

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The tropical Pacific remains in a neutral ENSO state in April 2014, but models forecasts and current indicators collectively suggest El Niño is likely by the middle of the year.
- Sea surface temperatures (SSTs) are warmer than normal in the central and eastern Pacific.
- Chances for El Niño have increased to 45 % over the forecast period. El Niño is likely to occur by the middle of the year.

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

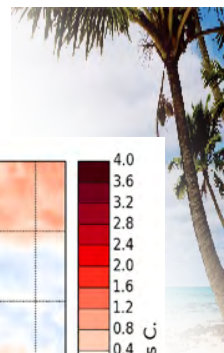
European Centre for
Medium Range Weather
Forecasts

UK Met Office

World Meteorological
Organization

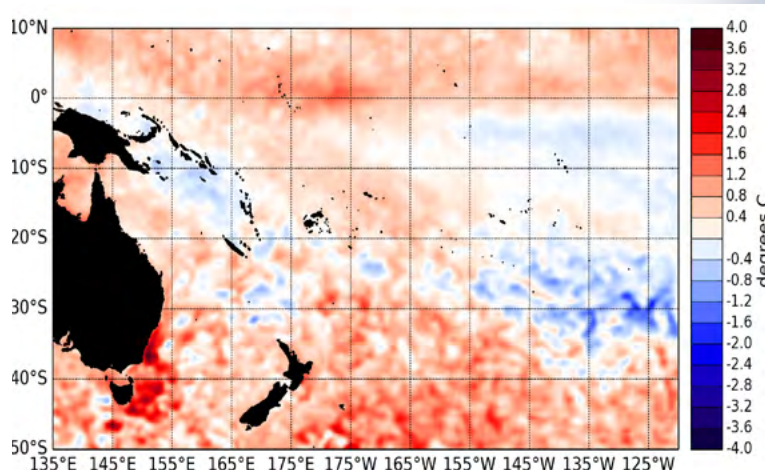
MetService of
New Zealand





El Niño/Southern Oscillation (ENSO)

The tropical Pacific Ocean remained in a neutral state (neither El Niño nor La Niña) in April 2014. However patterns of atmospheric and especially oceanic anomalies clearly indicate that an El Niño is currently developing. Sea Surface Temperatures (SSTs) are now positive all along the Equator except for the far western Pacific (west of about 145°E). The latest monthly values for all NINO indices are consequently positive: 0.34°C for NINO3.4, 0.47°C for NINO3, and 0.5°C for NINO4. Warm anomalies in the subsurface ocean have continued to propagate eastward and now exceed +5°C east of about 110°W at about 50m depth. Ocean heat content anomalies exceed +2°C over the same region. The Intertropical Convergence Zone (ITCZ) was broader and more intense than normal east of about 155°E, while convective activity was reduced over the maritime continent. Convection and rainfall in the South Pacific Convergence Zone (SPCZ) was reduced east of 165°E but intensified over the Solomon Islands and to the east of Papua New Guinea. The latest value for the TRMM ENSO index for the 30 days to 4 May is 1.54 (indicating El Niño-like precipitation anomalies), however the Southern Oscillation Index (SOI) is positive (+1) for April 2014. The Madden – Julian Oscillation (MJO) has been mostly inactive in the last two weeks, and the forecasts indicate

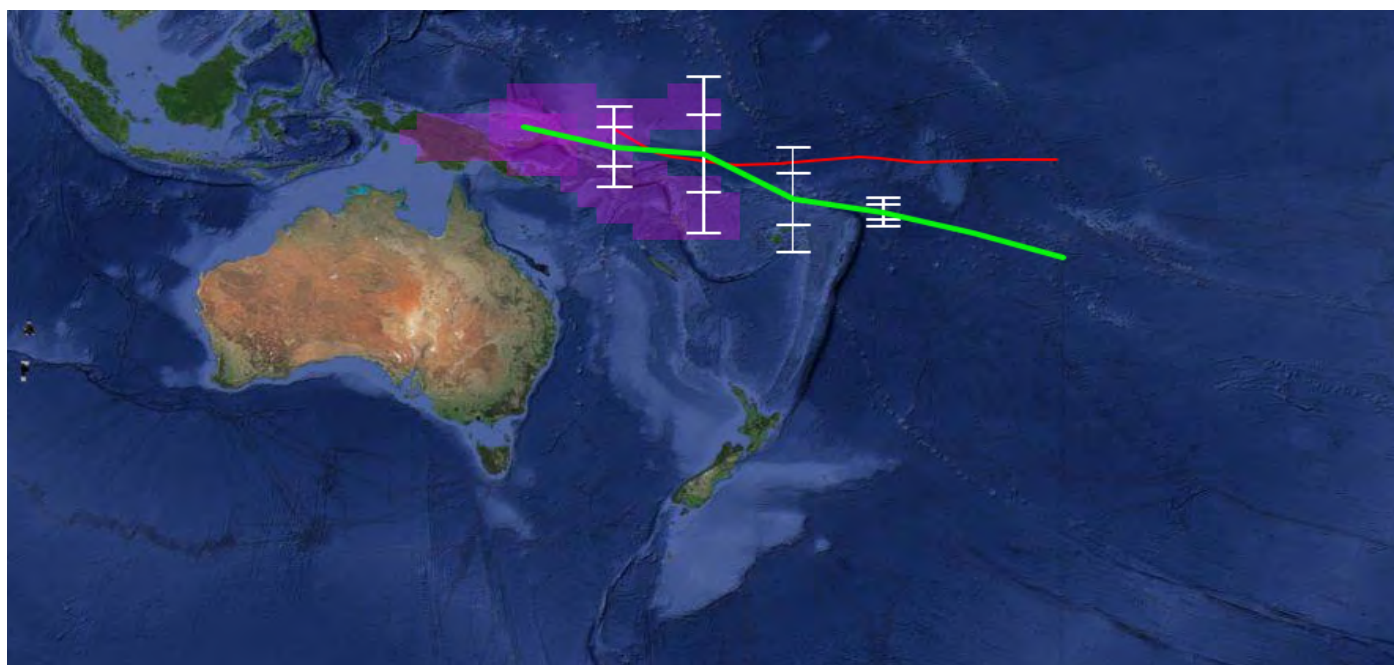


Surface temperature anomalies (°C) for April 2014, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres/>).

reduced intra-seasonal convective activity associated with the MJO over the next two weeks. The consensus forecast from IRI / CPC indicates that neutral ENSO conditions are the most likely outcome (64 % chance) over the May – July 2014 period, however the chances of El Niño thresholds being crossed over the same period reach 45%. Chances for El Niño increases over the following seasons to reach 66% in November - January 2014/15.

South Pacific Convergence Zone forecast May to July 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.

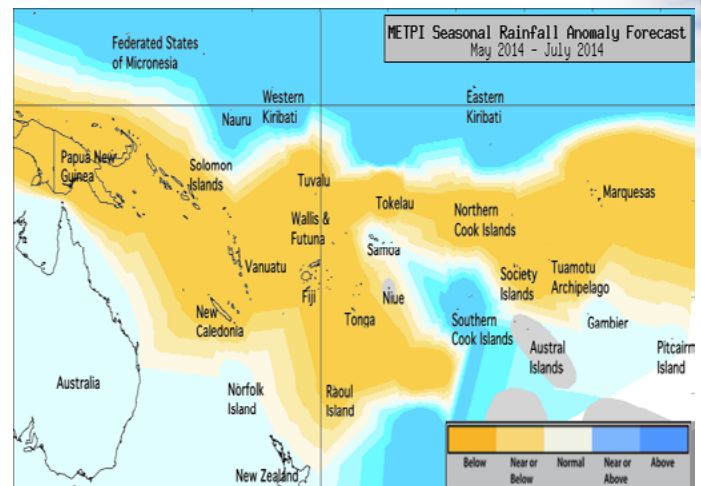


The ensemble of dynamical forecasts indicates that the SPCZ is expected to be located close to normal in the western Pacific and slightly south of its climatological position towards the east. In general, the models indicate weak SPCZ activity with the transition into winter, with some localized convection over the Bismarck Sea and the Solomon Islands.

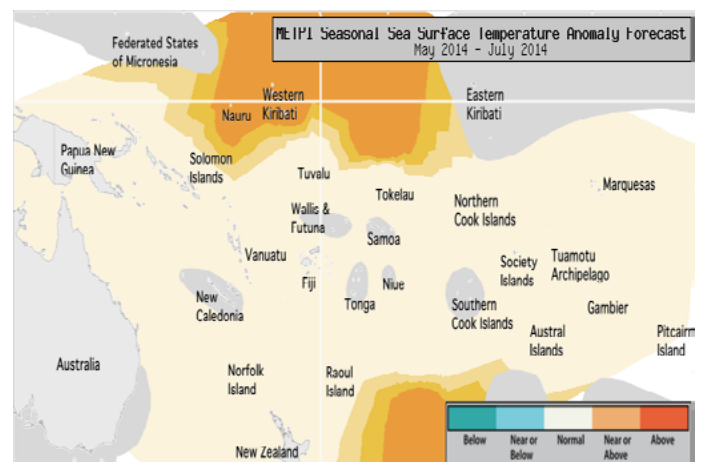
Tropical rainfall and SST outlook: May to July 2014

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

The global model ensemble forecast for SST continues to indicate warmer than normal SSTs in the central Equatorial Pacific as well as to the east of New Zealand, where warmer than normal sea surface temperatures have persisted for more than 15 months. Near normal or above normal SSTs are forecast for Western Kiribati. Near normal SSTs are forecast for the Austral Islands, Fiji, the Marquesas, the Northern Cook Islands, Pitcairn Island, Papua New Guinea, the Society Islands, the Solomon Islands, Tokelau, the Tuamotu archipelago, Tuvalu and Vanuatu. No clear guidance is provided for Eastern Kiribati, the Federated States of Micronesia, New Caledonia, Niue, Samoa, the Southern Cook Islands, Tonga and Wallis & Futuna. The confidence for the rainfall outlook is generally moderate to high, uncertainty is greater for the Federated States of Micronesia, Papua New Guinea, the Solomon Islands and New Caledonia. The average region-wide hit rate for rainfall forecasts issued in May is 56 %, 7 points lower than the average for all months combined. Confidence for the SST



Rainfall anomaly outlook map for May - July 2014



SST anomaly outlook map for May - July 2014

forecasts is high except for Western Kiribati.

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

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

Follow us on twitter: [@ICU_NIWA](https://twitter.com/ICU_NIWA)

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: Andrew.Lorrey@niwa.co.nz
Nava Fedaeff: Nava.Fedaeff@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.

The contents of The Island Climate Update may be freely disseminated, provided the source is acknowledged.

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 Micronesia, Fiji, 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