

Number 146, November 2012

# The Island Climate Update

## El Niño/Southern Oscillation (ENSO)

- The Tropical Pacific Ocean is still warmer than normal, but the atmosphere has yet to show any significant response to the ocean.
- According to the global forecast models, there is an approximately 50 percent chance of neutral versus weak El Niño conditions over November 2012 – January 2013.

### 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

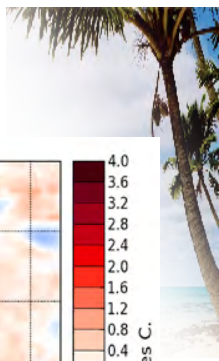
## The South Pacific Convergence Zone (SPCZ)

- For the coming three months, the SPCZ is forecast to be close to its climatological position for most of the Pacific, and to remain slightly north of normal to the east of 160°W.

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

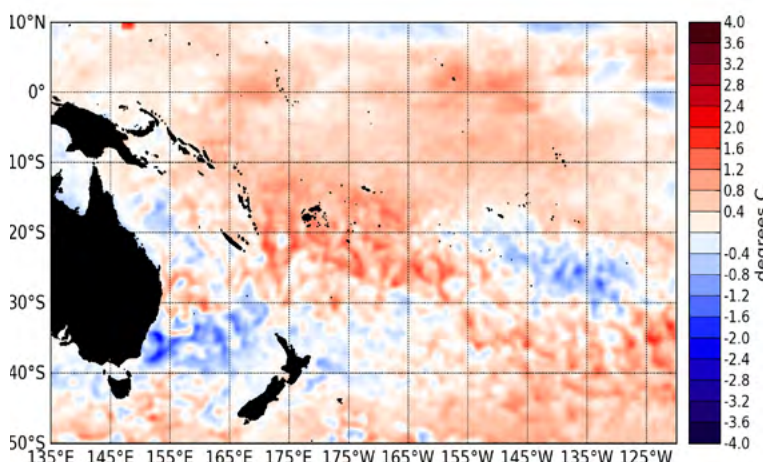
- Normal or below normal rainfall is forecast for the Southern Cook Islands, New Caledonia and Vanuatu.
- Near or above normal rainfall is forecast for the Austral Islands, Eastern and Western Kiribati, the Solomon Islands, Tuvalu, the Northern Cook Islands and Tokelau.
- Sea surface temperatures are still expected to be warmer than normal and show a weak El Niño – like pattern, especially near the Equator.





## El Niño/Southern Oscillation (ENSO)

The equatorial Pacific Ocean remains close to El Niño thresholds, but the atmosphere has yet to show any significant response to the warmer than normal sea surface temperatures. Sea surface temperature anomalies have weakened significantly in the eastern Pacific but have shown little change near the dateline. The NINO3 index has dropped to + 0.2 °C (from + 0.7 in September) and NINO4 (150 °W – 160 °E) is currently the warmest of all NINO indexes at + 0.8 °C. Heat content in the upper ocean (0 to 300 m) is generally positive near to and west of the dateline. The TAO analyses show that a warmer than normal subsurface temperature anomaly persists along the Equator at about 100m depth and is slightly more coherent compared to September. Surface winds along the Equator are currently very close to normal. Convection and rainfall are still anomalously high south of the Equator, to the west of the Dateline. The ITCZ and the SPCZ are both displaced equatorward and the SPCZ had a very zonal orientation (positioned around 10°S) in October. The latest value for the TRMM ENSO index for the 30 days to November 1<sup>st</sup> is -0.11 (i.e. neutral) and the monthly SOI for October is + 0.3, (i.e. on La Niña side of neutral). A Madden – Julian Oscillation (MJO) event was related to enhanced convection in the Indian Ocean and decreased convection over the

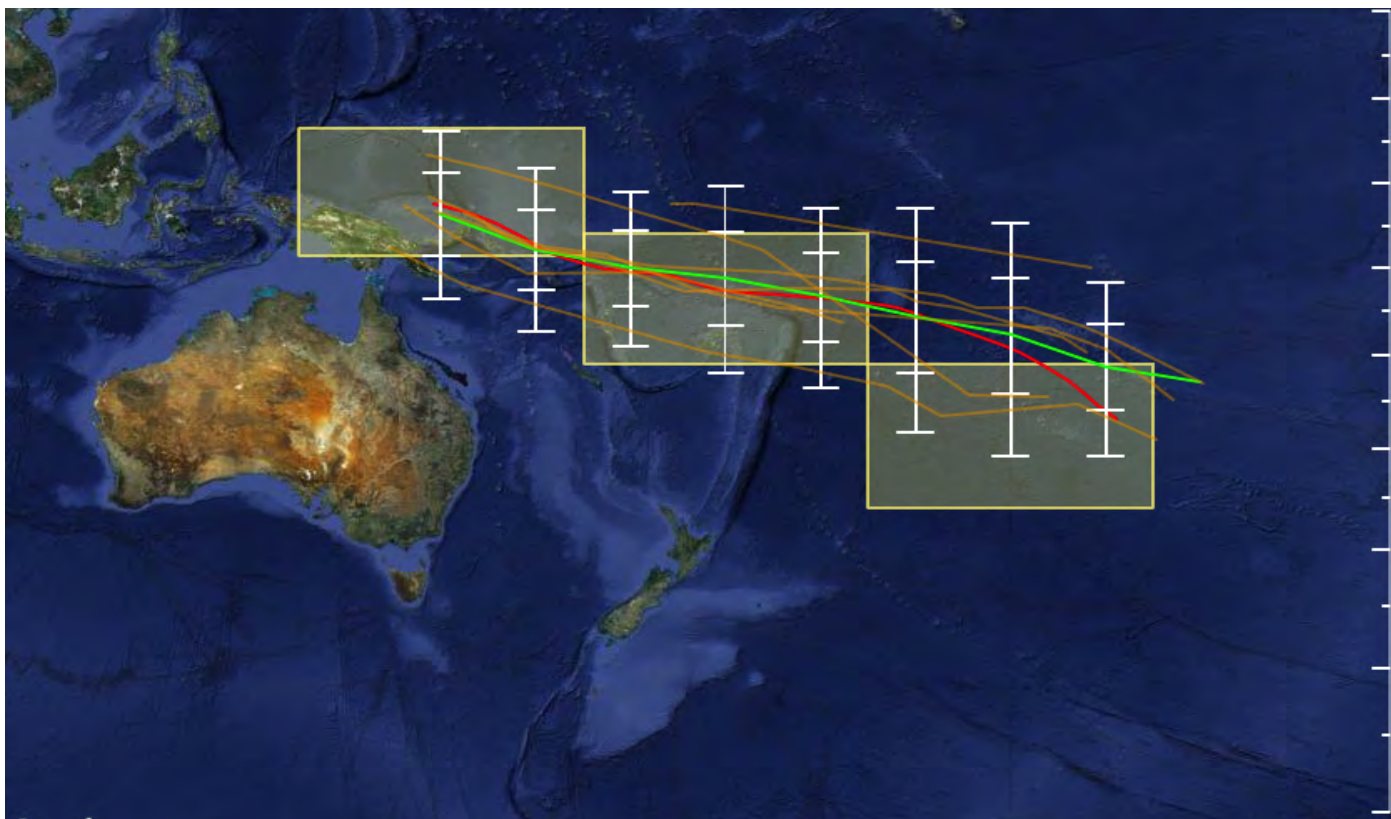


Surface temperature anomalies (°C) for October 2012, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres>).

maritime continent during the last two weeks, and is forecast to slowly move eastward and weaken during the first two weeks of November. Based on the climate models that NIWA monitors and the international consensus, there is an approximately 50:50 chance of neutral versus weak El Niño conditions over the period November 2012 – January 2013.

## South Pacific Convergence Zone forecast November 2012 to January 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 forecasts indicate that the South Pacific Convergence Zone (SPCZ) is likely to sit very close its to climatological position over most of the southwest Pacific, and be located slightly north of normal in the far eastern Pacific (east of around 160 °W). The uncertainty in the SPCZ location for the forecast period is highest to the east of the Dateline.

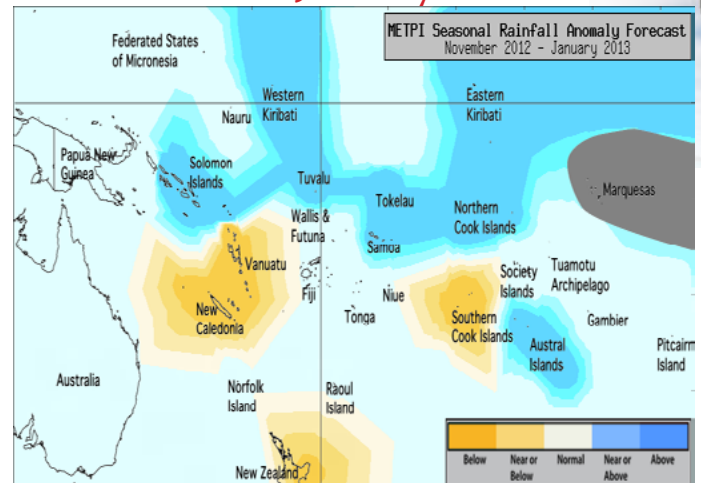
# Tropical rainfall and SST outlook: November 2012 to January 2013

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 November 2012 – January 2013 show an SPCZ position close to normal over most of the South Pacific and slightly north of its climatological position east of around 160 °W. Near or above normal rainfall is forecast for the Austral Islands, Eastern and Western Kiribati, the Solomon Islands, Tuvalu, the Northern Cook Island and Tokelau. Near normal rainfall is expected for Fiji, Niue, Papua New Guinea, Pitcairn Island, Samoa, the Society Islands, Tonga, the Tuamotu Archipelago, Wallis & Futuna, the Federated States of Micronesia. Normal or below normal rainfall is forecast for the Southern Cook Islands, New Caledonia and Vanuatu. No clear guidance is given for the Marquesas.

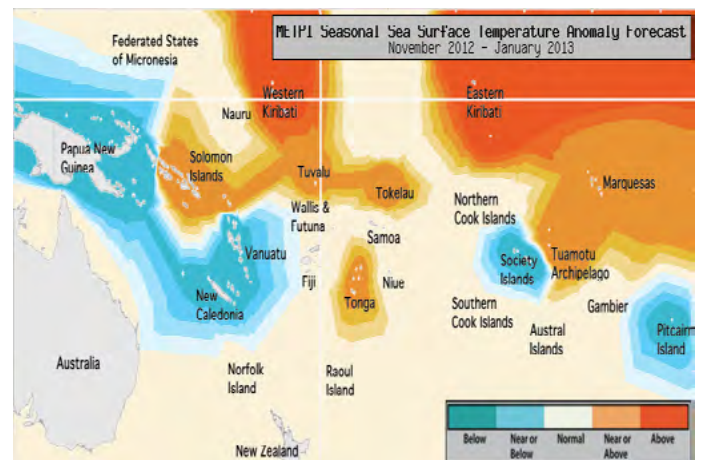
The global model ensemble shows some patterns that are similar to a weak El Niño in the sea surface temperature field, particularly near the Equator. Above normal SSTs are forecast for Eastern Kiribati and Western Kiribati. Near normal or above normal SSTs are expected for the Solomon Islands, Niue, Tonga, Tuvalu, Tokelau, the Tuamotu Archipelago and the Marquesas. Normal or below normal SSTs are forecast for Papua New Guinea, New Caledonia, Vanuatu, the Society Islands and Pitcairn Island. Normal sea surface temperatures are expected elsewhere.

The confidence for the rainfall outlook is moderate to high. The average region-wide hit rate for rainfall forecasts issued in November 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 over the eastern Pacific along the Equator and near the Marquesas.

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 November 2012 to January 2013



SST anomaly outlook map for November 2012 to January 2013

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