific ocean remains warmer than normal and in a borderline El Niño state, but the atmospheric conditions are close to neutral and are displaying anomalies atypical of El Niño. Sea surface temperatures have dropped slightly over the last few weeks along the Equator. Heat content in the upper ocean (0 to 300 m) has recently changed from weakly positive to weakly negative in the central Pacific (~160 °W). The TAO analyses also show less coherent and weakened subsurface temperature anomalies compared to August. Surface westerly anomalies are present in the far equatorial western Pacific (~150 °E) but weakly negative (i.e. easterly) anomalies dominate the central and eastern Pacific. Convection and rainfall are still anomalously high along the Equator west of the Dateline. The ITCZ and the SPCZ are both displaced south of their climatological positions and the SPCZ is now well organized compared to last month. The latest value for the TRMM ENSO index for the 30 days to September 3<sup>rd</sup> is +0.11 (i.e. neutral) and the monthly SOI for September is +0.2, which is on La Niña side of neutral. A Madden – Julian Oscillation (MJO) moved from the eastern Indian Ocean into the Maritime Continent in the last few weeks and is forecast to propagate eastward and strengthen over the next two weeks as it reaches the western Pacific.

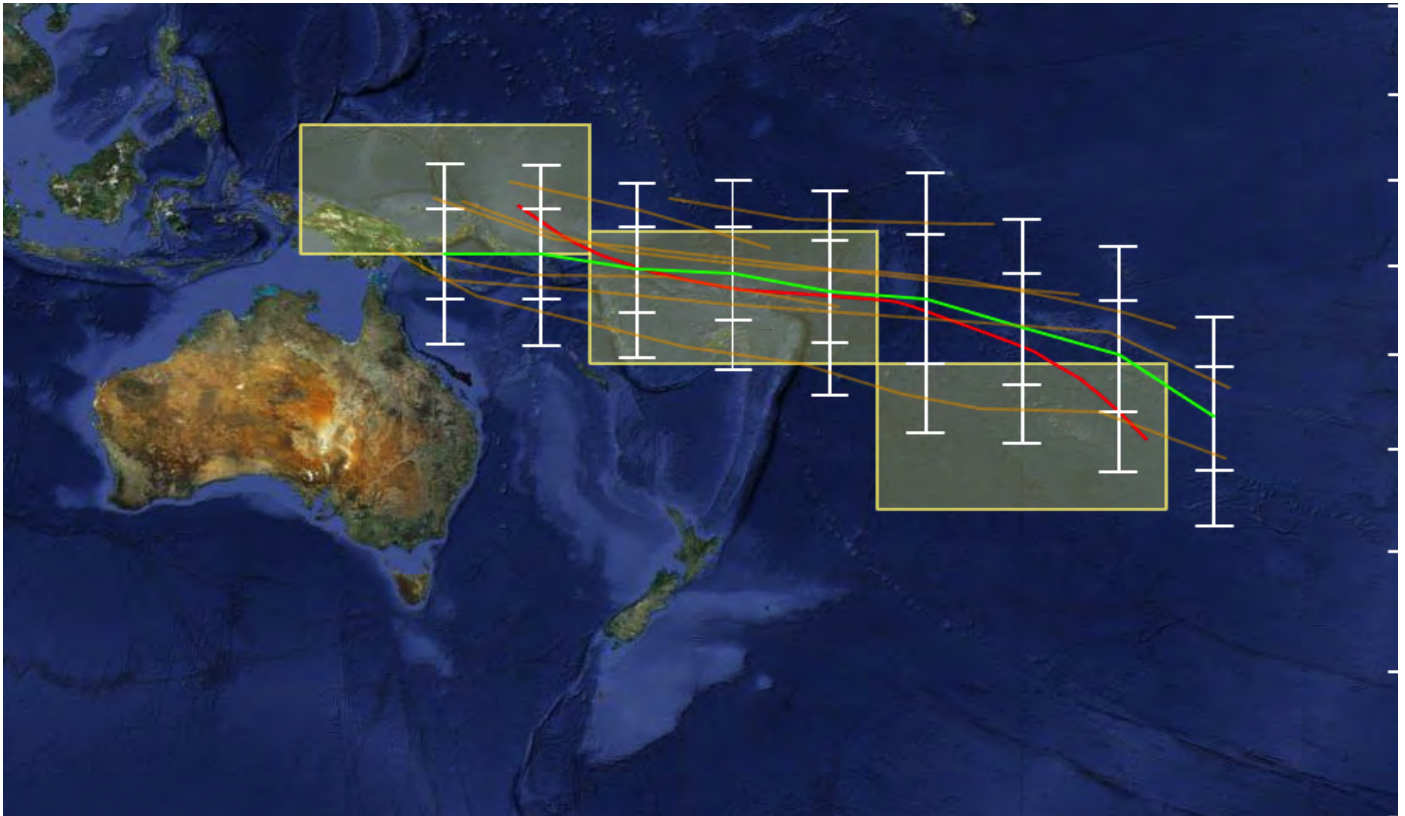


Surface temperature anomalies (°C) for September 2012, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres>).

The MJO is expected to interact constructively with the westerly anomalies recently recorded in the western Pacific around 150 °E. This pattern has been associated with El Niño onset in the past. Based on the climate models NIWA monitors, ENSO conditions are expected to remain neutral or transition towards El Niño. Even if El Niño develops during October – December, it is very likely to be a weak and short – lived event.

## South Pacific Convergence Zone (SPCZ) forecast October to December 2012

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.

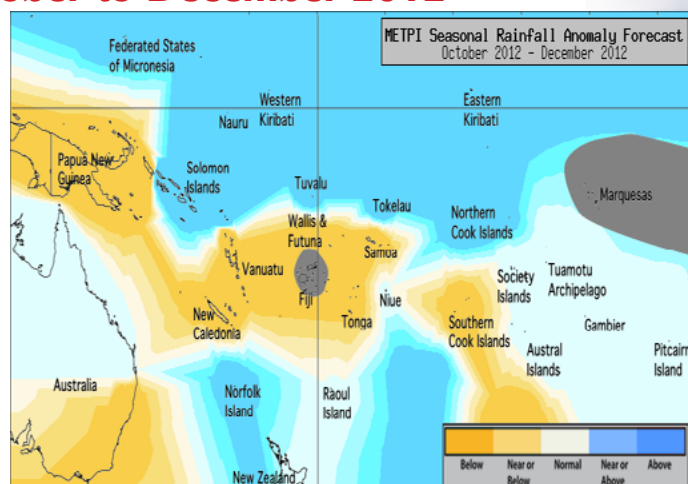


For the coming three months, the dynamical models forecasts indicate that the SPCZ is likely to sit in a position near or slightly north of its climatological position over most of the southwest Pacific. West of about 170 °E however the SPCZ position is shifted southward compared to the climatology. Uncertainty in the SPCZ position for the forecast period is high for the whole region.



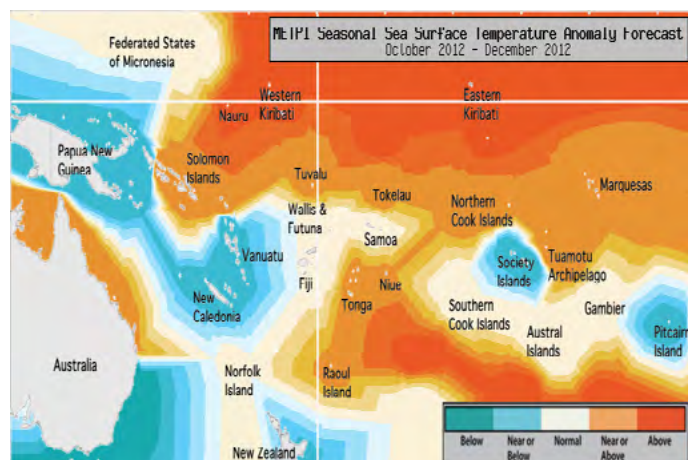
## Tropical rainfall and SST outlook: October to December 2012

The tropical Pacific is close to El Niño thresholds, but the atmosphere is still not showing patterns typical of El Niño. The dynamical model forecasts for October – December show an ITCZ south of its climatological position east of the Dateline, with a forecast of below normal or normal rainfall over the far western Pacific. The central Pacific south of the Equator is also expected to experience normal or below normal rainfall. Near or above normal rainfall is forecast for Eastern Kiribati and Western Kiribati, the Northern Cook Islands, the Solomon Islands, Tuvalu, the Federated States of Micronesia and Tokelau. Near normal rainfall is expected for the Austral Islands, Niue, Pitcairn Island, the Society Islands and the Tuamotu Archipelago. Normal or below normal rainfall is forecast for the Southern Cook Islands, New Caledonia, Papua New Guinea, Vanuatu, Samoa, Tonga and Wallis & Futuna. No clear guidance is given for Fiji and the Marquesas.



Rainfall anomaly outlook map for October to December 2012

The global model ensemble continues to show development of weak El Niño – like SST signals, with an indication of warm anomalies in the equatorial region, especially to the east of the Dateline in the coming three months. Normal or below normal SSTs are forecast for Papua New Guinea, New Caledonia, Vanuatu, the Society Islands and Pitcairn Island. Above normal SSTs are forecast for Eastern Kiribati and Western Kiribati. Near normal or above normal sea surface temperatures are forecast for the Solomon Islands, Tuvalu, Tokelau, Niue, Tonga, the Northern Cook Islands, the Marquesas and the Tuamotu Archipelago. Near normal SSTs are forecast elsewhere.



SST anomaly outlook map for October to December 2012

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

greatest near the Federated States of Micronesia and Papua New Guinea as well as along the Equator and near the

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

Island Group	SST Outlook	Confidence
Kiribati (Western)	15:35:50 (Above)	Moderate-High
Kiribati (Eastern)	20:35:45 (Above)	Moderate
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
Solomon Islands	25:40:35 (Normal or Above)	High
Tokelau	25:40:35 (Normal or Above)	High
Tonga	25:40:35 (Normal or Above)	High
Tuamotu Islands	25:40:35 (Normal or Above)	High
Tuvalu	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)	High
Samoa	30:40:30 (Near normal)	High
Wallis & Futuna	30:40:30 (Near normal)	High
FSM	30:40:30 (Near normal)	Moderate-High
New Caledonia	35:40:25 (Normal or Below)	High
Papua New Guinea	35:40:25 (Normal or Below)	Moderate-High
Pitcairn Island	35:40:25 (Normal or Below)	High
Society Islands	35:40:25 (Normal or Below)	High
Vanuatu	35:40:25 (Normal or Below)	High



## The Island Climate Update

Cover Photo:  
Wendy St George,  
NIWA

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### Acknowledgements

This bulletin is produced by NIWA and made possible with financial support from the New Zealand Ministry of Foreign Affairs and Trad (MFAT), with additional support from NOAA and the Secretariat for the Pacific Regional Environmental Programme (SPREP).

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/>