Number 148, January 2013

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The Pacific Ocean is still slightly warmer in parts of the tropics, and regional atmospheric circulation is close to normal.
- It is unlikely that El Niño will develop during the remainder of the summer season. Neutral ENSO conditions are forecast through early autumn 2013.

The South Pacific Convergence Zone (SPCZ)

- For the coming three months, the SPCZ is forecast to be close to its climatological position for most of the southwest Pacific.

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

- Below normal rainfall is forecast for the Marquesas.
- Near or above normal rainfall is forecast for Papua New Guinea, the Solomon Islands, Federated States of Micronesia, Niue, Tokelau and the Northern Cook Islands.
- Sea surface temperatures (SSTs) are forecast to be close to normal for most islands, except near the Coral Sea where normal or above normal SSTs are forecast.

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

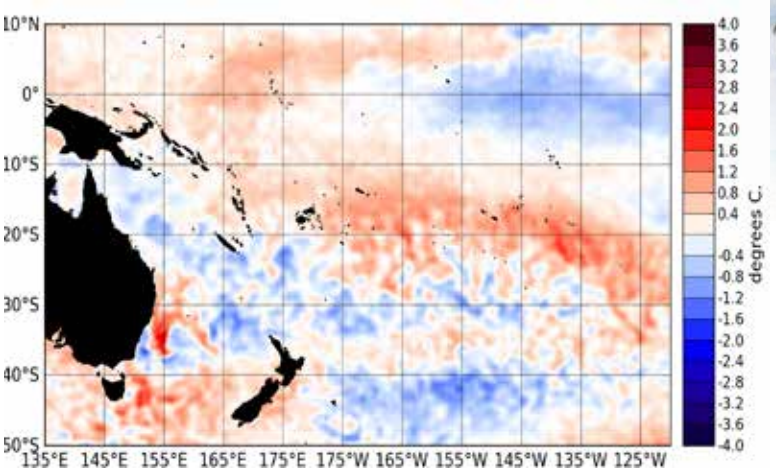
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

The equatorial Pacific Ocean reflects ENSO-neutral conditions. December SST values of +0.1°C existed for NINO3 and +0.5°C for NINO4. The SOI dropped in December to –0.8, with a 3–month average (October–December) of –0.1. The region of warmest SST anomalies is still centered west of the Dateline, and there are weak negative SST anomalies along the Equator in the far eastern Pacific. A warmer than normal sub–surface temperature anomaly persists at about 100m depth, but since November this has weakened and retreated westwards to near the Dateline. Other ENSO indicators, such as low level winds in the tropical Pacific and upper ocean heat content, are weak. Enhanced convection was largely absent from the Indonesian region during December. The South Pacific Convergence Zone (SPCZ) was quite prominent during the month, and located slightly south of its normal position. The latest value for the TRMM ENSO index for the 30 days to 2nd January is –0.78, which is on the La Niña side of neutral.

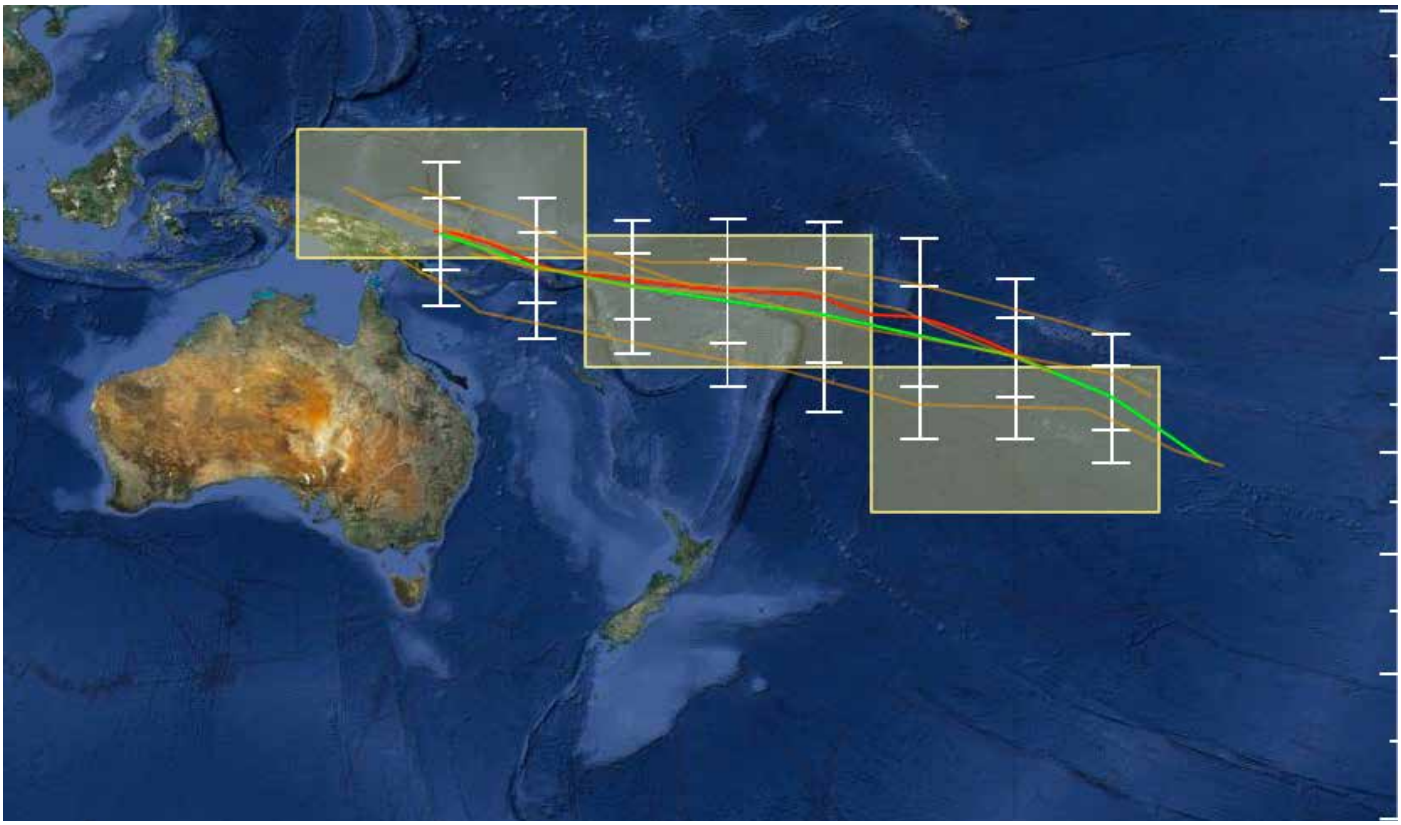


Surface temperature anomalies (°C) for December 2012, data is from the NOAA OISST Version 2 dataset, available at the NOAA's Climate Data Center (ftp.cdc.noaa.gov/Datasets/noaa.oisst.v2.highres).

International guidance indicates that the tropical Pacific Ocean is very likely to remain neutral over the next three months (January–March). All the 10 dynamical models and 5 statistical models monitored by NIWA forecast ENSO–neutral SST anomalies for January–March 2013 and also for the following April–June season. The NCEP 06 December forecast favours neutral conditions to persist into the southern hemisphere autumn. The IRI/CPC joint forecast of 20 December indicates a 94% chance of neutral conditions for the January–March 2013 season, a 5% chance of El Niño, and little chance for La Niña.

South Pacific Convergence Zone forecast January to March 2013

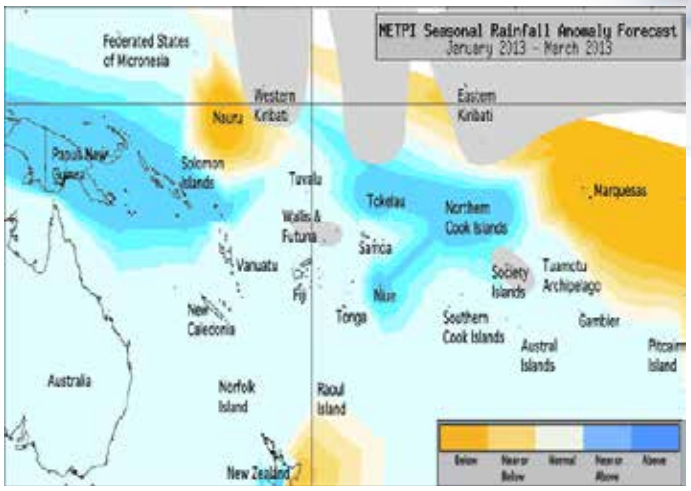
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of 8 climate models. The white vertical bars and 'whiskers' indicate the one and two standard deviations between the model projections of the SPCZ position every 5 degrees of longitude.



For the coming three months, the dynamical models indicate that the South Pacific Convergence Zone (SPCZ) is likely to sit close to its climatological position over the southwest Pacific. The uncertainty in the SPCZ location for the forecast period is highest to the east of the Dateline.

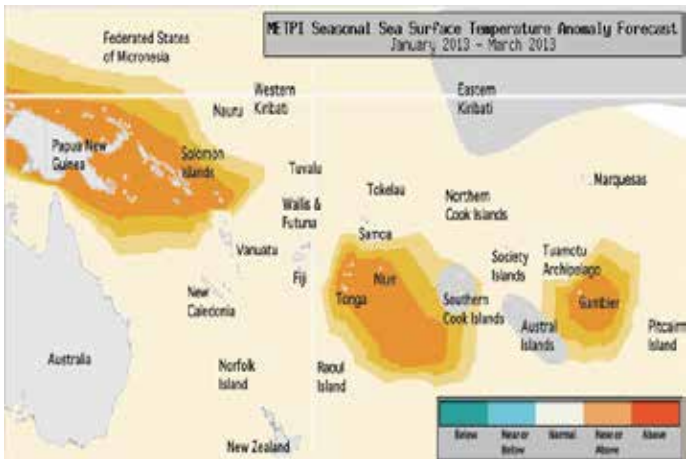
Tropical rainfall and SST outlook: January to March 2013

The tropical Pacific is still warmer than usual, but regional atmospheric circulation in the southwest Pacific is close to normal for this time of the year. The international consensus is for a continuation of neutral ENSO conditions throughout the summer and into early autumn. The global climate forecast models NIWA monitors generally agree that the ITCZ will be positioned south of normal and the SPCZ will be close to its average position for late summer and early autumn. For the coming three months, near or above normal rainfall is forecast for Papua New Guinea, the Federated States of Micronesia, the Solomon Islands, the Northern Cook Islands, Tokelau and Niue. Below normal rainfall is forecast for the Marquesas. No clear precipitation guidance is offered for Eastern Kiribati, Western Kiribati, Wallis & Futuna and the Society Islands. Normal rainfall is forecast for all other island groups.



Rainfall anomaly outlook map for January to March 2013

The global model ensemble shows some patterns that are similar to a weak El Niño in the SST field, however those anomalies are diminished from previous forecasts. Some of the forecasts in the ensemble show traits that are associated with a weak La Nina SSTa pattern, but these characteristics exist mostly east of the Dateline and along the Equator to the east of 160°W. For the coming three months, near normal or above normal SSTs are forecast for Papua New Guinea, the Solomon Islands, Niue and Tonga. No clear guidance is offered for the Austral Islands, the Southern Cook Islands or Eastern Kiribati. Normal sea surface temperatures are expected elsewhere.



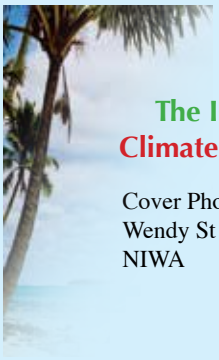
SST anomaly outlook map for January to March 2013

The confidence for the rainfall outlook is moderate to high. The average region–wide hit rate for rainfall forecasts issued in January is 58%, five points lower than the long–term average for all months combined. The SST forecast confidence is mostly high across the region, and uncertainty is greatest for islands to the east of the Dateline.

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

Island Group	SST Outlook	Confidence
Niue	25:40:35 (Normal or Above)	High
Papua New Guinea	25:40:35 (Normal or Above)	Moderate-High
Solomon Islands	25:40:35 (Normal or Above)	High
Tonga	25:40:35 (Normal or Above)	High
Cook Islands (Northern)	30:40:30 (Near normal)	High
Fiji	30:40:30 (Near normal)	High
Kiribati (Western)	30:40:30 (Near normal)	High
Marquesas	30:40:30 (Near normal)	Moderate
New Caledonia	30:40:30 (Near normal)	High
Pitcairn Island	30:40:30 (Near normal)	High
Samoa	30:40:30 (Near normal)	High
Society Islands	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
FSM	30:40:30 (Near normal)	High
Austral Islands	30:35:35 (Climatology)	Moderate
Cook Islands (Southern)	30:35:35 (Climatology)	Moderate
Kiribati (Eastern)	35:35:30 (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, 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.co.nz/

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
http://www.ecmwf.int/