Number 143, August 2012

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- Conditions in the Tropical Pacific ocean are currently on the brink of El Niño, however the atmosphere has not caught up yet with the ocean, and circulation patterns are atypical of El Niño.

- A large majority of the models indicate that El Niño thresholds in both the atmosphere and the ocean will be exceeded over the forecast period.

The South Pacific Concergence Zone

- The South Pacific Convergence Zone is forecast to sit slightly south of its climatological position, 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 Society Islands, the Tuamotu archipelago and Wallis & Futuna.

- Normal or above normal rainfall is forecast for Western and Eastern Kiribati, Tonga, and Pitcairn Island.

- Sea surface temperatures are 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

MetService of New Zealand

NEW ZEALAND MINISTRY OF FOREIGN AFFAIRS & TRADE Aid Programme

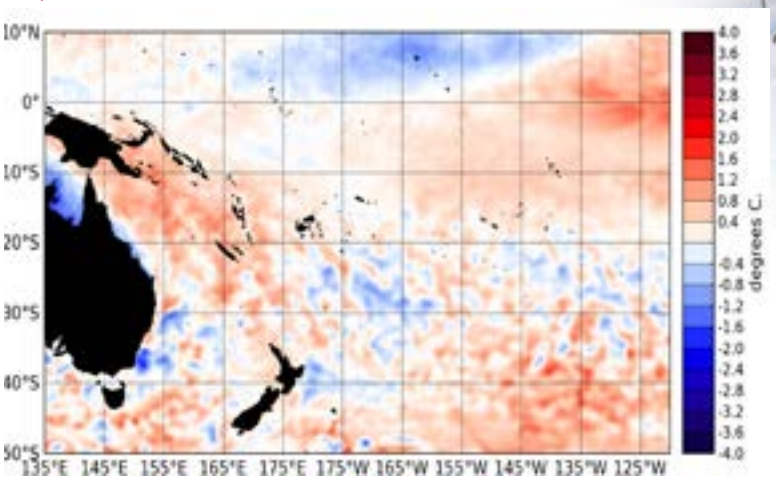
NOAA

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

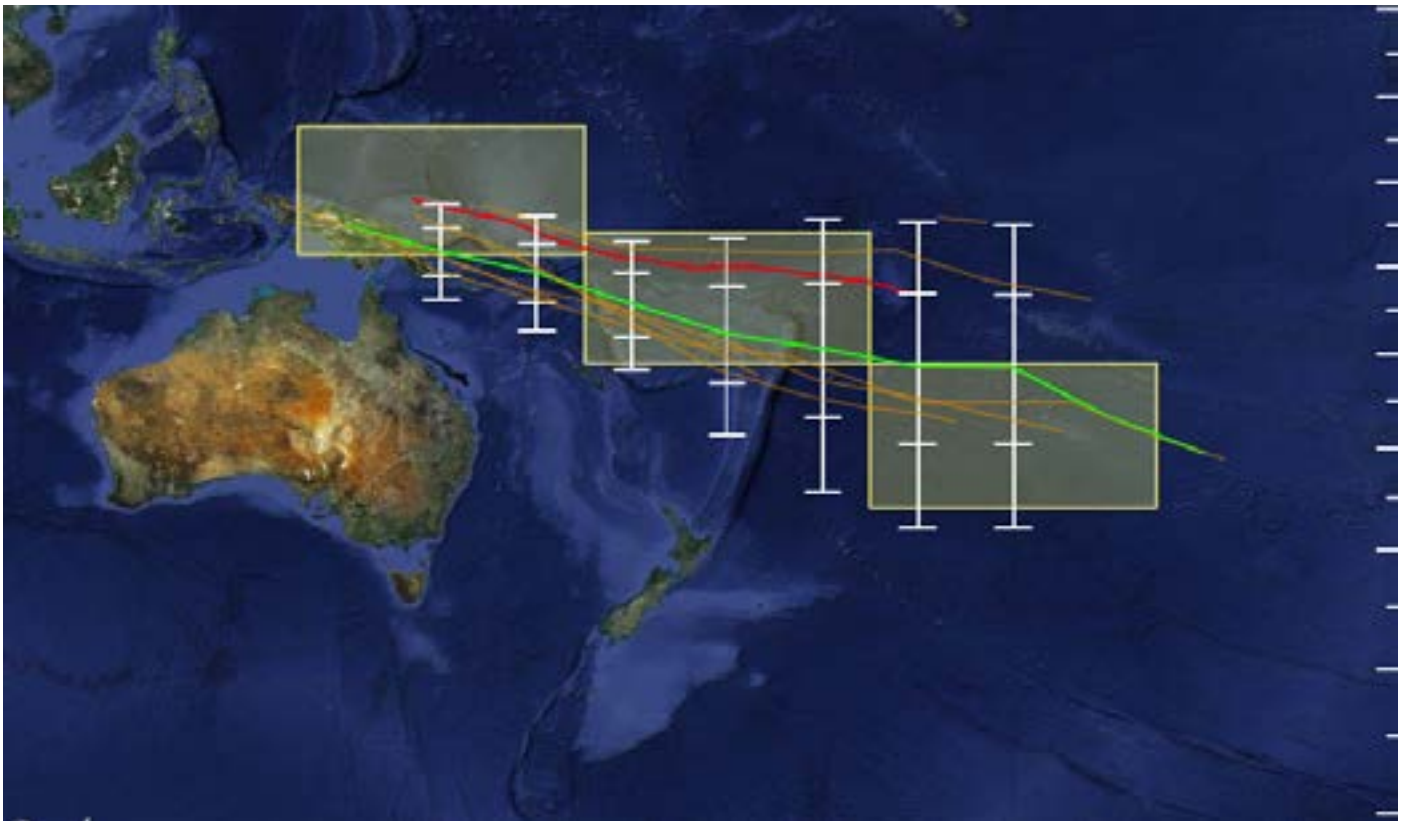
The Tropical Pacific ocean is currently on the brink of El Niño, with a recent resumption of warming after a short-term dip in the sea surface temperatures (SST) indices. The latest weekly NINO3.4 index indicates central–western equatorial Pacific ocean SSTs are now + 0.7 °C above average. Currently the NINO3 index in the eastern Pacific (150 °W to 90 °W) is the highest of the NINO indices with anomalies reaching + 1.1 °C. Subsurface temperatures across the equatorial Pacific have risen to become moderately above average in the upper ocean from just east of the Dateline eastward to 90 °W, and also in the western Pacific to a lesser extent. However the atmosphere hasn't caught up yet with the ocean and doesn't display the typical characteristics associated with El Niño. The SOI is back in the neutral range at +0.1 standard deviations after having been negative (– 1.2) in June. Westerly anomalies that were observed in the western Pacific in June have weakened recently. The TRMM ENSO index remains around – 0.8 for the 30 days to 29 July, which is still on the La Niña side of neutral. The OLR pattern accross the equatorial Pacific still shows enhanced convection over the Maritime Continent, while convection is reduced north of the Equator east of the Dateline. The SPCZ was not well defined in July. The MJO signal has been weak in the past few weeks and its current phase might be partly responsible for the lack of coupling between the ocean and the atmosphere. However 8 of the 10 dynamical models that NIWA monitors indicate that El Niño thresholds will be exceeded during the forecast period (August to October 2012) but the coming event might remain weak.



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

South Pacific Convergence Zone (SPCZ) forecast August to October 2012

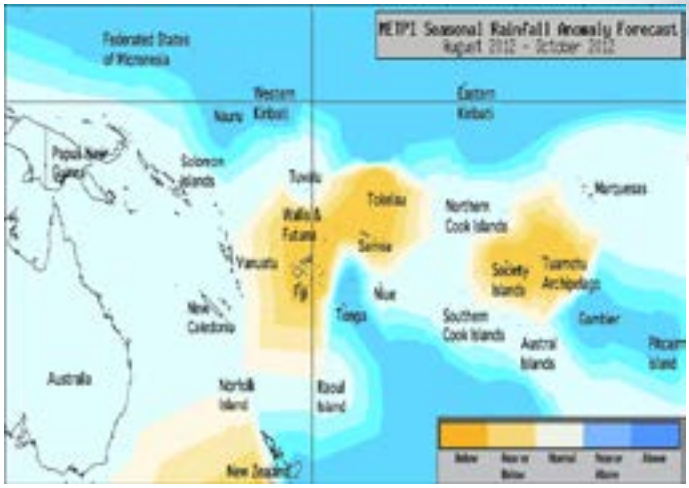
The ensemble of global climate models for rainfall that are used in METPI show an area of higher than normal rainfall associated with the SPCZ position. The green line indicates the average SPCZ position for the forecast period based on the average of 8 climate models. The white vertical bars and 'whiskers' 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 (orientation of the SPCZ very similar to climatology, with mean positional displacement southward). Uncertainty is however greatest over the Eastern part of the domain over and east of the Dateline.

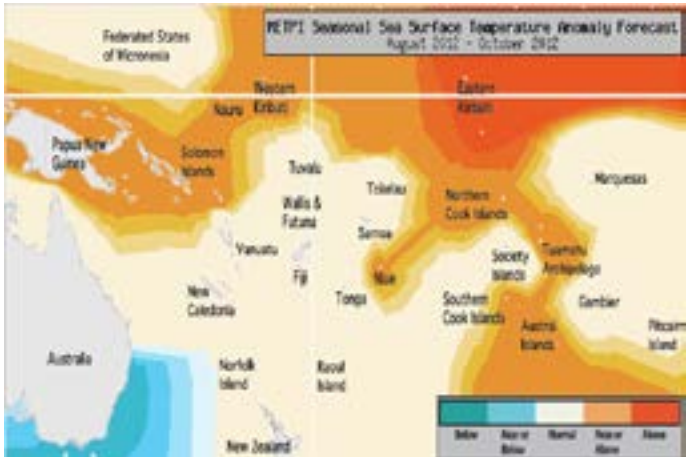
Tropical rainfall and SST outlook: August to October 2012

The Tropical Pacific is currently on the brink of El Niño, but the atmosphere is still not fully coupled to the ocean and atmospheric circulation anomalies typical of El Niño are not yet present. Convection and rainfall is still higher than normal in the western Pacific over the Maritime Continent. The ITCZ is south of its normal position to the east of the Dateline, with above normal rainfall over the Equator and below normal rainfall further north. For the period August to October 2012, the dynamical models used in METPI indicate near or above normal rainfall for Western and Eastern Kiribati, Tonga, and Pitcairn Island. Near normal rainfall is expected for the Austral Islands, the Cook Islands, New Caledonia, Papua New Guinea, Tuvalu, the Marquesas, and Vanuatu. Normal or below normal rainfall is forecast for Fiji, Samoa, the Society Islands, the Tuamotu Islands and Wallis & Futuna. No clear guidance is offered for the Solomon Islands and Niue.



Rainfall anomaly outlook map for August to October 2012

The global model ensemble continues to show the development of El Niño–like sea surface temperature (SST) signals, with east to west extension of warm anomalies in the equatorial region to the east of the Dateline in the coming three months. Above normal SSTs are forecast for Eastern Kiribati, while near normal or above normal SSTs are forecast for Western Kiribati, the Austral Islands, the Northern Cook Islands, Niue, Papua New Guinea, the Solomon Islands and the Tuamotu Islands. Near normal SSTs are forecast for the Southern Cook Islands, Fiji, the Marquesas, New Caledonia, PItcairn Island, Samoa, the Society Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Wallis & Futuna.



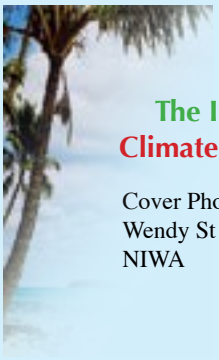
SST anomaly outlook map for August to October 2012

The confidence for the rainfall outlook is moderate to high. The average region–wide hit rate for rainfall forecasts issued in August is 60%, 3 points lower 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 and Western Kiribati.

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



Cover Photo:
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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.

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/