

# The Island Climate Update

## El Niño/Southern Oscillation (ENSO)

- The equatorial Pacific remains in a neutral ENSO state.
- Sea surface temperatures (SSTs) are higher than normal in the central south Pacific and the equatorial western Pacific.
- International guidance indicates that neutral ENSO conditions are extremely likely (96 % chance) to persist for the coming three months (December 2013 to February 2014).

### 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

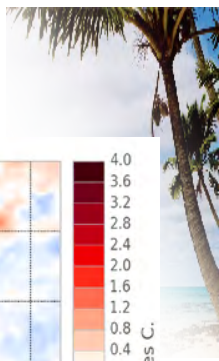
## The South Pacific Convergence Zone (SPCZ)

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

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

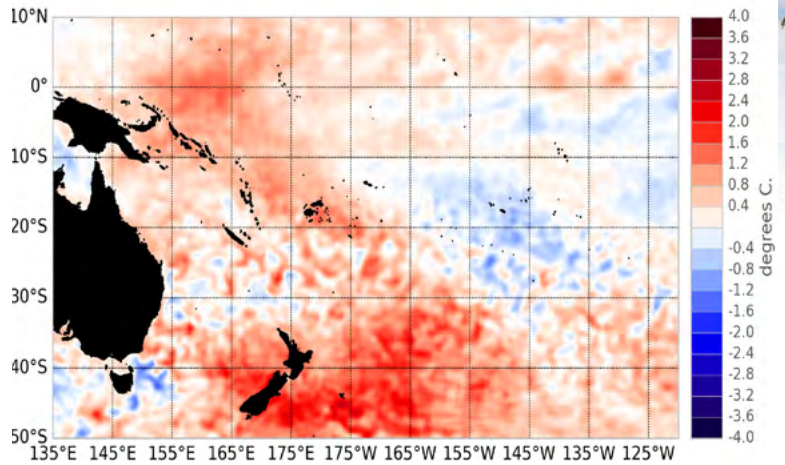
- Below normal rainfall is forecast for the Marquesas and Eastern Kiribati, and normal or below normal rainfall is forecast for the Tuamotu Archipelago and Western Kiribati.
- Near or above normal rainfall is forecast for the Austral Islands, Fiji, Niue, Papua New Guinea, the Solomon Islands, Tonga and the Federated States of Micronesia.
- Near normal SSTs are forecast for most Island groups. No guidance is provided for Eastern Kiribati, the Federated States of Micronesia, Pitcairn Island, the Solomon Islands and the Tuamotu Archipelago.





## El Niño/Southern Oscillation (ENSO)

The tropical Pacific ocean remained in a neutral state (neither El Niño nor La Niña) in November 2013. The western Pacific ocean continues to be warmer than normal, and the central Pacific has slightly warmed up recently. The NINO4 sea surface temperatures (SST) index (in the western Pacific) presents the largest anomalies at 0.5°C for November (up from 0.3°C in October). NINO 3 is close to 0 and NINO 3.4 is weakly positive at +0.16°C (was -0.17°C in October). The large area of higher than normal SSTs in the Central east Pacific has shifted southwestward and is now centered around 40°S and 175°W, while cooler than normal SSTs have reappeared around French Polynesia (a situation similar to September). The core of warmer than normal subsurface waters that was present at about 150m depth west of the Dateline has expanded towards the central Pacific. The trade winds were intensified in the far western Pacific, and close to normal elsewhere. The Intertropical Convergence Zone (ITCZ) was displaced south of its climatological position. Rainfall within the South Pacific Convergence Zone (SPCZ) was mostly suppressed in the western Pacific (west of the Dateline) but intensified in the east. The latest value for the TRMM ENSO index for the 30 days to 3 November is -0.83 (compared to -0.09 in October). The SOI is currently slightly positive (+0.8). The Madden – Julian Oscillation (MJO) was mostly inactive in the western Pacific in November. The MJO forecast for the next two weeks indicates intensified intra-seasonal convective activity over the maritime continent. The consensus forecast from IRI / CPC indicates that neutral ENSO conditions are extremely likely to persist over the December 2013 – February 2014 period, with 96 % chance, versus 3 % for La Niña and only 1 % chance for El Niño.

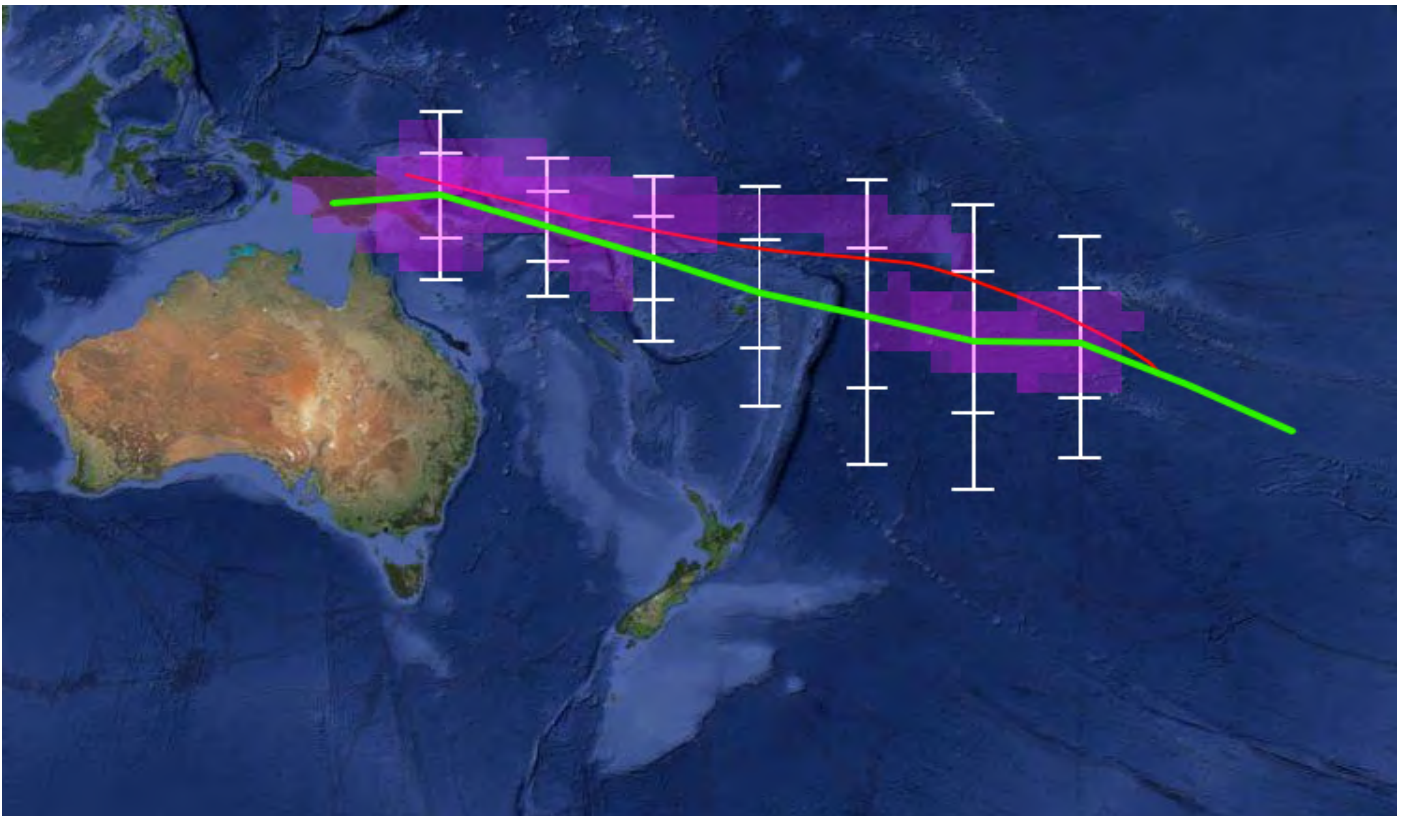


Surface temperature anomalies (°C) for November 2013, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres/>).

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## South Pacific Convergence Zone forecast December 2013 to February 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 forecast indicates the SPCZ will be positioned close to its normal location for the coming three months. The models indicate intense convection may occur close to the Bismarck Archipelago and over the Solomon Islands. Confidence in the forecast is generally lower east of the International Dateline.

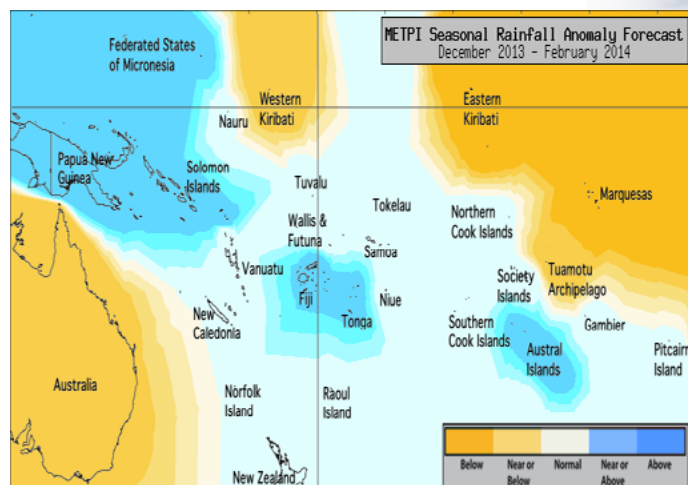
## Tropical rainfall and SST outlook: December 2013 to February 2014

The dynamical models continue to indicate slightly drier conditions than normal in the far eastern Pacific, including parts of French Polynesia. For the December 2013 to February 2014 period, slightly wetter than normal conditions are expected in the western Pacific and in parts of the central Pacific south of the Equator. Near or above normal rainfall is forecast for the Austral Islands, Fiji, Niue, Papua New Guinea, the Solomon Islands, Tonga and the Federated States of Micronesia. Near normal rainfall is expected for the Northern Cook Islands, the Southern Cook Islands, New Caledonia, Pitcairn Island, Samoa, the Society Islands, Tokelau, Tuvalu, Vanuatu and Wallis & Futuna. Normal or below normal rainfall is forecast for the Tuamotu Archipelago and Western Kiribati. Below normal rainfall is forecast for the Marquesas and Eastern Kiribati.

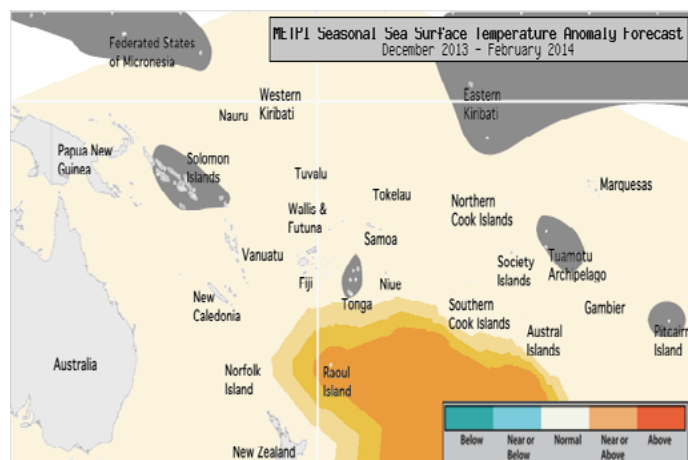
The global model ensemble forecast for SST indicates that the region of higher than normal temperatures in the central and eastern Pacific that has been present over the past six months (see Figure on page 2) is likely to persist over December 2013 – February 2014. Elsewhere in the Pacific near normal SSTs are forecast. Note however that for some regions there is poor agreement between the dynamical model forecasts, leading to weak guidance. No guidance is provided this month for Eastern Kiribati, the Federated States of Micronesia, Pitcairn Island, the Solomon Island, Tonga and the Tuamotu Archipelago. Near normal sea surface temperatures are expected elsewhere.

The confidence for the rainfall outlook is generally high, except for Papua New Guinea, Tuvalu, Western Kiribati and Eastern Kiribati, where uncertainty is greater. The average region-wide hit rate for rainfall forecasts issued in December is 73 %, 6 % higher than the long-term average for all months

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 December 2013 - February 2014



SST anomaly outlook map for December 2013 - February 2014

combined. The confidence is moderate for the SST forecasts,

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

Island Group	SST Outlook	Confidence
Kiribati (Western)	30:40:30 (Near normal)	Moderate
Marquesas	30:40:30 (Near normal)	Moderate
New Caledonia	30:40:30 (Near normal)	Moderate
Niue	30:40:30 (Near normal)	Moderate
Cook Islands (Northern)	30:40:30 (Near normal)	Moderate
Papua New Guinea	30:40:30 (Near normal)	Moderate
Samoa	30:40:30 (Near normal)	Moderate
Society Islands	30:40:30 (Near normal)	Moderate
Cook Islands (Southern)	30:40:30 (Near normal)	Moderate
Tokelau	30:40:30 (Near normal)	Moderate
Tuvalu	30:40:30 (Near normal)	Moderate
Vanuatu	30:40:30 (Near normal)	Moderate
Wallis & Futuna	30:40:30 (Near normal)	Moderate
Fiji	30:40:30 (Near normal)	Moderate
Kiribati (Eastern)	33:33:33 (Climatology)	Moderate
Micronesia	33:33:33 (Climatology)	Moderate
Pitcairn	33:33:33 (Climatology)	Moderate
Solomon Islands	33:33:33 (Climatology)	Moderate
Tonga	33:33:33 (Climatology)	Moderate
Tuamotu	33:33:33 (Climatology)	Moderate



## The Island Climate Update

Cover Photo:  
Wendy St George,  
NIWA

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Your comments and ideas about The Island Climate Update are welcome. Please contact:

Dr Nicolas Fauchereau, NIWA,  
41 Market Place, Auckland, New Zealand  
E-mail: [Nicolas.Fauchereau@niwa.co.nz](mailto:Nicolas.Fauchereau@niwa.co.nz)

### Forecasts:

Dr. Nicolas Fauchereau and Dr. Andrew Lorrey and (South Pacific rainfall, SPCZ and SST forecasts) and the NIWA National Climate Centre (ENSO wrap)

### ICU Editorial team:

Nicolas Fauchereau:  
[Nicolas.Fauchereau@niwa.co.nz](mailto:Nicolas.Fauchereau@niwa.co.nz)  
Andrew Lorrey: [a.lorrey@niwa.co.nz](mailto:a.lorrey@niwa.co.nz)  
Petra Chappell: [p.chappell@niwa.co.nz](mailto:p.chappell@niwa.co.nz)

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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/>

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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