Number 162, March 2014

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The tropical Pacific remains in a neutral ENSO state.
- Sea surface temperatures (SSTs) are slightly cooler than normal in the eastern equatorial Pacific
- International guidance indicates that neutral ENSO conditions are likely (87 % chance) to persist for the coming three months. Chances of El Niño increase towards the Southern Hemisphere winter.

The South Pacific Convergence Zone (SPCZ)

- The SPCZ is expected to be positioned slightly southwest of normal for the coming three months in the central and eastern Pacific.

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

- Normal or below normal rainfall is forecast for Samoa, the Society Islands, Tokelau, the Tuamotu Archipelago, Tuvalu and the Northern Cook Islands. Below normal rainfall is forecast for the Marquesas.
- Near or above normal rainfall is forecast for the Federated States of Micronesia, the Austral Islands, the Southern Cook Islands, Western Kiribati, Niue, Papua New Guinea, Pitcairn Island, Vanuatu, and the Federated States of Micronesia.
- Near or above normal SSTs are forecast for Fiji, Western Kiribati and Tonga. Normal SSTs are generally expected elsewhere.

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

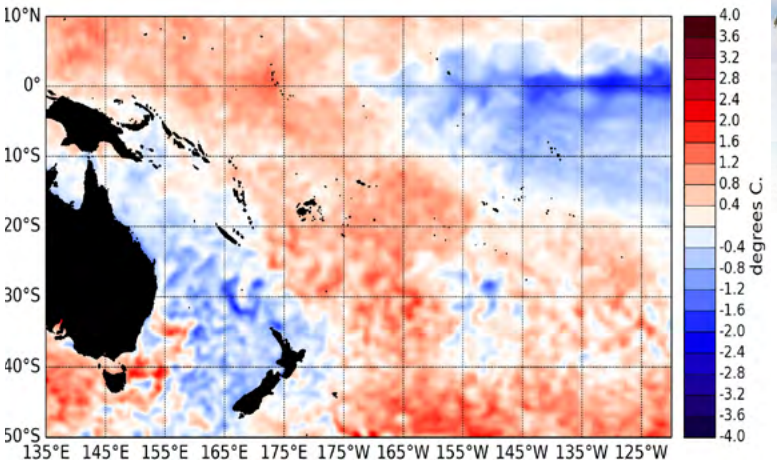
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

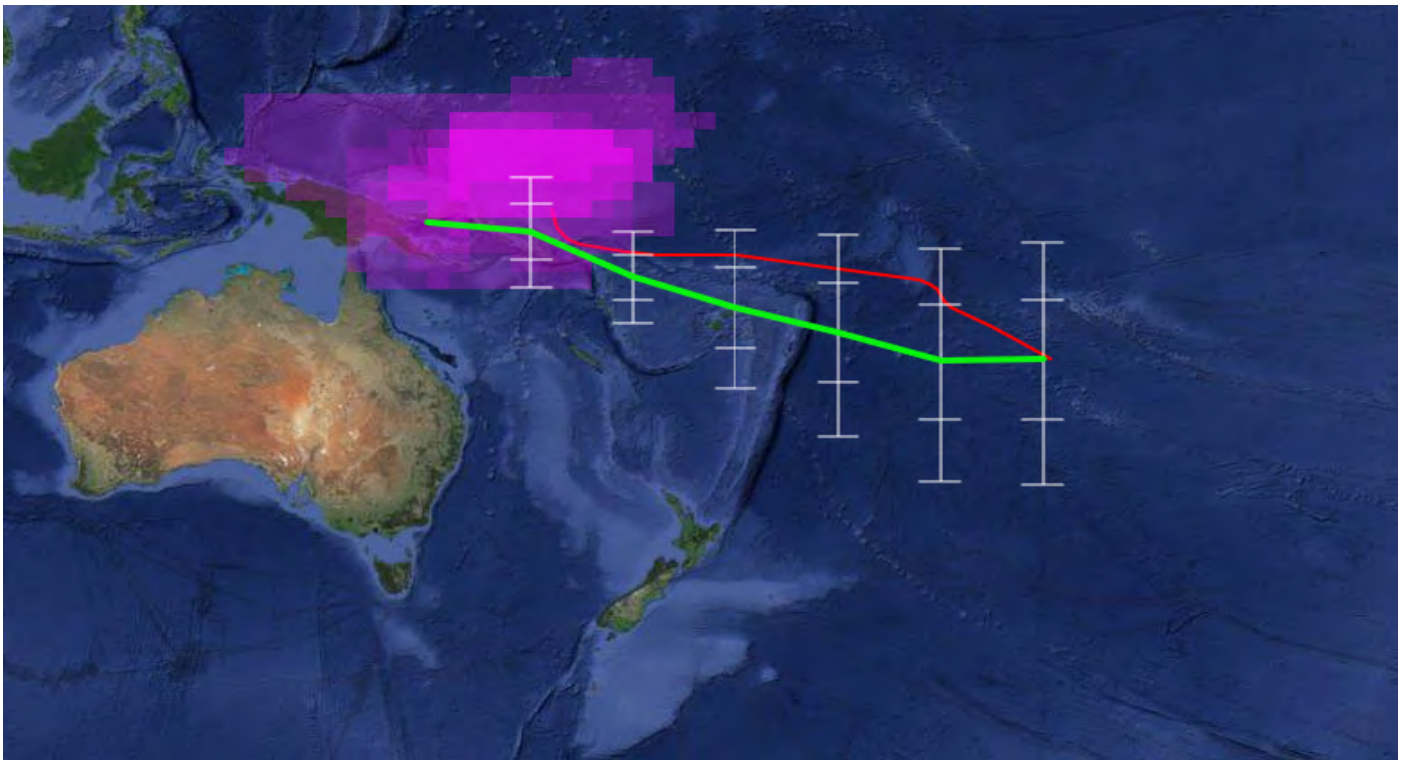
The tropical Pacific Ocean remained in a neutral state (neither El Niño nor La Niña) in February 2014. The central and eastern Pacific has cooled further in February compared to January. Both the NINO3.4 and NINO3 sea surface temperatures (SST) indices are currently negative (respectively −0.36 and −0.55°C). The NINO4 index (in the western Pacific) remains weakly positive at 0.28°C for February. The large area of higher- than-normal SSTs that has been a persistent feature of the central east Pacific has weakened and shifted eastward compared to January. Subsurface waters are currently much warmer (up to + 4°C) than normal in the western and central Pacific at about 150m. deep, while slightly cooler than normal waters are present at about 50m deep in the eastern Pacific. A very strong westerly wind anomaly (westerly wind burst) affected the western Pacific over the last week of February. This was associated with an intense Madden–Julian Oscillation (MJO) pulse. The Intertropical Convergence Zone (ITCZ) was shifted north of its climatological position throughout the Pacific. The South Pacific Convergence Zone was shifted southwest of its climatological position. The latest value for the TRMM ENSO index for the 30 days to 3 March is 0.36. The Southern Oscillation Index (SOI) is slightly negative at −0.3 for February 2014. A intense MJO event affected the western Pacific in the last week of February. The MJO forecasts for the next two weeks are in disagreement so no clear guidance can be provided this month with regards to the intra-seasonal convective activity in the Pacific over the next two weeks. The consensus forecast from IRI / CPC indicates that neutral ENSO conditions are likely to persist over the March – May 2014 period, with 87 % chance, versus 8 % for La Niña and 5 % for El Niño.



Surface temperature anomalies (°C) for February 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 March to May 2014

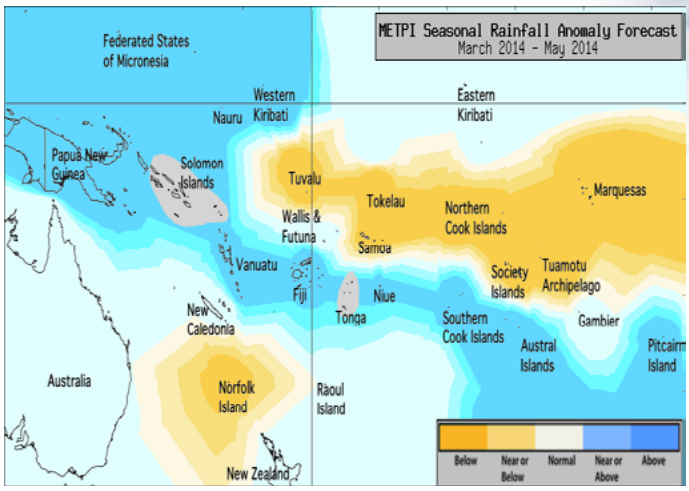
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of 8 climate models. The white vertical bars and 'whiskers' 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 in the central Pacific for this time of year, and more intense than normal convective activity is forecast for the western Pacific over Northern Papua New Guinea, the Bismarck Archipelago, the Solomon Islands and northern Vanuatu. Uncertainty in the SPCZ position is greater east of the International Dateline.

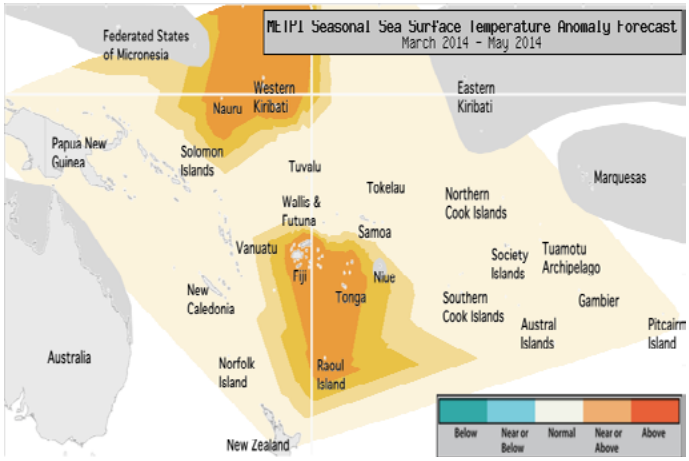
Tropical rainfall and SST outlook: March to May 2014

The dynamical models indicate drier conditions than normal for the March to May 2014 period in the eastern equatorial and south Pacific. Wetter than normal conditions are expected in the equatorial west Pacific. Near or above normal rainfall is forecast for the Federated States of Micronesia, the Austral Islands, the Southern Cook Islands, Western Kiribati, Niue, Papua New Guinea, Pitcairn Island, Vanuatu, and the Federated States of Micronesia. Near normal rainfall is expected for Eastern Kiribati, New Caledonia and Wallis & Futuna. Normal or below normal rainfall is forecast for Samoa, the Society Islands, Tokelau, the Tuamotu Archipelago, Tuvalu and the Northern Cook Islands. Below normal rainfall is forecast for the Marquesas. No clear guidance is available this month for Fiji, Tonga and the Solomon Islands.



Rainfall anomaly outlook map for March - May 2014

The global model ensemble forecast for SST indicates that the large area of positive SST anomalies in the central and eastern Pacific that has been a persistent feature in the region over more than a year will persist over March – May 2014. Near normal or above normal SSTs are forecast for Fiji, Western Kiribati and Tonga. Normal SSTs are forecast for the Austral Islands, New Caledonia, the Northern Cook Islands, Pitcairn, Papua New Guinea, Samoa, the Society Islands, the Solomon Islands, the Southern Cook Islands, Tokelau, the Tuamotu Archipelago, Tuvalu, Vanuatu and Wallis and Futuna. No clear guidance is provided for Eastern Kiribati, the Marquesas, the Federated States of Micronesia and Niue.



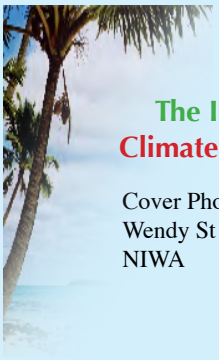
SST anomaly outlook map for March - May 2014

The confidence for the rainfall outlook is generally high, uncertainty is greater for Western Kiribati, Eastern Kiribati and the Solomon Islands. The average region–wide hit rate for rainfall forecasts issued in March is 63 %, similar to the long–term average for all months combined. Confidence for the SST forecasts is high where guidance is available.

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	20:35:45 (Normal or Above)	High
Austral Islands	25:35:40 (Normal or Above)	High
Cook Islands (Southern)	25:40:35 (Normal or Above)	High
Kiribati (Western)	25:40:35 (Normal or Above)	Moderate-High
Niue	25:40:35 (Normal or Above)	High
Papua New Guinea	25:40:35 (Normal or Above)	High
Pitcairn Island	25:40:35 (Normal or Above)	High
Vanuatu	25:40:35 (Normal or Above)	High
Kiribati (Eastern)	30:40:30 (Near normal)	Moderate-High
New Caledonia	30:40:30 (Near normal)	High
Wallis & Futuna	30:40:30 (Near normal)	High
Fiji	30:35:35 (Climatology)	High
Tonga	30:35:35 (Climatology)	High
Solomon Islands	33:33:33 (Climatology)	Moderate-High
Samoa	35:40:25 (Normal or Below)	High
Society Islands	35:40:25 (Normal or Below)	High
Tokelau	35:40:25 (Normal or Below)	High
Tuamotu Islands	35:40:25 (Normal or Below)	High
Tuvalu	35:40:25 (Normal or Below)	High
Cook Islands (Northern)	40:35:25 (Normal or Below)	High
Marquesas	45:35:20 (Below)	High

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



The Island Climate Update

Cover Photo:
Wendy St George,
NIWA

Visit The Island Climate Update at:
www.niwa.co.nz/climate/icu

Your comments and ideas about The Island Climate Update are welcome. Please contact:

Dr Nicolas Fauchereau, NIWA,
41 Market Place, Auckland, New Zealand
E-mail: Nicolas.Fauchereau@niwa.co.nz

Forecasts:
Dr. Nicolas Fauchereau and Dr. Andrew Lorrey and (South Pacific rainfall, SPCZ and SST forecasts) and the NIWA National Climate Centre (ENSO wrap)

ICU Editorial team:
Nicolas Fauchereau:
Nicolas.Fauchereau@niwa.co.nz
Andrew Lorrey: a.lorrey@niwa.co.nz
Petra Chappell: p.chappell@niwa.co.nz

Acknowledgements

This bulletin is produced by NIWA and made possible with financial support from the New Zealand Ministry of Foreign Affairs and Trad (MFAT), with additional support from NOAA and the Secretariat for the Pacific Regional Environmental Programme (SPREP).

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