Number 168, September 2014

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- Sea surface temperatures (SSTs) remain warmer than normal in the Pacific but are below El Niño thresholds.
- Despite the Southern Oscillation Index being currently negative, the atmosphere has yet to couple to the ocean.
- Chances for El Niño over the September – November 2014 period are about 55%, increasing to about 70% later in the summer.

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 Marquesas, the Society Islands, Tonga, the Tuamotu archipelago, Vanuatu, the Northern Cook Islands, Fiji, New Caledonia, Tokelau, Tuvalu and Wallis & Futuna.
- Normal or above normal rainfall is forecast for the Austral Islands, the Southern Cook Islands and Eastern Kiribati.
- Normal or above normal SSTs are forecast for Western Kiribati and Eastern Kiribati.

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

NEW ZEALAND MINISTRY OF FOREIGN AFFAIRS & TRADE Aid Programme

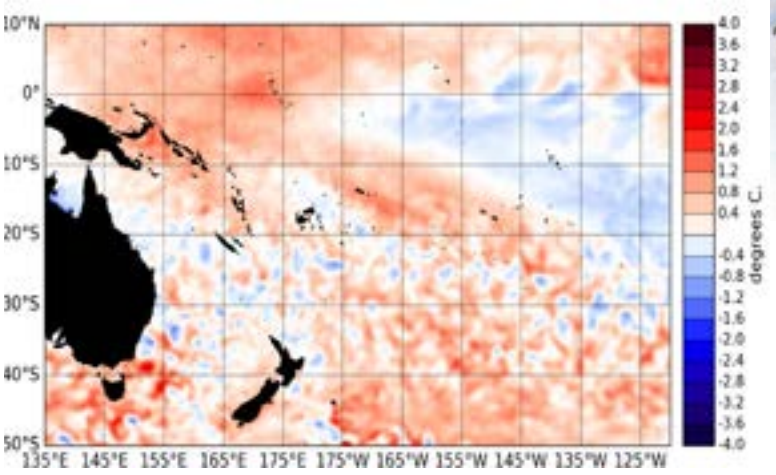
NOAA

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

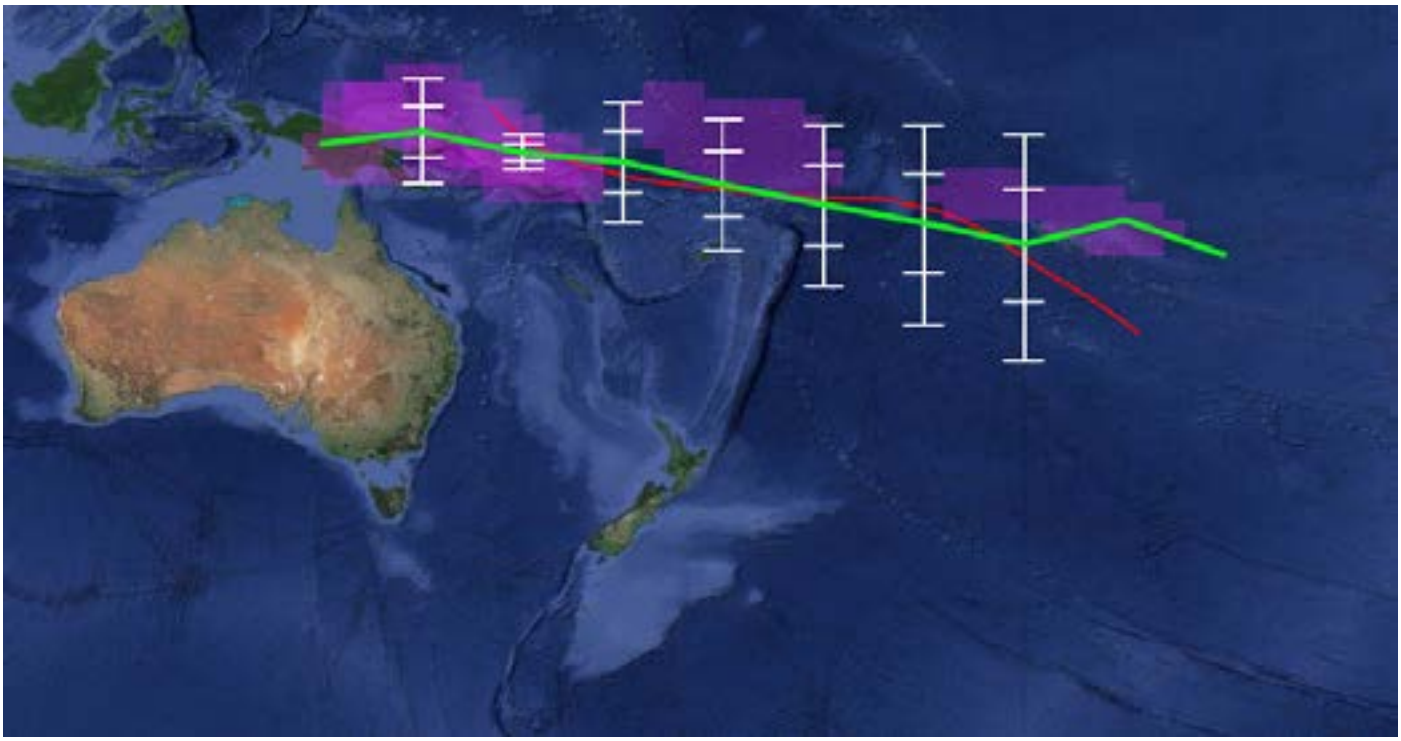
The equatorial Pacific Ocean remains ENSO–neutral at the end of August 2014. Despite the Southern Oscillation Index being currently negative, a fully coupled (ocean – atmosphere) El Niño event has yet to initiate. Equatorial sea–surface temperatures (SSTs) in the NINO3.4 region remain below El Niño threshold, while SST anomalies remain elevated in the western Pacific. The latest monthly anomaly values for the NINO SST indices are: 0.26°C for NINO3.4, 0.43°C for NINO3, and 0.62°C for NINO4. The Southern Oscillation Index (SOI) is at –1.1 for August 2014, and has thus currently crossed El Niño thresholds (typically SOI values above 1 indicate La Niña, and values below –1 indicate El Niño) but it would need to remain below this value for at least 3 month for an El Niño event to be declared. On the other hand, the latest value for the TRMM ENSO index for the 30 days to 2 September is –0.82, i.e. close the La Niña threshold. The Intertropical Convergence Zone (ITCZ) was mostly suppressed in the western Pacific and shifted north of its climatological position in the eastern Pacific. The South Pacific Convergence Zone (SPCZ) extended further east than normal for this time of year. As was the case in July, a large region of the southwest Pacific (from Vanuatu to Tonga) experienced anomalously low rainfall in August 2014. The Madden – Julian Oscillation (MJO) was mostly inactive over the Pacific in the last two weeks of August. The forecasts from the CPC indicate normal or reduced levels of intra-seasonal convective activity over the next two weeks. The consensus forecast from the IRI / CPC indicate that the chance of El Niño developing over the September – November 2014 period is about 55%, increasing to about 70% in December 2014 – February 2015.



Surface temperature anomalies (°C) for August 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/).

South Pacific Convergence Zone forecast September to November 2014

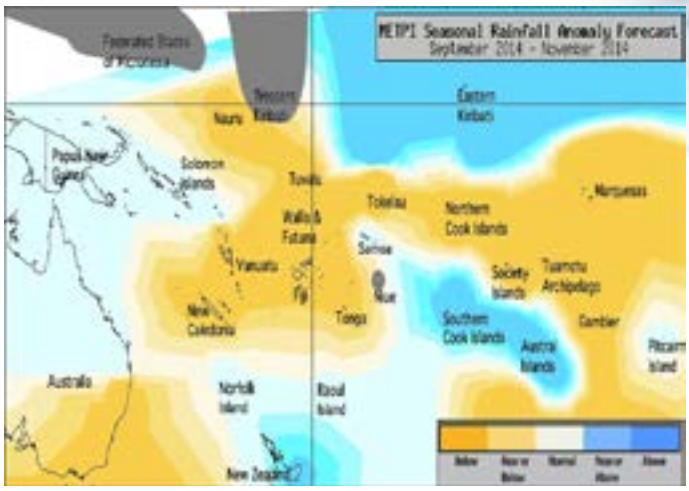
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of eight climate models. The white vertical bars and '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 September – November 2014, the South Pacific Convergence Zone (SPCZ) is forecast to sit close to normal for the time of year. Enhanced convective activity can be expected to the north of Papua New Guinea and the Solomon Islands. Uncertainty in the position of the SPCZ is greatest to the east of the Dateline.

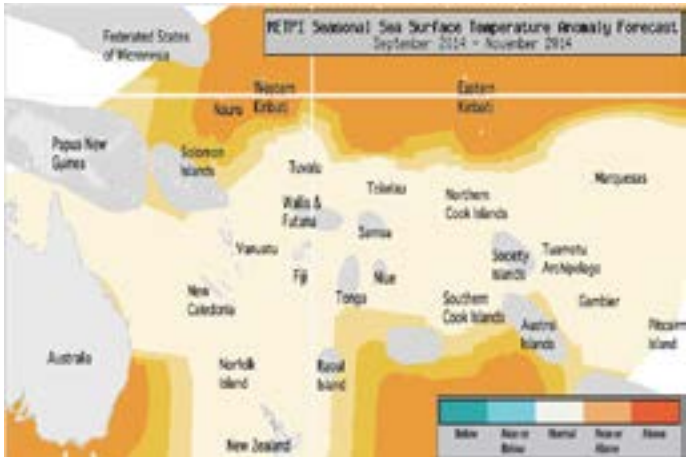
Tropical rainfall and SST outlook: September to November 2014

The dynamical models forecasts forecasts indicate that several regions of the Pacific south of the Equator are likely to receive less rainfall than normal during the September to November 2014 season. Normal or below normal rainfall is forecast for the Marquesas, the Society Islands, Tonga, the Tuamotu archipelago, Vanuatu, the Northern Cook Islands, Fiji, New Caledonia, Tokelau, Tuvalu and Wallis & Futuna. Normal or above normal rainfall is forecast for the Austral Islands, the Southern Cook Islands and Eastern Kiribati. Near normal rainfall is expected for the Austral Islands and Pitcairn Island. No clear guidance is available for Western Kiribati, the Federated States of Micronesia and Niue.



Rainfall anomaly outlook map for September - November 2014

The global model ensemble forecast for SSTs indicate higher than normal SSTs in the central and eastern Equatorial Pacific. Above normal SSTs are also forecast to persist from previous months to the east of New Zealand at subtropical and mid-latitudes. Normal or above normal SSTs are forecast for Western Kiribati and Eastern Kiribati. Near normal SSTs are forecast for Fiji, the Marquesas, New Caledonia, the Northern and Southern Cook Islands, Pitcairn, Tokelau, the Tuamotu archipelago, Tuvalu and Vanuatu. No guidance was available this month for the remaining regions of the southwest Pacific.



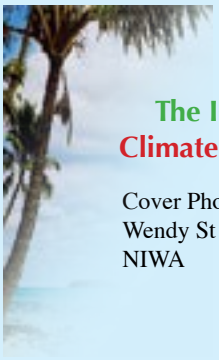
SST anomaly outlook map for September - November 2014

The confidence for the rainfall outlook is generally high. Climatological probabilities for Niue, Papua New Guinea and the Tuamotu archipelago are typically associated with moderate confidence. The average region–wide hit rate for rainfall forecasts issued in September is 66 %, two points higher than the average for all months combined. Confidence for the SST forecasts is generally high, but many island groups are lacking strong guidance from the ensemble of models forecasts for the September – November .

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

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



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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.

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 MicronesiaFiji, 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