Number 166, July 2014

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- Sea surface temperatures (SSTs) remain warmer than normal in the central and eastern Pacific, at or above El Niño thresholds.
- The atmosphere has yet to show anomalies typical of El Niño.
- Chances for El Niño over the July - September 2014 period are about 70%, increasing to about 80 % in October - December.

The South Pacific Convergence Zone (SPCZ)

- The SPCZ is expected to be positioned mostly 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 Papua New Guinea, the Northern Cook Islands, the Marquesas, New Caledonia, the Society Islands, Tokelau, the Tuamotu archipelago, Tuvalu and Vanuatu.
- Near or above normal rainfall is forecast for the Federated States of Micronesia, the Southern Cook Islands, Eastern Kiribati and Western Kiribati.
- Above normal SSTs are forecast for Eastern Kiribati. Normal or below normal SSTs are forecast for the southern Cook Islands, the Austral Islands, Pitcairn Island and the Society Islands.

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

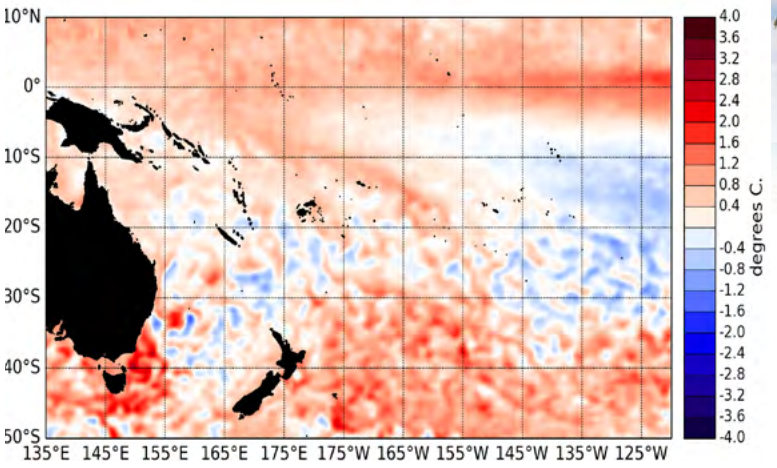
NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

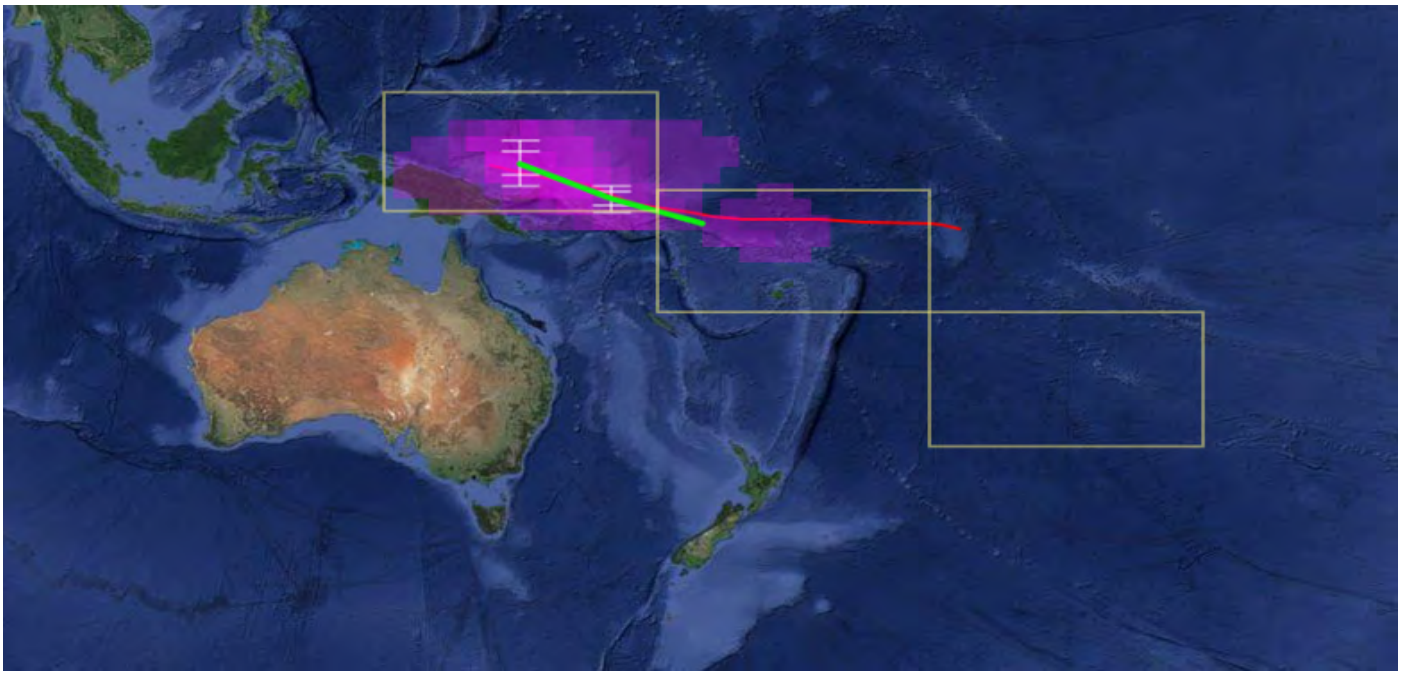
The Pacific Ocean carried on being borderline between neutral and weak El Niño conditions in June 2014. El Niño like patterns are discernible in the ocean, however the atmosphere is yet to respond in a manner consistent with El Niño. Sea surface temperatures (SSTs) continued to be warmer than normal in the NINO regions, but there is currently no large difference in anomalies between the east and west Pacific, the ocean being warmer than normal all along the Equator. The latest monthly anomaly values for all NINO indices continue at or above usual El Niño thresholds: 0.53°C for NINO3.4, 0.9°C for NINO3, and 0.64°C for NINO4. Warm anomalies in the subsurface ocean still exceed +4°C east of about 110°W at about 50m depth, but the ocean has been slowly loosing heat to the atmosphere without the latter showing a response typical of El Nino. The Southern Oscillation Index (SOI) is at −0.3 for June 2014 (neutral), and the latest value for the TRMM ENSO index for the 30 days to 2 July is in the neutral range (−0.08). The Intertropical Convergence Zone (ITCZ) was intensified especially at and around the Dateline. The South Pacific Convergence Zone (SPCZ) was weaker than normal and restricted to the far western Pacific. A large area in the south Pacific (from the southern parts of the Solomon Islands to east of Samoa) consequently experienced anomalously low rainfall last month. The Madden – Julian Oscillation (MJO) was inactive in the last two weeks of June. The forecasts (CPC) indicate normal or reduced levels of intra-seasonal convective activity over the next two weeks. The consensus forecast from IRI / CPC indicates that El Niño is the most likely outcome (70 % chance) over the July to September 2014 period. Chances for El Niño increase further to reach 82% in October – December 2014.



Surface temperature anomalies (°C) for June 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 July to September 2014

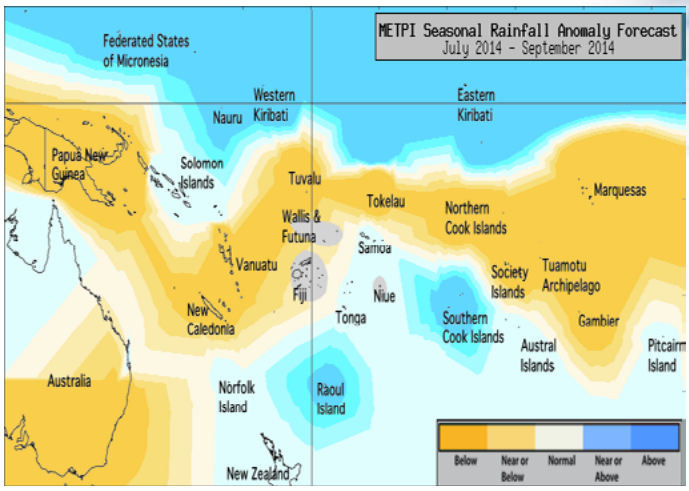
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of eight climate models. The white vertical bars and '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 July - September 2014, the SPCZ is expected to sit close to its normal position. Climate forecasts indicate the SPCZ will be mostly restricted to well west of the International Dateline. Intense convection is expected near the Bismarck Archipelago, to the northwest of Papua New Guinea and the Solomon Islands on average over the forecast period.

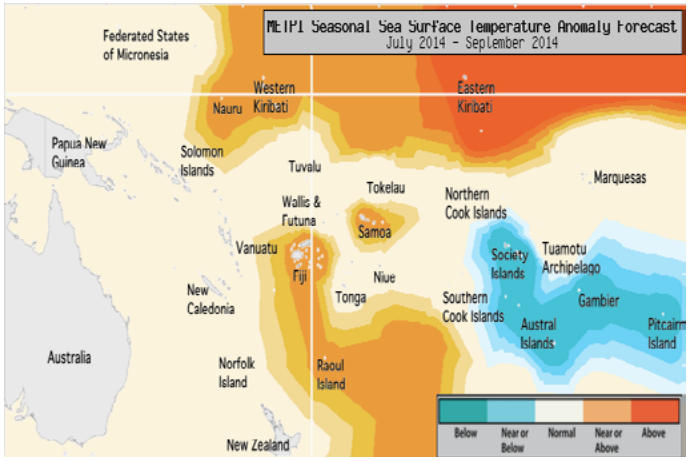
Tropical rainfall and SST outlook: July to September 2014

The dynamical forecast models are predicting rainfall patterns generally consistent with the expected development of El Niño over the July – September 2014 period. The ITCZ is forecast to be intensified towards the Equator, and large areas of the south Pacific at subtropical latitudes are still forecast to be drier than normal. Near or above normal rainfall is forecast for the Federated States of Micronesia, the Southern Cook Islands, Eastern Kiribati and Western Kiribati. Near normal rainfall is expected for the Austral Islands, Pitcairn Island, Samoa, the Solomon Islands and Tonga. Normal or below normal rainfall is forecast for Papua New Guinea, the Northern Cook Islands, the Marquesas, New Caledonia, the Society Islands, Tokelau, the Tuamotu archipelago, Tuvalu and Vanuatu. No clear guidance is available this month for Fiji, Niue and Wallis and Futuna.



Rainfall anomaly outlook map for July - September 2014

The global model ensemble forecast for SSTs indicate a pattern consistent with El Niño, with higher than normal SSTs in the central and eastern Equatorial Pacific and lower than normal SSTs in the southeastern Pacific. Above normal SSTs are forecast to persist from previous months east and northeast of New Zealand. Above normal SSTs are forecast for Eastern Kiribati. Near normal or above normal SSTs are forecast for Western Kiribati, Fiji and Samoa. Normal or below normal SSTs are forecast for the southern Cook Islands, the Austral Islands, Pitcairn Island and the Society Islands. Near normal SSTs are expected elsewhere.



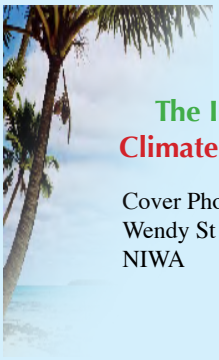
SST anomaly outlook map for July - September 2014

The confidence for the rainfall outlook is generally moderate to high. Climatological probabilies (for Fiji, Niue and Wallis & Futuna) are typically associated with moderate confidence. The average region–wide hit rate for rainfall forecasts issued in July is 65 %, two points higher than the average for all months combined. Confidence for the SST forecasts is moderate to high, with greater uncertainty in the southeastern Pacific.

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

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

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