

Number 170, November 2014

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- Borderline El Niño conditions persisted in the Pacific during October 2014.
- Chances for El Niño developing over the November 2014 – January 2015 period are 66%.

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.

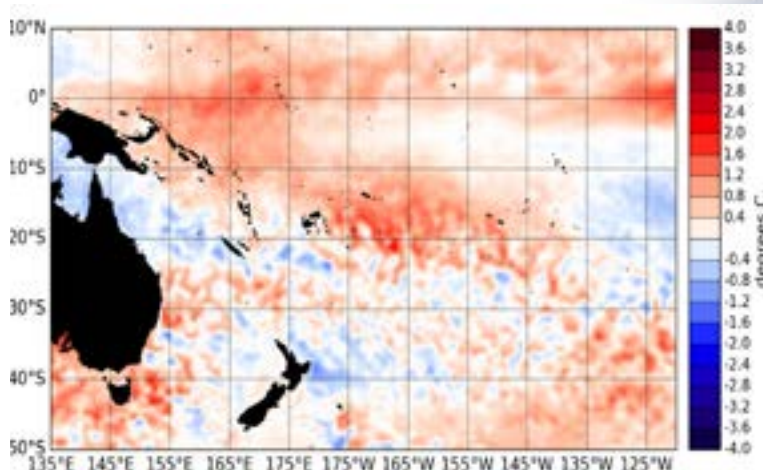
Multi-model Ensemble Tool for Pacific Island (METPI) rainfall and sea surface temperature forecasts

- Normal or below normal rainfall is forecast for the Northern Cook Islands, New Caledonia, Tonga, Fiji, the Marquesas and Vanuatu.
- Normal or above normal rainfall is forecast for western Kiribati, Papua New Guinea, the Solomon Islands and the Austral Islands.
- Above normal sea surface temperatures (SSTs) are forecast for western Kiribati, and normal or above normal SSTs are forecast for the Austral Islands, eastern Kiribati, the Federated States of Micronesia, Papua New Guinea, Samoa, the Society Islands, the Solomon Islands, Tokelau and Tonga.



El Niño/Southern Oscillation (ENSO)

During October 2014, borderline El Niño conditions persisted in the Pacific Ocean. Equatorial sea surface temperatures (SSTs) rose slightly across the equatorial Pacific ocean, but there is still no gradient in the SST anomalies. The latest monthly anomaly values for the NINO SST indices are: +0.53 for NINO3.4 (up from +0.42°C in September), +0.68°C for NINO3 (up from +0.42°C last month), and +0.75°C for NINO4 (was +0.72°C in September). Ocean sub-surface temperatures increased in the central Pacific, with anomalies reaching now more than +4°C around the dateline at about 100m depth. Oceanic subsurface heat content also increased in the central Pacific and expanded eastward. The Southern Oscillation Index (SOI) is at -0.9 for October 2014. The latest value for the TRMM ENSO index for the 30 days to 4 November is weakly positive at +0.24. The Intertropical Convergence Zone (ITCZ) was mostly suppressed in the western Pacific and over the Maritime Continent and intensified in the eastern Pacific. Increased rainfall within the western limb of the South Pacific Convergence Zone (SPCZ) affected parts of Papua New Guinea, the Solomon Islands and Vanuatu. Further east increased precipitation also occurred over large parts of French Polynesia. The Madden – Julian Oscillation (MJO) activity over the Pacific was very weak over the past two weeks,

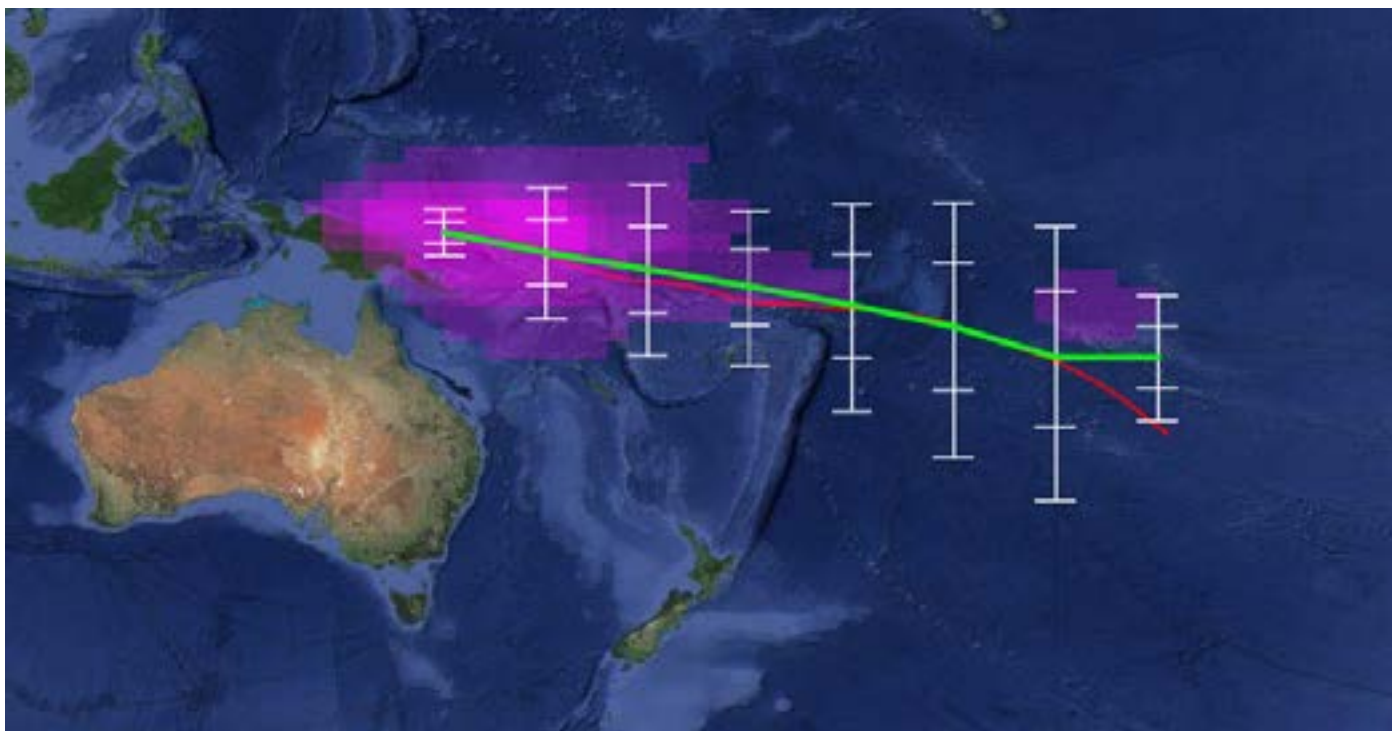


Surface temperature anomalies (°C) for October 2014, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres/>).

and dynamical and statistical forecasts (from the Climate Prediction Center) for the next two weeks indicate a mostly inactive MJO and reduced levels of intra-seasonal convective activity. The consensus ENSO forecast from the IRI / CPC indicate that the chance of El Niño developing over the November 2014 – January 2015 period is 66%. Chances of El Niño remain similar for later in the summer, with 67% for the February – April 2015 period.

South Pacific Convergence Zone forecast November 2014 to January 2015

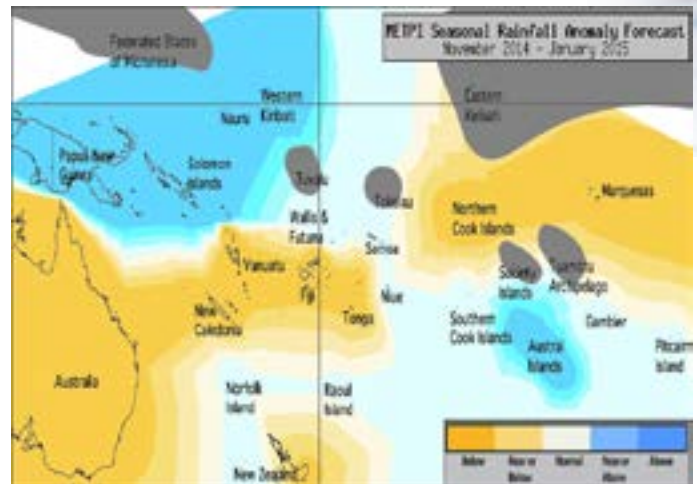
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of eight climate models. The white vertical bars and 'whiskers' indicate the one and two standard deviations between the model projections of the SPCZ position every five degrees of longitude. The purple shading is proportional to the probability of intense convection developing within the SPCZ.



For November 2014 - January 2015, the SPCZ is forecast to be positioned close to normal for the time of year. However model uncertainty is quite large this month, leading to moderate confidence in the SPCZ position forecast. An area of intense convection is forecast over northern Papua New Guinea and the Solomon Islands.

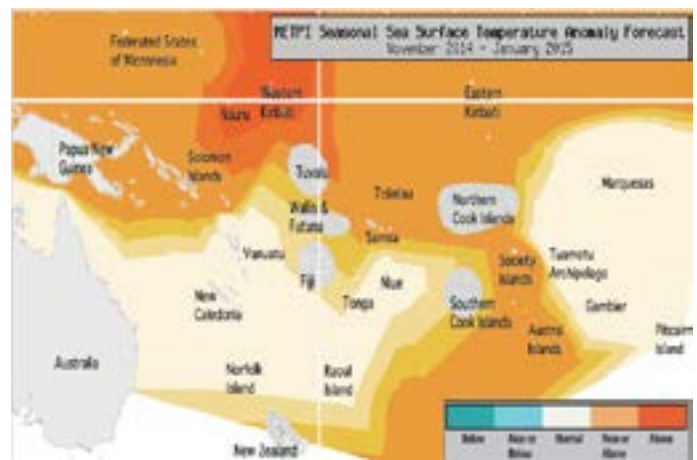
Tropical rainfall and SST outlook: November 2014 to January 2015

The dynamical models forecasts indicate that the western equatorial Pacific as well as parts of the Maritime Continent are likely to experience normal or above-normal rainfall for the November 2014 - January 2015 season as a whole. In contrast, parts of the south Pacific - from New Caledonia to Tonga - and the eastern Pacific from the northern Cook Islands to the Marquesas are expected to experience reduced rainfall. Normal or below normal rainfall is forecast for the Northern Cook Islands, New Caledonia, Tonga, Fiji, the Marquesas and Vanuatu. Normal or above normal rainfall is forecast for western Kiribati, Papua New Guinea, the Solomon Islands and the Austral Islands. Near normal rainfall is expected for the Southern Cook Islands, Niue, Pitcairn Island and Samoa. No clear guidance is available for Eastern Kiribati, Tokelau, the Society Islands, the Tuamotu archipelago, Tuvalu and the Federated States of Micronesia.



Rainfall anomaly outlook map for November 2014 - January 2015

The global model ensemble forecast for SSTs indicate higher than normal SSTs over the whole Equatorial Pacific, with maximum anomalies just west of the International Dateline. Above normal SSTs are forecast for western Kiribati. Normal or above normal SSTs are forecast for the Austral Islands, eastern Kiribati, the Federated States of Micronesia, Papua New Guinea, Samoa, the Society Islands, the Solomon Islands, Tokelau and Tonga. Near Normal SSTs are forecast elsewhere, except for Fiji, the northern Cook Islands, the southern Cook Islands, Tuvalu and Wallis & Futuna, for which no guidance is available (i.e. equal chances are given to each tercile).



SST anomaly outlook map for November 2014 - January 2015

The confidence for the rainfall outlook is moderate to high, but as usual moderate confidence is attached to the climatological forecasts. The average region-wide hit rate for rainfall forecasts issued for the November - January season is 65 %, one point higher than the average for all months

combined. Confidence for the SST forecasts is generally high.

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

Island Group	SST Outlook	confidence
Western Kiribati	20:30:50 (Above)	High
Austral Islands	25:35:40 (Normal or Above)	High
Kiribati (Eastern)	25:35:40 (Normal or Above)	High
FSM	25:35:40 (Normal or Above)	High
Papua New Guinea	25:35:40 (Normal or Above)	High
Samoa	25:35:40 (Normal or Above)	High
Society Islands	25:35:40 (Normal or Above)	High
Solomon Islands	25:35:40 (Normal or Above)	High
Tokelau	25:35:40 (Normal or Above)	High
Tonga	25:40:35 (Normal or Above)	High
Marquesas	30:40:30 (Near normal)	High
New Caledonia	30:40:30 (Near normal)	High
Niue	30:40:30 (Near normal)	High
Cook Islands (Southern)	30:40:30 (Near normal)	High
Tuamotu	30:40:30 (Near normal)	High
Vanuatu	30:40:30 (Near normal)	High
Fiji	33:33:33 (Climatology)	Moderate
Cook Islands (Northern)	33:33:33 (Climatology)	Moderate
Cook Islands (Southern)	33:33:33 (Climatology)	Moderate
Tuvalu	33:33:33 (Climatology)	Moderate
Wallis & Futuna	33:33:33 (Climatology)	Moderate



The Island Climate Update

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Wendy St George,
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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