

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The Pacific remains in a neutral ENSO state.
- Sea surface temperatures continue to be higher than normal in the central south Pacific.
- The international consensus indicates that neutral ENSO conditions are very likely (93 % chance) to persist for the coming three months (November 2013 to January 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

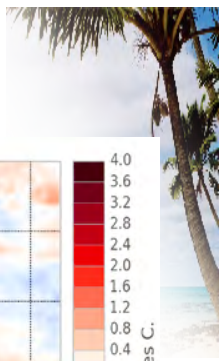
The South Pacific Convergence Zone (SPCZ)

- The SPCZ is forecast to be positioned slightly south of normal for the coming three months.

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

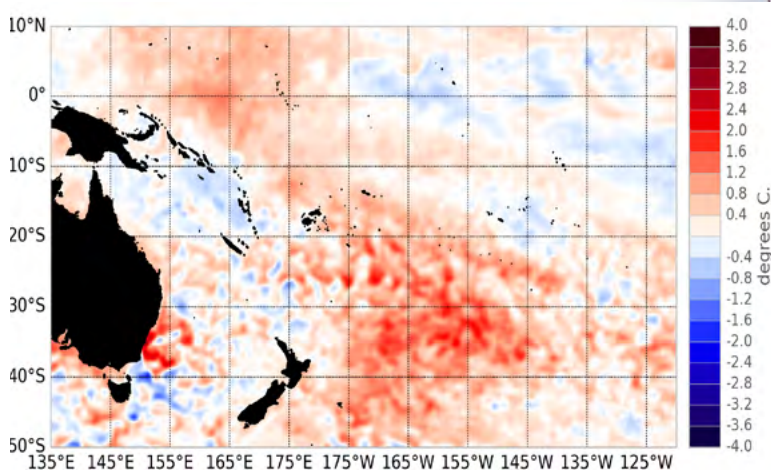
- Normal or below normal rainfall is forecast for Western Kiribati, Pitcairn Island, Tuvalu, Eastern Kiribati, the Marquesas and the Tuamotu archipelago.
- Near or above normal rainfall is forecast for Fiji, the Southern Cook Islands, the Federated States of Micronesia, Papua New Guinea and Tonga.
- Near or above average SST is forecast for Fiji, Niue, the Southern Cook Islands, Eastern Kiribati and Western Kiribati, Tonga and Wallis and Futuna.





El Niño/Southern Oscillation (ENSO)

The tropical Pacific remained in a neutral state (neither El Niño nor La Niña) in October 2013. In contrast to previous months, the eastern equatorial Pacific is now slightly warmer than normal. The western Pacific continues to be warmer than normal, while the central Pacific displays slightly negative anomalies. The NINO 4 sea surface temperatures (SST) index (in the western Pacific) presents the largest anomalies at 0.3°C for October, while NINO 3 is close to 0 and NINO 3.4 is negative at -0.17°C. SSTs continue - for the 6th consecutive month - to be higher than normal over a large area in the central south Pacific, extending from Fiji to the northeast of New Zealand. On the other hand, the lower than normal SSTs around French Polynesia have now vanished. The subsurface ocean is warmer than normal at about 125 m deep west of the Dateline, and a shallow layer of warmer than normal ocean temperatures is also present in the far eastern Pacific. The trade winds remained close to normal in October. The Intertropical Convergence Zone (ITCZ) was not well defined in October. The South Pacific Convergence Zone (SPCZ) was intensified over its northern edge and extended further east than normal. The latest value for the TRMM ENSO index for the 30 days to 3 November is -0.09 (compared to -0.46 in September). The SOI is



Surface temperature anomalies (°C) for October 2013, 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>).

currently slightly negative (-0.3 estimate for October). The Madden-Julian Oscillation (MJO) was mostly inactive in the western Pacific in October and is forecast to remain so over the next two weeks. The ensemble of dynamical and statistical climate forecast models that NIWA monitors indicates that neutral ENSO conditions are extremely likely to persist over the November 2013 - January 2014 period, with 93 % chance, versus 6 % for La Niña and only 1 % chance El Niño.

South Pacific Convergence Zone forecast November 2013 to January 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 slightly south of its normal location for the coming three months. Confidence in the forecast is generally higher in the western Pacific than in the eastern Pacific..

Tropical rainfall and SST outlook: November 2013 to January 2014

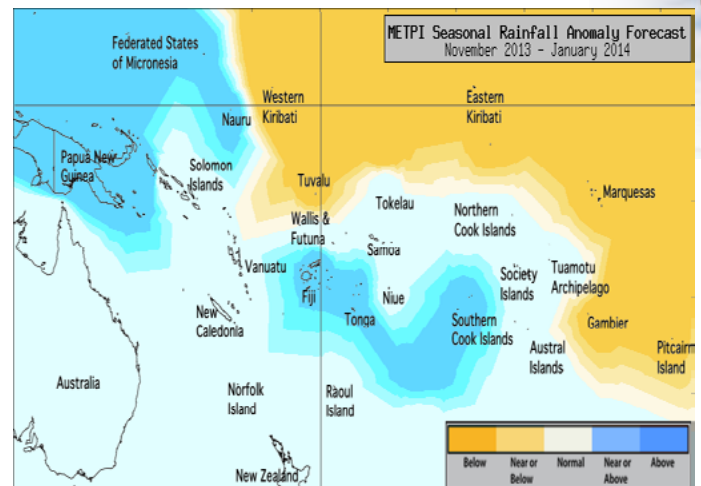
The dynamical models continue to indicate slightly drier conditions than normal in the far eastern Pacific south of the Equator, while the November 2013 to January 2014 period is forecast to be slightly wetter than normal in the western Pacific along and north of the Equator as well as in the central Pacific south of the Equator. Near or above normal rainfall is forecast for Fiji, the Southern Cook Islands, the Federated States of Micronesia, Papua New Guinea and Tonga. Near normal rainfall is expected for the Austral Islands, the Northern Cook Islands, New Caledonia, Niue, Samoa, the Society Islands, Tokelau, Vanuatu and Wallis & Futuna. Normal or below normal rainfall is forecast for Western Kiribati, Pitcairn Island, Tuvalu, Eastern Kiribati, the Marquesas and the Tuamotu Archipelago.

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 November 2013 – January 2014. Several models also forecast slightly warmer than normal SSTs in the equatorial western Pacific. Near or above average SST is forecast for Fiji, Tonga, Niue, the Southern Cook Islands, Western Kiribati, Niue and the Federated States of Micronesia. Near normal sea surface temperatures are expected elsewhere.

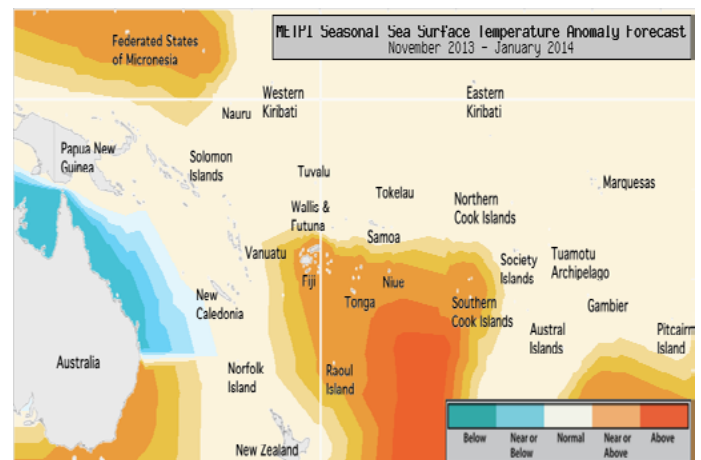
The confidence for the rainfall outlook is generally high, except for Eastern Kiribati and Western Kiribati and Samoa, where uncertainty is greater. The average region-wide hit rate for rainfall forecasts issued in November is 66 %, 3 % higher than the long-term average for all months combined. The confidence is generally high for the SST forecasts, except for the far eastern Pacific, around Eastern Kiribati and 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.

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



Rainfall anomaly outlook map for November - January 2014



SST anomaly outlook map for November - January 2014

| Island Group | SST Outlook | Confidence |
|-------------------------|----------------------------|------------|
| Fiji | 25:35:40 (Normal or Above) | High |
| Tonga | 25:35:40 (Normal or Above) | High |
| Cook Islands (Southern) | 25:40:35 (Normal or Above) | High |
| Kiribati (Western) | 25:40:35 (Normal or Above) | High |
| Niue | 25:40:35 (Normal or Above) | High |
| FSM | 25:40:35 (Normal or Above) | High |
| Austral Islands | 30:40:30 (Near normal) | High |
| Cook Islands (Northern) | 30:40:30 (Near normal) | High |
| Kiribati (Eastern) | 30:40:30 (Near normal) | Moderate |
| Marquesas | 30:40:30 (Near normal) | Moderate |
| New Caledonia | 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) | High |
| Society Islands | 30:40:30 (Near normal) | High |
| Solomon Islands | 30:40:30 (Near normal) | High |
| Tokelau | 30:40:30 (Near normal) | High |
| Tuamotu Islands | 30:40:30 (Near normal) | High |
| Tuvalu | 30:40:30 (Near normal) | High |
| Vanuatu | 30:40:30 (Near normal) | High |
| Wallis & Futuna | 30:40:30 (Near normal) | High |



The Island Climate Update

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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