Number 173, February 2014

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- Sea surface temperatures in the Equatorial Pacific were close to El Niño thresholds in January 2015.
- Regional atmospheric patterns are inconsistent with El Niño.
- Probability for El Niño during February – April 2015 is about 60 %.

The South Pacific Convergence Zone (SPCZ)

- The SPCZ is expected to be positioned north of 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 Fiji, the Marquesas, New Caledonia and Vanuatu.
- Normal or above normal rainfall is forecast for Western Kiribati, Samoa, Tokelau, Tuvalu, the Austral Islands and the Society Islands.
- Normal or above normal SSTs are forecast for western Kiribati , eastern Kiribati, Tokelau and Tuvalu. Normal or below normal SSTs are forecast for Pitcairn Island.

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

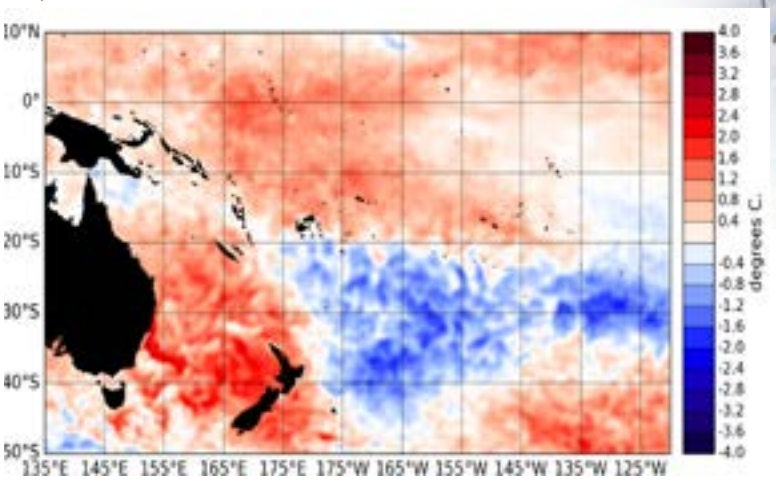
NOAA

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

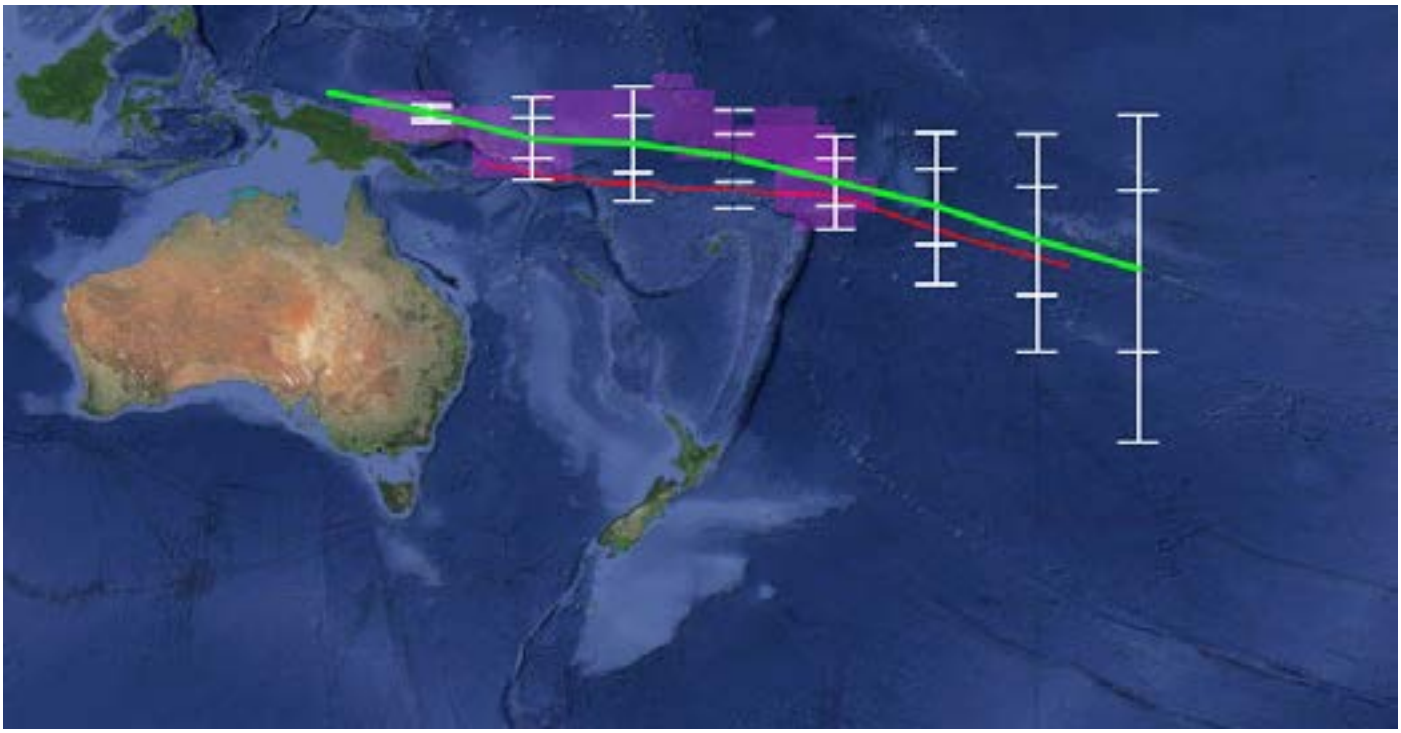
The tropical Pacific Ocean continued to hover between neutral and weak El Niño conditions in January 2015. Equatorial sea surface temperatures (SSTs) remain warmer than normal over most of the basin, with the exception of the far eastern Pacific, where slightly cooler than normal SSTs have recently appeared. The latest monthly anomaly values for the NINO SST indices are: +0.39°C for NINO3.4 (down from about +0.8°C the preceding month), +0.10°C for NINO3 (a sharp decrease from about +0.8°C last month), and +0.87°C for NINO4 (was +1°C in December 2014). Subsurface ocean temperature anomalies over +2°C persist at about 150m depth just east of the International Dateline. Oceanic heat content anomalies (300m to surface) are positive in the western and central Pacific but negative east of about 120°W. The Southern Oscillation Index (SOI) is at –0.7 for January 2015 (on the El Niño side of neutral). However patterns of convection and rainfall are still inconsistent with El Niño, with convective activity and rainfall at higher levels than normal in the western Pacific Ocean. The latest value for the TRMM ENSO index for the 30 days to 4 February is +0.03 (reflecting neutral conditions). The MJO very recently (as of 3 February) increased amplitude in the western Pacific, coinciding with a strong Westerly Wind Burst that occured around 160°E. The CPC indicates increased levels of intra-seasonal convective activity are likely in the western Pacific over the next two weeks. The consensus ENSO forecast from the IRI/CPC places the chance of El Niño developing over the February – April period at about 60% (reduced probability compared to previous months forecasts). Note that the current forecast period (February – April) is reaching into what is typically the decaying phase of the El Niño – Southern Oscillation.



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/).

South Pacific Convergence Zone forecast February to April 2015

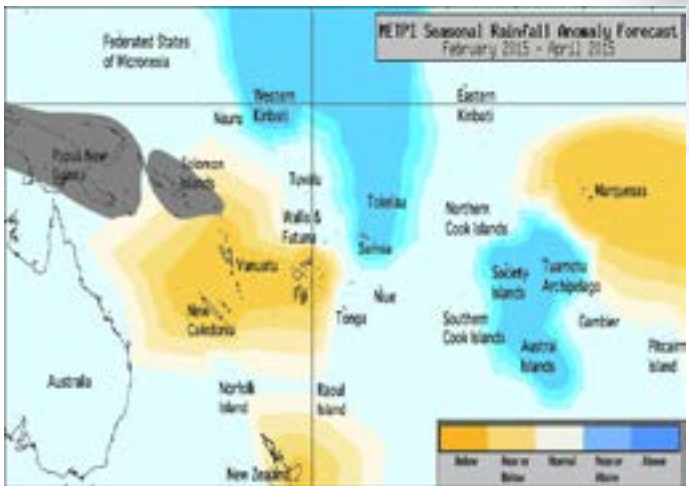
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of eight climate models. The white vertical bars and '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 South Pacific Convergence Zone (SPCZ) is forecast to be positioned to the north of normal during the February to April 2015 period. Areas of higher than normal convective activity are expected along the SPCZ from the Bismarck Archipelago extending across to the east of the International Dateline near Samoa. Confidence in the forecast is highest to the west of the International Dateline.

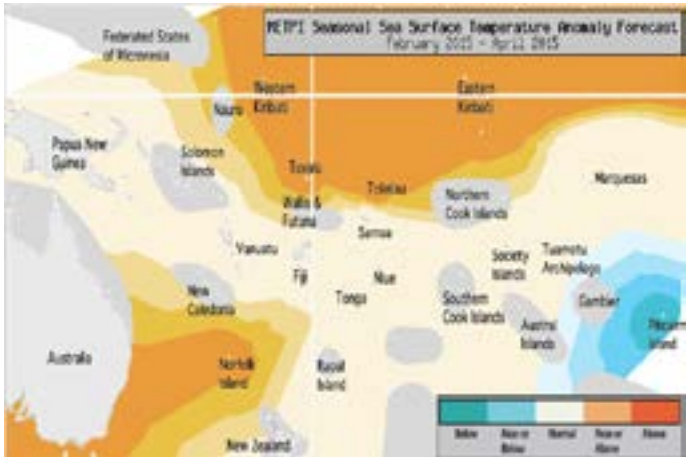
Tropical rainfall and SST outlook: February to April 2015

The dynamical model forecasts indicate that the central equatorial as well as some parts of the southeast Pacific are likely to experience normal or above normal rainfall in February – April 2015. In contrast, regions in the southwest as well as east Pacific are expected to experience reduced rainfall. Normal or below normal rainfall is forecast for Fiji, the Marquesas, New Caledonia and Vanuatu. Normal or above normal rainfall is forecast for Western Kiribati, Samoa, Tokelau, Tuvalu, the Austral Islands and the Society Islands. Near normal rainfall is expected for the Northern Cook Islands, the Southern Cook Islands, Eastern Kiribati, Niue, Pitcairn Island, Tonga, the Tuamotu archipelago, Wallis & Futuna and the Federated States of Micronesia. No clear guidance is available for Papua New Guinea and the Solomon Islands.



Rainfall anomaly outlook map for February - April 2015

The global model ensemble forecast for SSTs indicates higher than normal SSTs over the equatorial Pacific, with maximum anomalies east of the International Dateline. Above normal SSTs are also forecast to persist in the Tasman sea. Normal or above normal SSTs are forecast for Western Kiribati, Eastern Kiribati, Tokelau and Tuvalu. Normal or below normal SSTs are forecast for Pitcairn Island. Near normal SSTs are forecast for Fiji, the Marquesas, Niue, Papua New Guinea, Samoa, the Society Islands, Tonga, the Tuamotu archipelago and Vanuatu. No guidance is available for the Austral Islands, the Federated States of Micronesia, New Caledonia, the Northern Cook Islands, the Solomon Islands, the Southern Cook Islands and Wallis and Futuna.



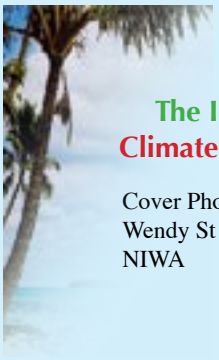
SST anomaly outlook map for February - April 2015

The confidence for the rainfall outlooks is moderate to high. The average region–wide hit rate for rainfall forecasts issued for the February – April season is 63 %, one point higher than the average for all months combined. The confidence for the SSTs forecasts is generally high.

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

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



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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.

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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