Number 144, September 2012

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- The Tropical Pacific ocean continues to edge towards El Niño, but the atmospheric circulation has yet to show anomaly patterns typical of El Niño.

- International consensus is that a weak, and probably short-lived, El Niño will form during the September to November season.

The South Pacific Convergence Zone

- The South Pacific Convergence Zone is forecast to sit slightly south of its climatological position in the western Pacific and north in the eastern Pacific, with the greatest uncertainty east of the Dateline.

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

- Normal or below normal rainfall is forecast for Fiji, Samoa, the Austral Islands and Wallis & Futuna.

- Above normal rainfall is forecast for the Federated States of Micronesia.

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- Normal rainfall is forecast elsewhere, with no clear guidance given for Niue, the Solomon Islands, the Southern Cook Islands and the Society Islands.

- Sea surface temperatures are still expected to be warmer than normal along the Equator east of the Dateline.

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

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NEW ZEALAND MINISTRY OF FOREIGN AFFAIRS & TRADE Aid Programme

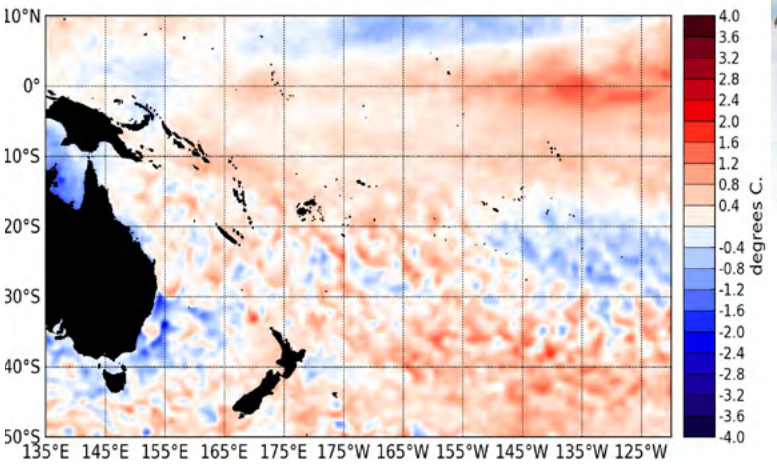
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

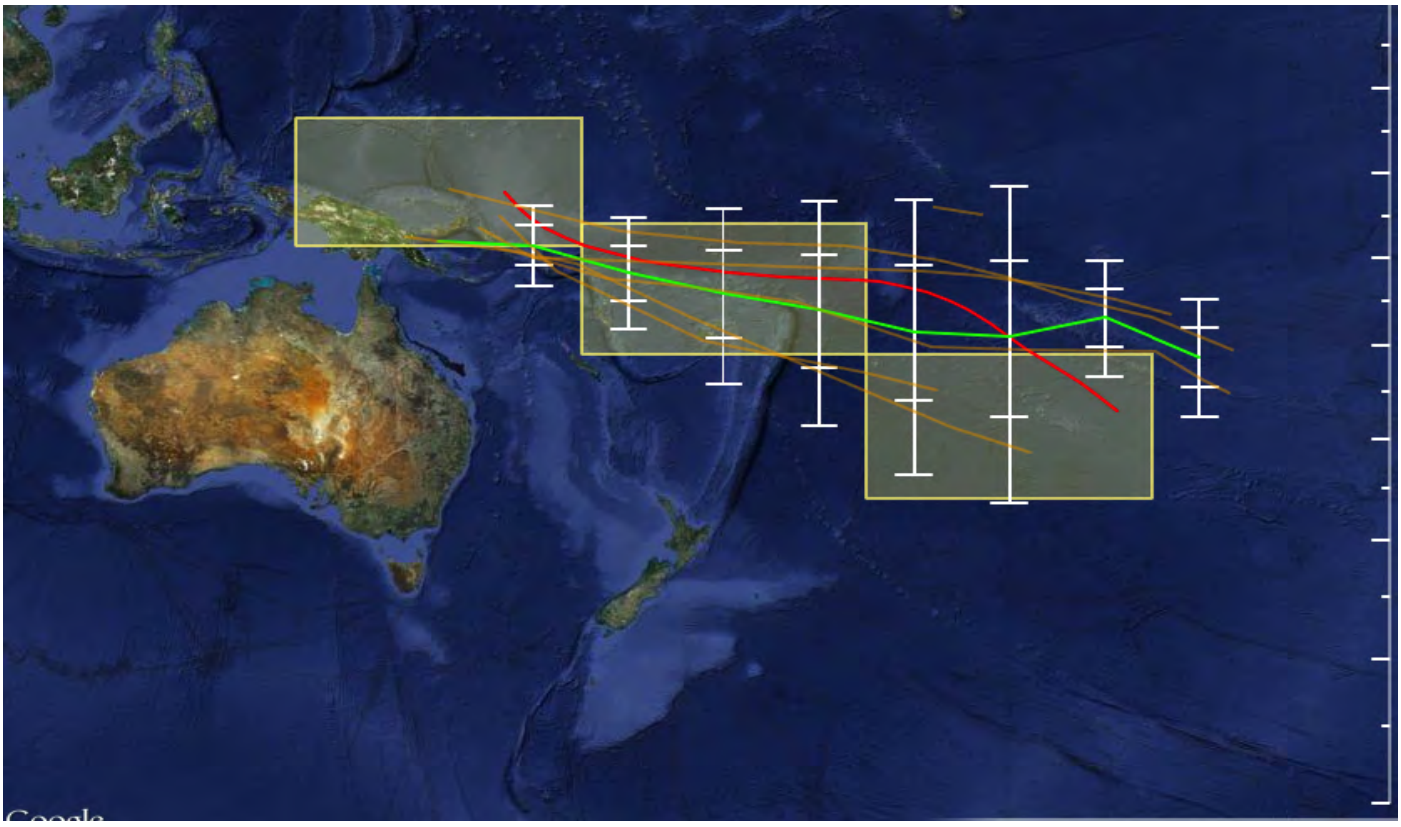
Borderline El Niño conditions still exist at present in the tropical Pacific. A noticeable change from July to August is the westward movement of the strongest positive sea surface temperature anomalies towards the central Pacific. As a consequence, the NINO3 index in the eastern Pacific (150 °W to 90 °W) has dropped slightly, from + 1.2 °C in July to + 1.0 °C in August, while the NINO4 Index (160 °E to 150 °W) has increased from + 0.4 to + 0.8 °C. Subsurface temperatures are still moderately above average in the upper ocean along the Equator, but according to the TAO analysis have weakened since July. The atmospheric circulation has yet to show a typical El Niño pattern. The SOI is currently (in August) negative at – 0.7 but the low–level zonal winds are not very different from normal. The TRMM ENSO index remains negative at – 0.2 for the 30 days to 1 September (values above +1.0 indicate El Niño conditions). The OLR pattern across the equatorial Pacific still shows enhanced convection over the Maritime Continent north of the Equator, while convection was reduced north of the Equator east of the Dateline. The SPCZ was not very well defined in August. A relatively strong MJO event moved into the tropical Indian Ocean in the last 10 days of August. It was forecast to be slowly–moving, and has in fact 'stalled' and weakened. The international consensus is that the tropical Pacific is likely to warm further over the forecast season. Nine of the 10 dynamical models that NIWA monitors indicate that El Niño thresholds will be exceeded during September to November 2012, with the remaining model indicating conditions on the warm side of neutral. The coming event is likely to remain weak and short-lived, with a collapse of the event anticipated in the first quarter of 2013.



Surface temperature anomalies (°C) for August 2012, data is from the NOAA OISST Version 2 dataset, available at the CDC.

South Pacific Convergence Zone (SPCZ) forecast September to November 2012

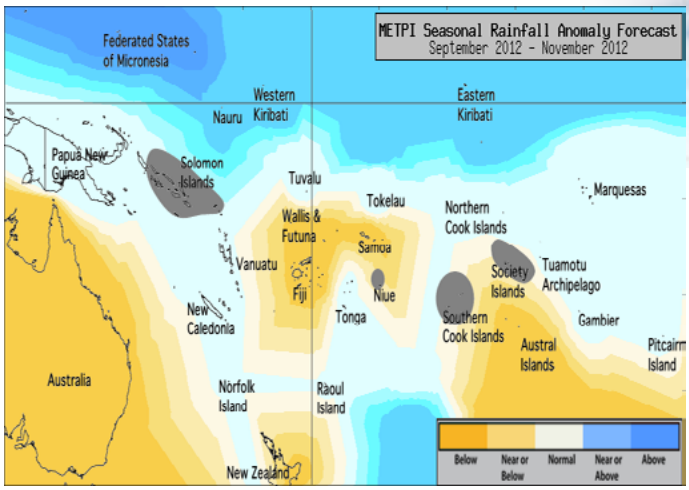
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of 8 climate models. The white vertical bars and 'whiskers' 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 models indicate that the SPCZ is likely to sit in a position near or slightly south of climatology (near normal for this time of year) with a mean displacement southward in the Western Pacific and a northward displacement in the eastern Pacific. Uncertainty in the SPCZ position for the forecast period is greatest east of the Dateline.

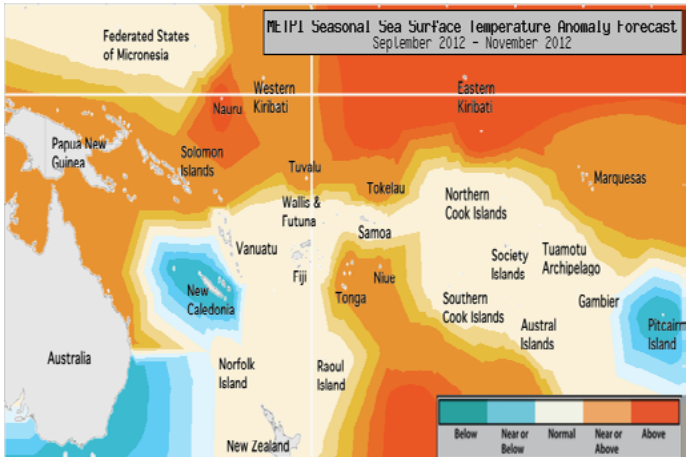
Tropical rainfall and SST outlook: September to November 2012

The tropical Pacific continues to edge towards El Niño, but the atmosphere is still not showing patterns typical of El Niño. The dynamical rainfall forecasts for the September to November season show enhanced rainfall over the western part of the maritime continent north of the Equator, and an ITCZ displaced south of its climatological position east of the Dateline. There is less agreement on the position of the SPCZ, leading to weak forecast guidance for some Island groups. Above normal rainfall is expected for the Federated States of Micronesia. Near or above normal rainfall is forecast for Eastern Kiribati and Western Kiribati. Near normal rainfall is expected for the Northern Cook Islands, the Marquesas, New Caledonia, Papua New Guinea, Pitcairn Island, Tokelau, Tonga, the Tuamotu Archipelago, Tuvalu and Vanuatu. Normal or below normal rainfall is expected for Fiji, Samoa, the Austral Islands and Wallis & Futuna. No clear guidance is given for Niue, the Solomon Islands, the Southern Cook Islands and the Society Islands.



Rainfall anomaly outlook map for September to November 2012

The global model ensemble continues to show development of El Niño–like sea surface temperatures signals, with an indication of warm anomalies in the equatorial region, especially to the east of the Dateline in the coming three months. Above normal SSTs are forecast for Eastern Kiribati. Near normal or above normal SSTs are forecast for Papua New Guinea, the Solomon Islands, Niue, Tonga, Tuvalu, Tokelau, the Marquesas and Eastern Kiribati. Normal or below normal SSTs are forecast for New Caledonia and Pitcairn Island. Near normal SSTs are forecast elsewhere.



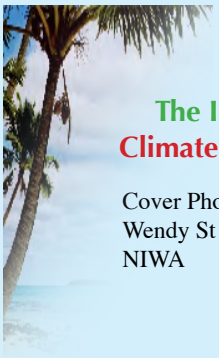
SST anomaly outlook map for September to November 2012

The confidence for the rainfall outlook is moderate to high. The average region–wide hit rate for rainfall forecasts issued in September is 66%, 3 points higher than the long–term average for all months combined. The SST forecast confidence is moderate to high across the region, and uncertainty is greatest near Eastern Kiribati and the Marquesas.

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	20:30:50 (Above)	Moderate-High
Kiribati (Eastern)	25:35:40 (Normal or Above)	High
Kiribati (Western)	25:35:40 (Normal or Above)	Moderate-High
Cook Islands (Northern)	30:40:30 (Near normal)	Moderate-High
Marquesas	30:40:30 (Near normal)	High
New Caledonia	30:40:30 (Near normal)	High
Papua New Guinea	30:40:30 (Near normal)	High
Pitcairn Island	30:40:30 (Near normal)	High
Tokelau	30:40:30 (Near normal)	Moderate-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
Niue	30:35:35 (Climatology)	Moderate
Solomon Islands	30:35:35 (Climatology)	Moderate
Cook Islands (Southern)	35:35:30 (Climatology)	Moderate
Society Islands	35:35:30 (Climatology)	Moderate
Austral Islands	35:40:25 (Normal or Below)	High
Fiji	35:40:25 (Normal or Below)	Moderate-High
Samoa	35:40:25 (Normal or Below)	High
Wallis & Futuna	35:40:25 (Normal or Below)	High

Island Group	SST Outlook	Confidence
Kiribati (Eastern)	25:30:45 (Above)	Moderate
Kiribati (Western)	25:35:40 (Normal or Above)	Moderate-High
Austral islands	25:40:35 (Normal or Above)	High
Cook Islands (Northern)	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
Solomon Islands	25:40:35 (Normal or Above)	High
Tuamotu Islands	25:40:35 (Normal or Above)	High
Cook Islands (Southern)	30:40:30 (Near normal)	High
Fiji	30:40:30 (Near normal)	High
Marquesas	30:40:30 (Near normal)	Moderate
New Caledonia	30:40:30 (Near normal)	Moderate-High
Pltcairn 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
Tonga	30:40:30 (Near normal)	High
Tuvalu	30:40:30 (Near normal)	High
Vanuatu	30:40:30 (Near normal)	Moderate-High
Wallis & Futuna	30:40:30 (Near normal)	High
FSM	30:40:30 (Near normal)	Moderate-High



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/