Number 161, February 2014

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The equatorial Pacific remains in a neutral ENSO state.
- Sea surface temperatures (SSTs) remain higher than normal in the central south Pacific.
- International guidance indicates that neutral ENSO conditions are very likely (88 % chance) to persist for the coming three months.

The South Pacific Convergence Zone (SPCZ)

- The SPCZ is expected 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

- Below normal rainfall is forecast for the Marquesas. Normal or below normal rainfall is forecast for the Northern Cook Islands, Eastern Kiribati, the Society Islands, the Tuamotu archipelago and Tuvalu.
- Near or above normal rainfall is forecast for the Federated States of Micronesia, Western Kiribati, Niue, Fiji and Tonga.
- Near normal SSTs are expected for most of the southwest Pacific.

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

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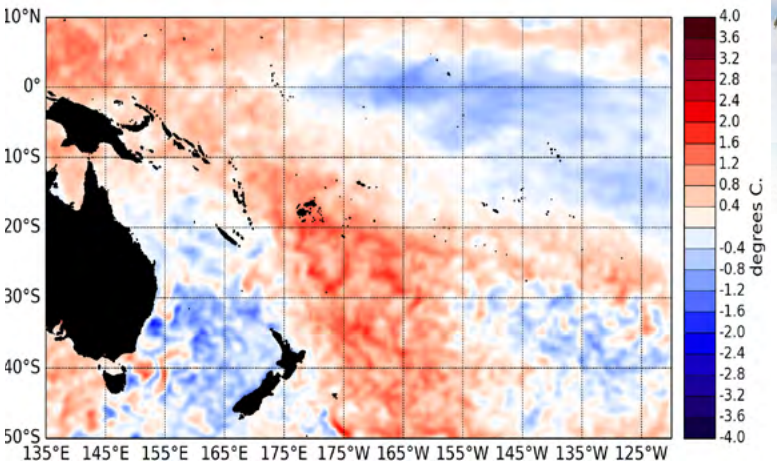
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

The tropical Pacific ocean remained in a neutral state (neither El Niño nor La Niña) in January 2014. The central and eastern Pacific has cooled slightly in January 2014 compared to December 2013. The NINO4 sea surface temperatures (SST) index (in the western Pacific) is currently at 0°C for January (down from 0.3°C in December). The NINO 3 value is −0.17°C for the month of January and NINO 3.4 is negative at −0.27°C (was +0.17°C in December). The large area of higher-than-normal SSTs that has been a persistent feature of the central east Pacific has weakened in amplitude in January 2014. Subsurface waters are currently much warmer (up to + 3°C) than normal in the western Pacific at about 150m. deep, while slightly cooler than normal waters are present at about 50m deep in the eastern Pacific. This indicates a thermocline tilted to the west, a pattern usually associated with La Niña. The trade winds are currently close to normal (as of 2 February), but a strong westerly wind burst, associated with a Madden–Julian Oscillation (MJO) pulse, has affected the far western Pacific during the last two weeks of January. The Intertropical Convergence Zone (ITCZ) was shifted north of its climatological position in the central and east Pacific. The latest value for the TRMM ENSO index for the 30 days to 7 January is −0.01 . The SOI is positive at +1.4

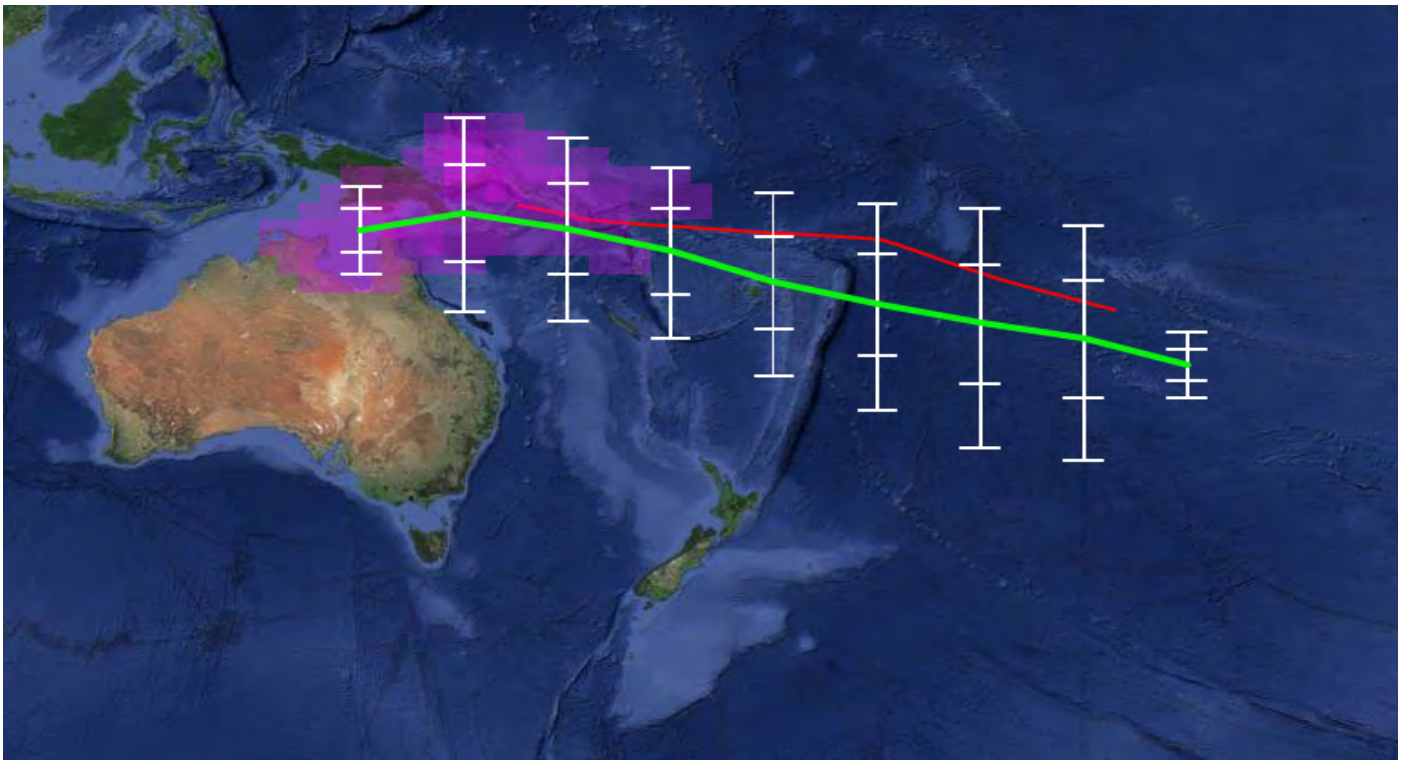


Surface temperature anomalies (°C) for January 2014, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres/).

for January 2014. The MJO has been very active in the western Pacific in last 2 weeks of January. The MJO forecasts for the next two weeks indicate possible intensified intra–seasonal convective activity over the maritime continent and western Pacific. The consensus forecast from IRI / CPC indicates that neutral ENSO conditions are very likely to persist over the January – March 2014 period, with 88 % chance, versus 4 % for La Niña and 8 % for El Niño.

South Pacific Convergence Zone forecast February to April 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 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 purple shading is proportional to the probability of intense convection developing within the SPCZ.



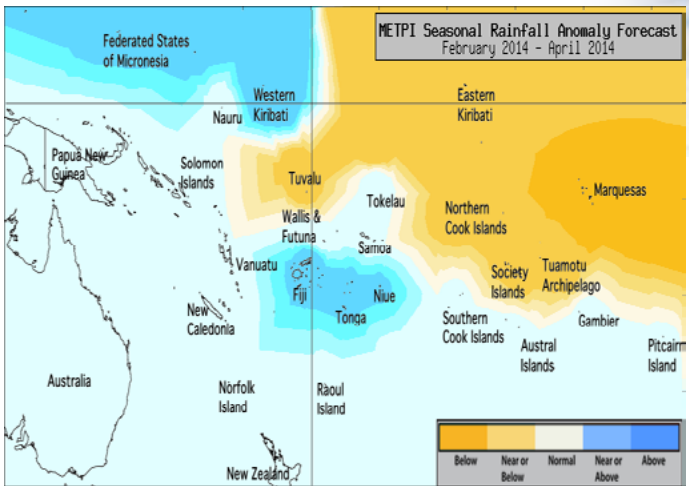
The ensemble of dynamical forecasts indicates that the SPCZ is expected to sit slightly south of normal for this time of year, and more intense than normal convective activity is forecast for Gulf of Carpentaria, Bismarck Archipelago, Solomon Islands and northern Vanuatu. Uncertainty in the SPCZ position is relatively large, especially east of the International Dateline.

Tropical rainfall and SST outlook: February to April 2014

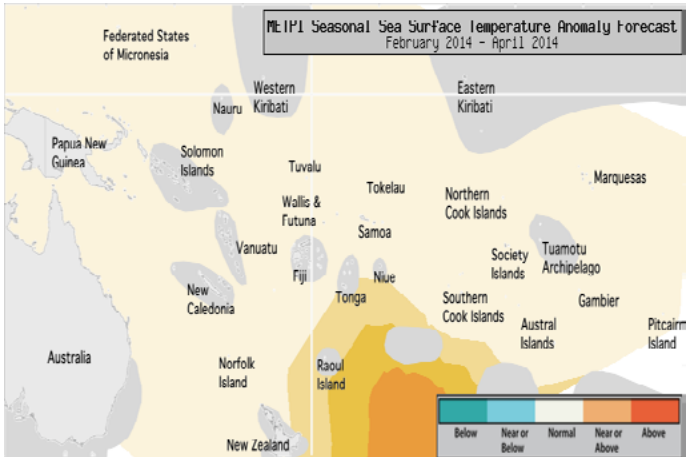
The dynamical models indicate drier conditions than normal for the February to April 2014 period in the eastern equatorial and south Pacific. Slightly wetter than normal conditions are expected in the equatorial west Pacific as well as around the Dateline south of the Equator. Near or above normal rainfall is forecast for the Federated States of Micronesia, Western Kiribati, Niue, Fiji and Tonga. Near normal rainfall is expected for the Austral Islands, the Southern Cook Islands, New Caledonia, Papua New Guinea, Pitcairn Island, Samoa, the Solomon Islands, Tokelau, Vanuatu and Wallis & Futuna. Normal or below normal rainfall is forecast for the Northern Cook Islands, Eastern Kiribati, the Society Islands, the Tuamotu archipelago and Tuvalu. Below normal rainfall is forecast for the Marquesas.

The global model ensemble forecast for SST indicates that the region of higher than normal temperatures in the central and eastern Pacific that has been present over the past seven months has recently weakened (see Figure on page 2) but will nonetheless persist throught February – April 2014. Normal SSTs are forecast for the Austral Islands, the Marquesas, the Federated States of Micronesia, the Northern Cook Islands, Pitcairn Island, Papua New Guinea, Samoa, the Society Islands, the Southern Cook Islands, Tokelau, Tuvalu and Wallis & Futuna. Elsewhere in the Pacific there is relative poor agreement between the dynamical model forecasts, leading to weak guidance (i.e. climatological probabilities).

The confidence for the rainfall outlook is generally high, except for the Solomon Islands where uncertainty is greater. The average region–wide hit rate for rainfall forecasts issued in February is 69 %, 3 % higher than the long–term average for all months combined. The confidence is high for the SST forecasts where guidance is provided.



Rainfall anomaly outlook map for February - April 2014

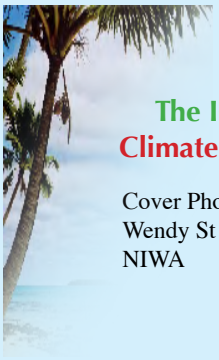


SST anomaly outlook map for February - April 2014

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
Fiji	25:40:35 (Normal or Above)	High
Kiribati (Western)	25:40:35 (Normal or Above)	High
Niue	25:40:35 (Normal or Above)	High
Tonga	25:40:35 (Normal or Above)	High
FSM	25:40:35 (Normal or Above)	High
Austral Islands	30:40:30 (Near normal)	High
Cook Islands (Southern)	30:40:30 (Near normal)	High
New Caledonia	30:40:30 (Near normal)	High
Papua New Guinea	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)	Moderate-High
Tokelau	30:40:30 (Near normal)	High
Vanuatu	30:40:30 (Near normal)	High
Wallis & Futuna	30:40:30 (Near normal)	High
Cook Islands (Northern)	35:40:25 (Normal or Below)	High
Kiribati (Eastern)	35:40:25 (Normal or Below)	High
Society Islands	35:40:25 (Normal or Below)	High
Tuamotu Islands	35:40:25 (Normal or Below)	High
Tuvalu	40:35:25 (Normal or Below)	High
Marquesas	45:35:20 (Below)	High

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



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