Number 165, June 2014

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The tropical Pacific was bordeline between neutral and El Niño conditions in May 2014.
- Sea surface temperatures (SSTs) continued to increase in the central and eastern Pacific.
- Chances for El Niño over the June - August 2014 period are about 60%. El Niño becomes even more likely as we progress into winter.

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 Samoa, Fiji, New Caledonia, Pitcairn Island, the Solomon Islands, the Society Islands, the northern Cook Islands, Papua New Guinea, Tokelau, Tuvalu, Vanuatu, Wallis & Futuna and the Tuamotu archipelago. Below normal rainfall is forecast for the Marquesas.
- Near or above normal rainfall is forecast for Eastern Kiribati, Western Kiribati, the Federated States of Micronesia and the Southern Cook Islands.
- Above normal SSTs are forecast for Western Kiribati and Eastern Kiribati. Below than normal SSTs are predicted for the Austral 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

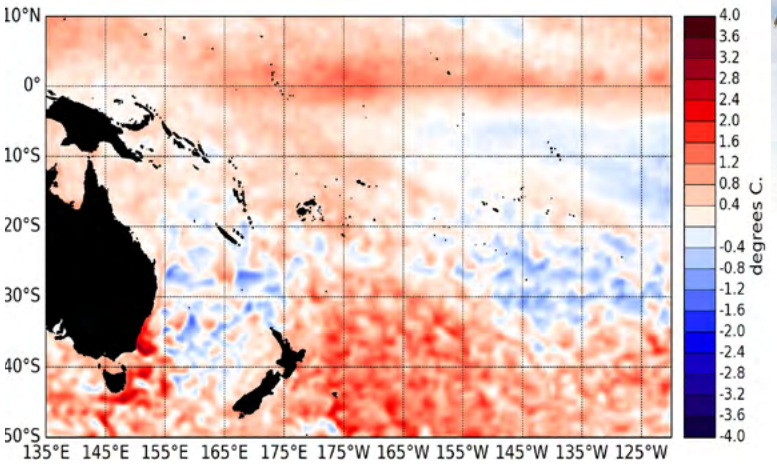
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

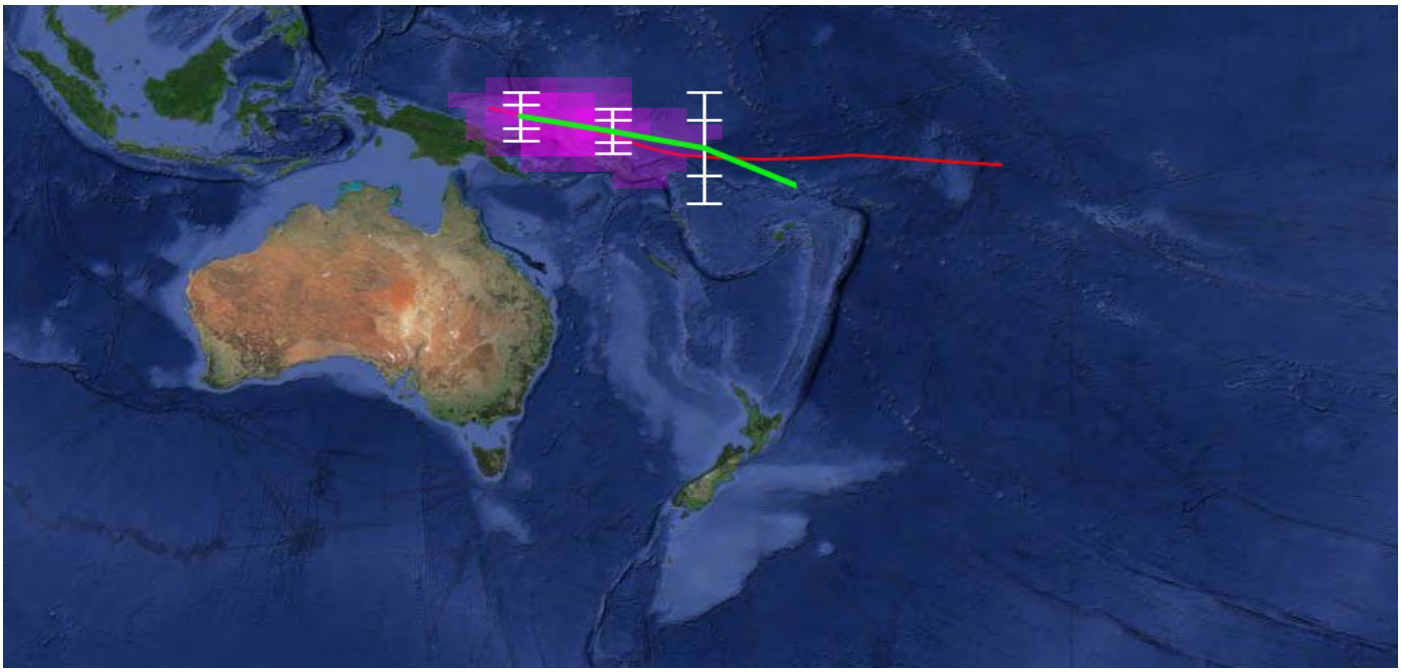
The tropical Pacific Ocean was borderline between neutral and El Niño conditions in May 2014. Above normal sea surface temperatures warmed further in the eastern Pacific and persisted around the International dateline. The latest monthly values for all NINO indices are now at or already above conventional El Niño thresholds: 0.49°C for NINO3.4, 0.72°C for NINO3, and 0.74°C for NINO4. Warm anomalies in the subsurface ocean still exceed +5°C east of about 110°W at about 50m depth. Ocean heat content anomalies still reach about +2°C locally over the same region but have weakened slightly from last month. The Intertropical Convergence Zone (ITCZ) was not very coherent spatially, overall it was weaker than normal in the western equatorial Pacific and the maritime continent and associated with reduced rainfall. The South Pacific Convergence Zone (SPCZ) was shifted towards the Equator and assumed a more zonal orientation in May 2014. The atmosphere as a whole has yet to respond to the oceanic anomalies. The Southern Oscillation Index (SOI) is positive (+0.4) for May 2014, and the latest value for the TRMM ENSO index for the 30 days to 4 June is –0.51 (on the La Niña side of neutral). The Madden – Julian Oscillation (MJO) was active in the central Indian ocean in the last 2 weeks of May. The MJO forecasts indicate that increased convective activity is likely to stay confined into the maritime continent over the next two weeks, without propagating into the western Pacific. The consensus forecast from IRI / CPC indicates that Niño is the most likely outcome (59 % chance) over the June – August 2014 period. Chances for El Niño increases over the following seasons to reach 72% in November – February 2014/15. Uncertainty remains about the strength of the event if it does fully develop.



Surface temperature anomalies (°C) for May 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 June to August 2014

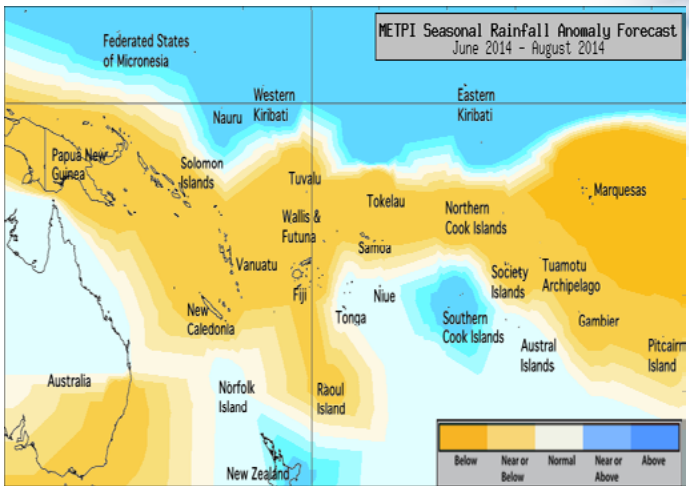
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of eight climate models. The white vertical bars and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

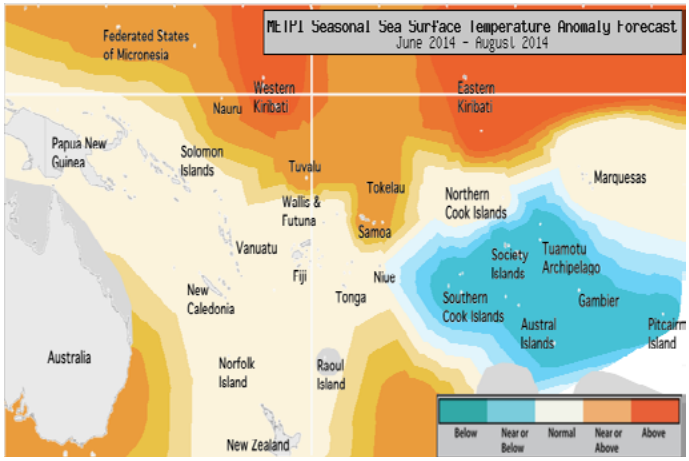
Tropical rainfall and SST outlook: June to August 2014

The dynamical forecast models are in good agreement this month and predict (June – August 2014 period) a pattern consistent with anomalies generally experienced during El Niño. The ITCZ is forecast to be shifted and intensified towards the Equator, and large regions of the south Pacific are forecast to be drier than normal. Near or above normal rainfall is forecast for Eastern Kiribati, Western Kiribati, the Federated States of Micronesia and the Southern Cook Islands. Near normal rainfall is expected for the Austral Islands, Niue and Tonga. Normal or below normal rainfall is forecast for the Samoa, Fiji, New Caledonia, Pitcairn Island, the Solomon Islands, the Society Islands, the northern Cook Islands, Papua New Guinea, Tokelau, Tuvalu, Vanuatu, Wallis & Futuna and the Tuamotu archipelago. Below normal rainfall is forecast for the Marquesas.



Rainfall anomaly outlook map for June - August 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 temperatures in the southeastern Pacific. Above normal SSTs are forecast for Western Kiribati and Eastern Kiribati. Near normal or above normal SSTs are forecast for the Federated States of Micronesia, Samoa, Tokelau and Tuvalu. Near normal SSTs are forecast for Fiji, the Marquesas, New Caledonia, the northern Cook Islands, Papua New Guinea, the Solomon Islands, Tonga, Vanuatu, Wallis & Futuna and Niue. Normal or below normal SSTs are forecast for the Society Islands, the southern Cook Islands, the Tuamotu archipelago and Pitcairn Island. Below normal SSTs are forecast for the Austral Islands. The confidence for the rainfall outlook is generally moderate to high, uncertainty is greater for Eastern Kiribati, Samoa and the Marquesas. The average region–wide hit rate for rainfall forecasts issued in May is 63 %, equals to the average for all months combined. Confidence for the SST forecasts is moderate for many Islands (see table below).

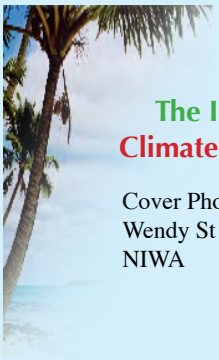


SST anomaly outlook map for June - August 2014

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

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