

Number 156, September 2013

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The ocean - atmosphere system remains in a neutral ENSO state.
- The eastern Pacific is currently slightly cooler than normal.
- The international consensus indicates that neutral ENSO conditions are likely to persist for the coming three months (September to November 2013).

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 Eastern Kiribati and Western Kiribati, the Northern Cook Islands and the Marquesas.
- Near or above normal rainfall is forecast for Fiji, Tonga, Niue, Papua New Guinea, Samoa and the Solomon Islands.
- Near or above average SST is forecast for Fiji and Tonga.

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

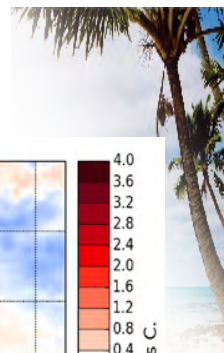
European Centre for
Medium Range Weather
Forecasts

UK Met Office

World Meteorological
Organization

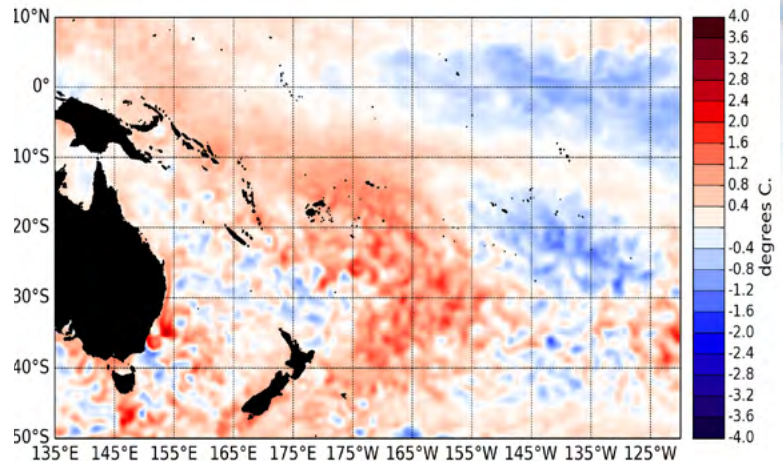
MetService of
New Zealand





El Niño/Southern Oscillation (ENSO)

The tropical Pacific remained in a neutral state (neither El Niño nor La Niña) in August 2013, although cooler than normal Sea Surface Temperatures (SSTs) persist in the far eastern Pacific. Accordingly both the NINO 3.4 and NINO 3 indices are slightly negative, with August values estimates of -0.2°C for NINO 3.4 and -0.5°C for NINO 3. NINO 4 remains positive at 0.2°C . SSTs are still warmer than normal over a large area in the central and west Pacific, extending from the Solomon Island to the southeast, encompassing Fiji and Samoa. The subsurface ocean is currently slightly warmer than normal from about 100 m to the surface, while colder than normal below (~ 150 m). The trade winds remained close to normal in August. The Intertropical Convergence Zone (ITCZ) was situated north of its climatological position in the eastern Pacific, while convection and rainfall within the ITCZ was - as last month - much lower than normal west of the Dateline. The South Pacific Convergence Zone (SPCZ) was not well defined in the western Pacific and positioned slightly southwest of its climatological position. The latest value for the TRMM ENSO index for the 30 days to 31 August is -1.50 (on the La Niña side of Neutral). The SOI is now slightly negative (-0.2 for August) after having been positive for 3 consecutive months. The Madden – Julian Oscillation (MJO) was

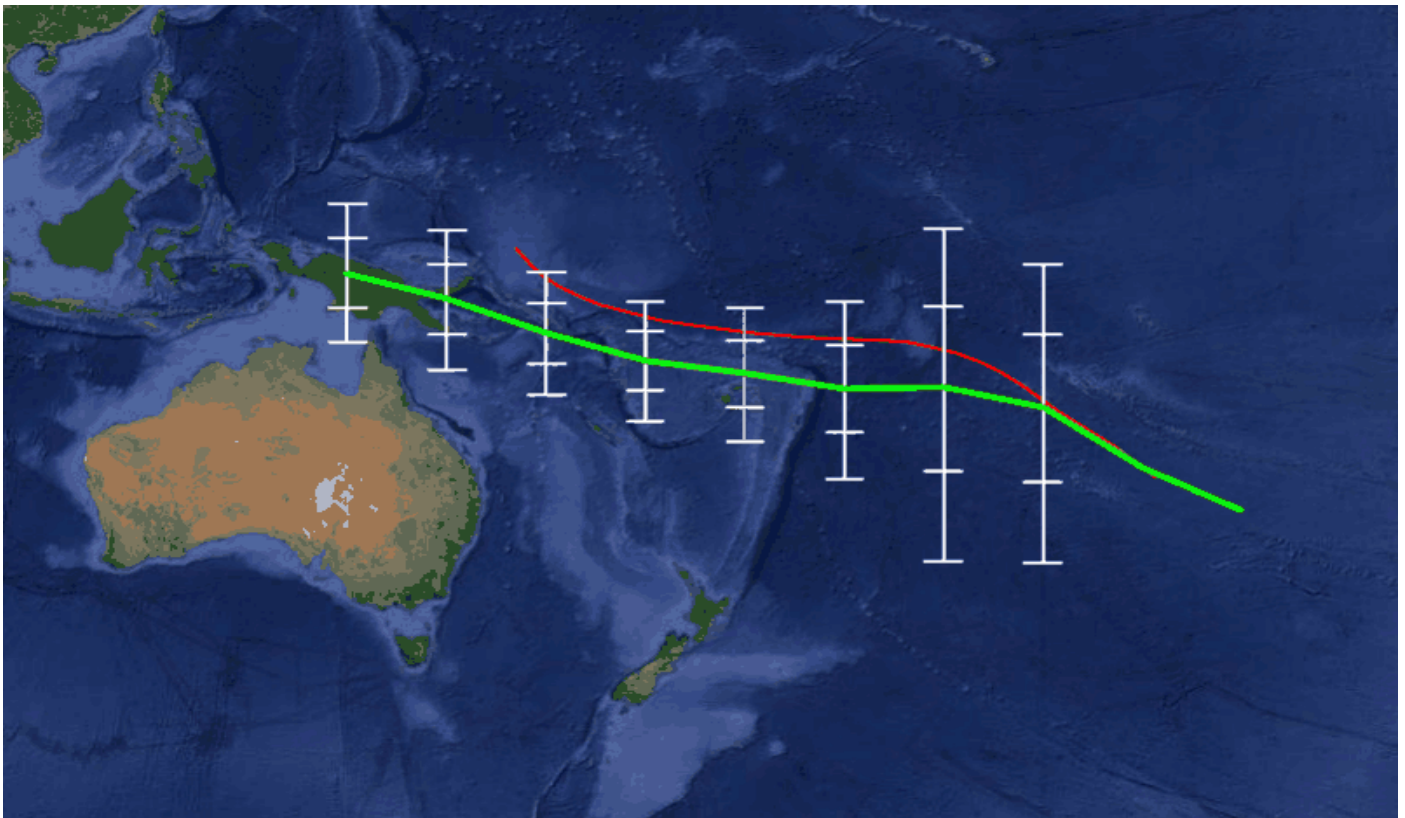


Surface temperature anomalies ($^{\circ}\text{C}$) for August 2013, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres>).

inactive over the Pacific over most of last month. Reduced convective activity associated with the MJO is forecast in the western Pacific over the coming two weeks. The ensemble of dynamical and statistical climate forecast models that NIWA monitors indicates that neutral ENSO conditions are likely to persist over the September – November 2013 period, with 66 % chance, versus 21 % for La Niña and 13 % chance El Niño (source IRI / CPC).

South Pacific Convergence Zone forecast September to November 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.



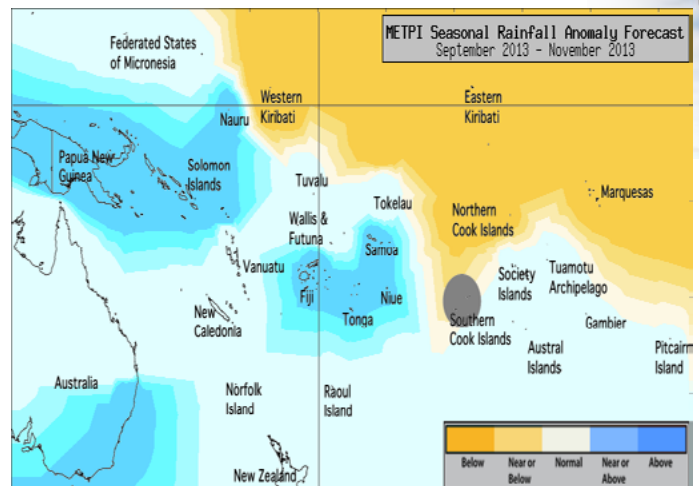
The forecast indicates the SPCZ will be positioned slightly south of its normal location for the coming three months. Confidence in the forecast is generally high in the west and low in the east..

Tropical rainfall and SST outlook: September to November 2013

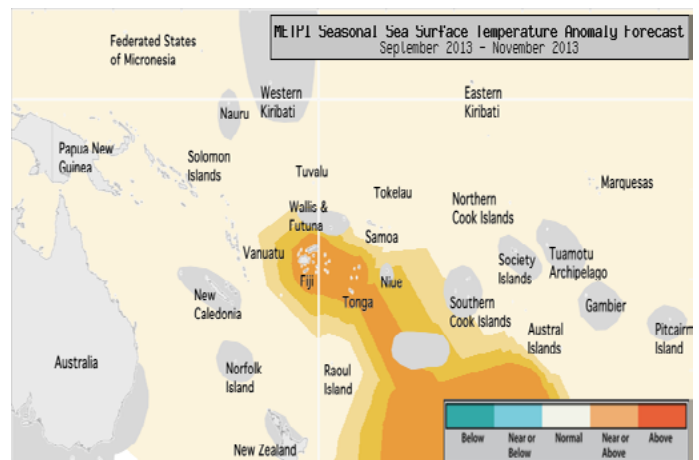
The dynamical models continue to indicate drier conditions than normal in the eastern Pacific along the Equator, while the September to November period is forecast to be slightly wetter than normal in the western and central Pacific south of the Equator (consistent with a SPCZ forecast to be positioned south of normal). Near or above normal rainfall is forecast for Fiji, Tonga, Niue, Papua New Guinea, Samoa and the Solomon Islands. Near normal rainfall is expected for the Austral Islands, New Caledonia, Pitcairn Island, the Society Islands, Tokelau, the Tuamotu Archipelago, Tuvalu, Vanuatu, Wallis & Futuna and the Federated States of Micronesia. Normal or below normal rainfall is forecast for Eastern Kiribati and Western Kiribati, the Northern Cook Islands and the Marquesas. No guidance is provided for the Southern Cook Islands.

As was the case last month, the global model ensemble forecast for SST does not provide much guidance for several island groups. A consistent feature across models however is the persistence of above normal SSTs for parts of the southeast Pacific. Near or above average SST is forecast for Tonga and Fiji. No Guidance is provided for Niue, New Caledonia, Wallis and Futuna, the Southern Cook Islands, Western Kiribati, Pitcairn Island, the Society Islands and the Tuamotu Archipelago. Near normal sea surface temperatures are expected elsewhere.

The confidence for the rainfall outlook is generally moderate to high, except for the Southern Cook Islands where uncertainty is greater. The average region-wide hit rate for rainfall forecasts issued in September is 66 %, 3 % higher than the long-term average for all months combined. For the Island groups for which SST guidance is provided, the confidence is generally high.



Rainfall anomaly outlook map for September to November 2013



SST anomaly outlook map for September to November 2013

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
Tonga	25:35:40 (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
Samoa	25:40:35 (Normal or Above)	High
Solomon Islands	25:40:35 (Normal or Above)	High
Austral Islands	30:40:30 (Near normal)	High
New Caledonia	30:40:30 (Near normal)	High
Pitcairn Island	30:40:30 (Near normal)	High
Society 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
FSM	30:40:30 (Near normal)	High
Cook Islands (Southern)	33:33:33 (Climatology)	Moderate
Kiribati (Eastern)	35:40:25 (Normal or Below)	Moderate-High
Cook Islands (Northern)	40:35:25 (Normal or Below)	High
Kiribati (Western)	40:35:25 (Normal or Below)	Moderate-High
Marquesas	40:35:25 (Normal or Below)	High

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



The Island Climate Update

Cover Photo:
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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, 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