

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- Borderline El Niño conditions returned in the Pacific during September 2014.
- Oceanic and atmospheric indicators are pointing in the direction of a possible weak El Niño event developing.
- Chances for El Niño over the October – December 2014 period are 67%, increasing to 72% in December 2014 – February 2015.

The South Pacific Convergence Zone (SPCZ)

- The SPCZ is expected to be positioned 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 Marquesas, New Caledonia, Samoa, the Society Islands, Tonga, Tuvalu, Vanuatu, the Northern Cook Islands, Fiji, Tokelau, the Tuamotu archipelago and Wallis & Futuna.
- Normal or above normal rainfall is forecast for the Austral Islands, the Solomon Islands, Eastern Kiribati, Niue and Papua New Guinea.
- Normal or above normal SSTs are forecast for Western Kiribati, Eastern Kiribati, the Federated States of Micronesia, Papua New Guinea and the Solomon 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

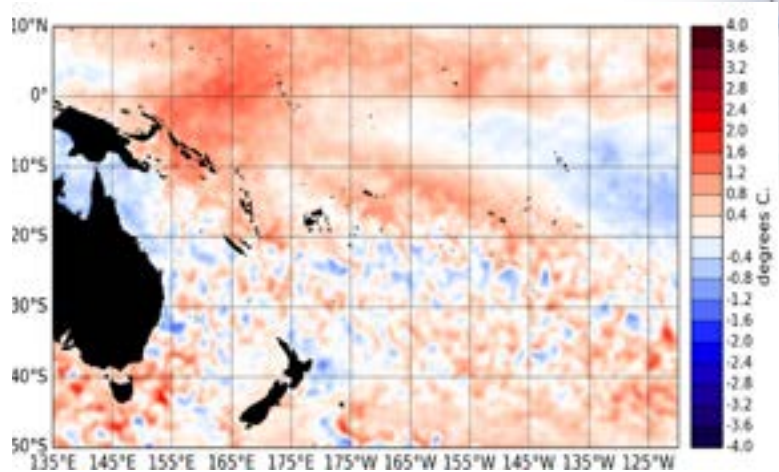
World Meteorological
Organization

MetService of
New Zealand



El Niño/Southern Oscillation (ENSO)

During September 2014, borderline El Niño conditions returned in the Pacific Ocean. Equatorial sea surface temperatures (SSTs) rose in the western and eastern Pacific. The latest monthly anomaly values for the NINO SST indices are: +0.42 for NINO3.4 (up from +0.26°C in August), +0.43°C for NINO3 (same value as last month), and +0.72°C for NINO4 (up from +0.62°C in August). Oceanic subsurface heat content also increased in the equatorial eastern Pacific, coinciding with a downwelling Kelvin wave which propagated along the equatorial wave-guide in September, triggered by the occurrence of relatively strong westerly wind anomalies in the far western Pacific. The Southern Oscillation Index (SOI) is at -0.7 for September 2014. The latest value for the TRMM ENSO index for the 30 days to 2 October is on El Niño side of neutral at +0.38. The Intertropical Convergence Zone (ITCZ) was intensified in the central and eastern Pacific. The South Pacific Convergence Zone (SPCZ) on the other hand was displaced southwest of its climatological position. Again this month, several Islands groups in the central south Pacific (e.g. Fiji, Samoa, Tonga, Niue, the Southern Cook Islands) experienced drier conditions than normal for this time of the year. A Madden – Julian Oscillation (MJO) pulse was associated with increased convective activity in the western Pacific last month.

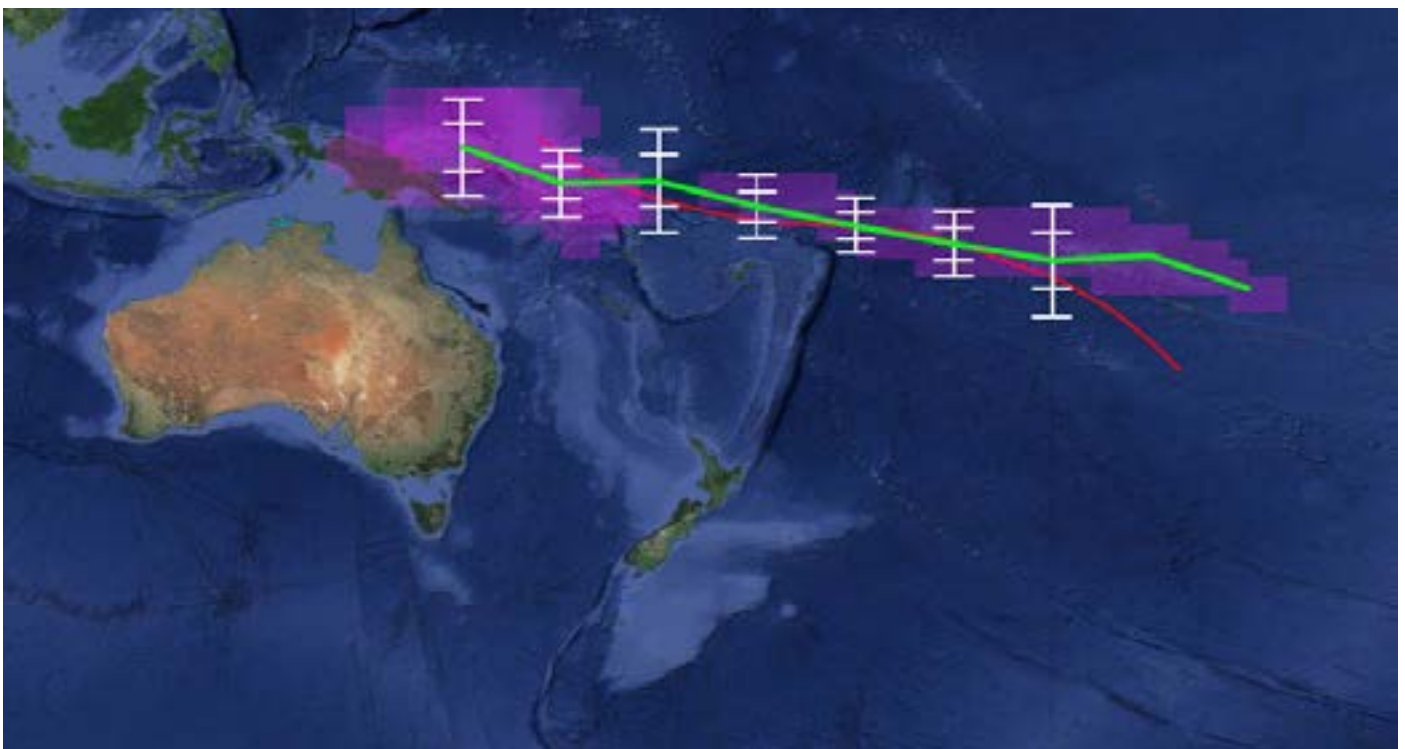


Surface temperature anomalies (°C) for September 2014, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (<ftp://ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres/>).

The dynamical and statistical forecasts from the CPC are at odds for the next 15 days, with the dynamical model forecasting increased intra-seasonal convection in the western Pacific, and the statistical model indicating a mostly inactive MJO. The consensus forecast from the IRI / CPC indicate that the chance of El Niño developing over the October – December 2014 period is 67%, increasing to 72% for December 2014 – February 2015.

South Pacific Convergence Zone forecast October to December 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 October - December 2014, the SPCZ is forecast to be positioned close to normal for the time of year. Model uncertainty is highest over French Polynesia and near the Bismarck Archipelago. An area of intense convection is forecast over northern Papua New Guinea and the Solomon Islands..

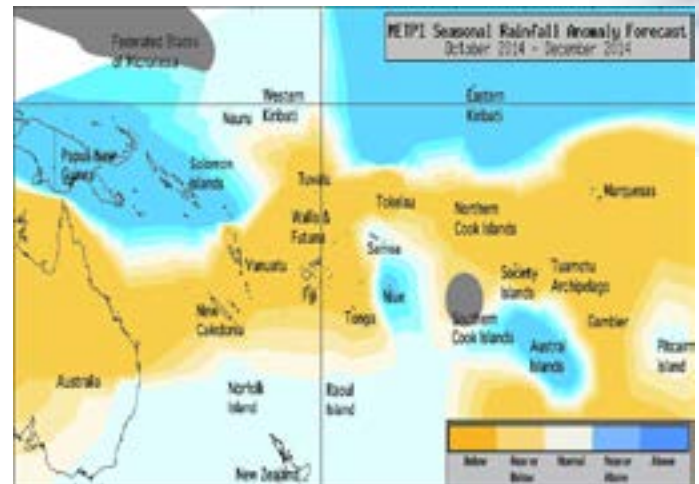
Tropical rainfall and SST outlook: October to December 2014

The dynamical models forecasts indicate again this month that several Island groups in the Pacific south of the Equator are likely to receive less rainfall than normal during the October to December 2014 season. Normal or below normal rainfall is forecast for the Marquesas, New Caledonia, Samoa, the Society Islands, Tonga, Tuvalu, Vanuatu, the Northern Cook Islands, Fiji, Tokelau, the Tuamotu archipelago and Wallis & Futuna. Normal or above normal rainfall is forecast for the Austral Islands, the Solomon Islands, Eastern Kiribati, Niue and Papua New Guinea. Near normal rainfall is expected for Western Kiribati and Pitcairn Island. No clear guidance is available for the Federated States of Micronesia and the Southern Cook Islands.

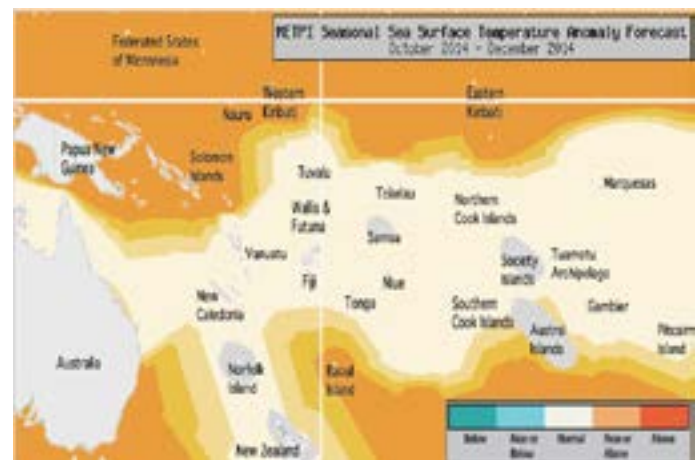
The global model ensemble forecast for SSTs indicate higher than normal SSTs over the whole Equatorial Pacific. The models also indicate warmer than normal conditions to the east of New Zealand at subtropical and mid-latitudes, despite recent observations showing a weakening of the anomalies in the same region. Normal or above normal SSTs are forecast for Western Kiribati, Eastern Kiribati, the Federated States of Micronesia, Papua New Guinea and the Solomon Islands. Near normal SSTs are forecast for Fiji, the Marquesas, New Caledonia, Niue, the Northern and Southern Cook Islands, Pitcairn, Tokelau, Tonga, the Tuamotu archipelago, Tuvalu, Vanuatu and Wallis & Futuna. No guidance was available this month for the Austral Islands, Samoa and the Society Islands.

The confidence for the rainfall outlook is generally high. Climatological probabilities for the Federated States of Micronesia and the Southern Cook Islands are typically associated with moderate confidence. The average region-wide hit rate for rainfall forecasts issued in September is 66 %, two points higher than the average for all months combined.

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.



Rainfall anomaly outlook map for October - December 2014



SST anomaly outlook map for October - December 2014

Confidence for the SST forecasts is generally high.

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

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