Number 127, April 2011

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- La Niña in the equatorial Pacific region continues to show signs of weakening. Many dynamical and statistical climate models project deterioration of the event in the coming three months. ENSO neutral conditions are expected by the onset of austral winter.

Update of tropical cyclone forecast for 2010-11 season

- Nine tropical cyclones (TCs) have occurred in the SW Pacific region this season. Normal or above normal TC occurrence is still expected for the remainder of the season. Increased activity to the west of Fiji in the Coral Sea and North Tasman region is anticipated. Risk is elevated for Papua New Guinea, the Solomon Islands, New Caledonia, Vanuatu, and New Zealand.

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

- Below normal rainfall is forecast for the Northern Cook Islands, the Marquesas, the Tuamotu Archipelago, Tuvalu and Tokelau.
- The South Pacific Convergence Zone is expected to be displaced slightly southwest of normal. Above normal rainfall is expected for Papua New Guinea, Niue, Tonga, and the Austral Islands.
- Below normal sea surface temperatures are forecast for the Marquesas and the Northern Cook Islands, while the Austral Islands are expected to have above normal SSTs.

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

nzaid

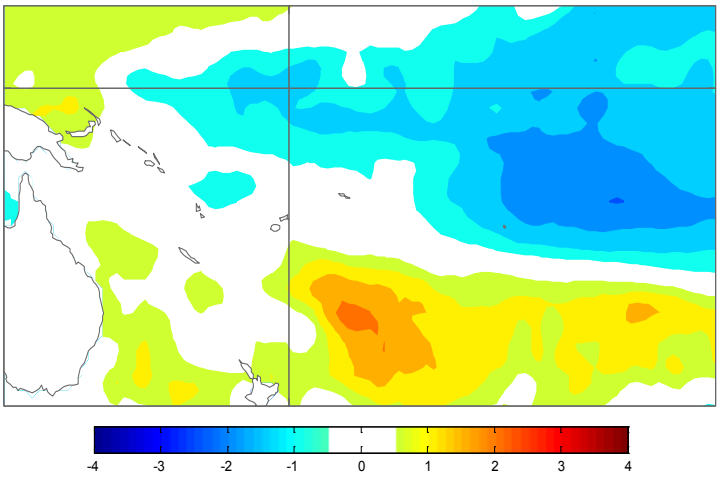
NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

SPREP

NIWA Taihoro Nukurangi

El Niño/Southern Oscillation (ENSO)

The La Niña event in the tropical Pacific has continued to ease, with some indicators weakening substantially but others showing little change as yet. The SOI dropped quickly in the second half of March, to +1.3 (estimated) for the month as a whole, with the 3-month mean SOI for JFM 2011 being +1.9. NINO3 and NINO4 SST anomalies have weakened considerably from the beginning of the year, being –0.7°C and –0.8°C respectively in March, compared to their respective values of –1.1°C and –1.4°C in January. The sub-surface temperature anomaly in the far eastern Pacific is now very weak, and the integrated upper–ocean heat content in the tropical Pacific is now everywhere positive except for 90–80°W. The Equatorial cold tongue, although weaker, is still prominent in the SST anomaly field, but near the South American coast the SST anomalies are around zero with small regions of positive anomaly. Positive SST anomalies in the extra-tropics of both hemispheres (the warm horseshoe) remain in place, but there is noticeable weakening of the southern branch along 40°S east of New Zealand. Conversely, the TRMM ENSO index strengthened to –1.5 for the 30 days to 27 March. Convection is more enhanced over the Maritime Continent and northern Australia than February, and is strongly suppressed near the Dateline just south of the equator. The ITCZ and SPCZ both remain displaced poleward of their normal positions, and anomalous easterly surface winds remain in place near and west of the Dateline. The MJO is currently very weak, and models



Surface temperature anomalies (ºC) for March 2011

are equivocal about any future development.

All but one of the models NIWA monitor are predicting ENSO–neutral conditions by the onset of Austral winter. Four long–range models suggest an El Niño event could develop by the end of 2011. Only one model suggests a return to cool La Niña conditions. The NCEP ENSO discussion of 10 March states that La Niña has weakened, and that ENSO–neutral conditions are expected by June. The IRI summary of 17 March rates La Niña as weak to moderate strength, and suggests below 50% for La Niña conditions continuing through April-June 2011.

Update of Southwest Pacific tropical cyclone guidance for the 2010-11 season

There is an expectation of normal or above normal tropical cyclone (TC) activity for most islands west of the International Date Line in the southwest Pacific during the remainder of the 2010-11 season (February–April). Although risk is reduced east of the International Date Line, all communities should remain alert and prepared.

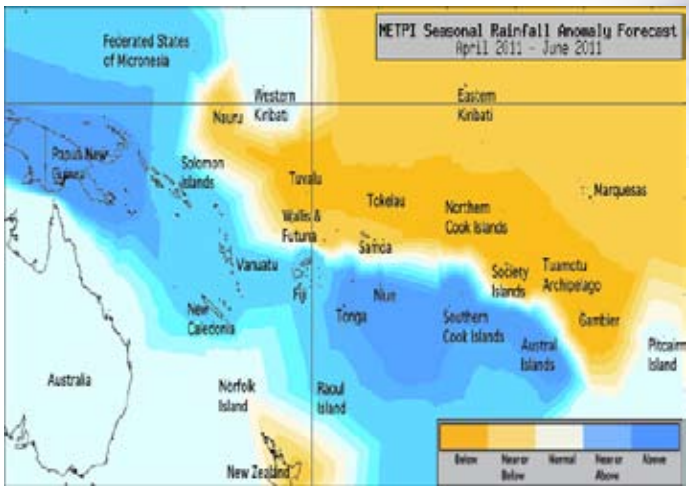
As of the end of March 2011, nine TCs have occurred in the region covered by the ICU forecast. A total of nine to 12 named TCs were forecast for the southwest Pacific (between 135°E to 120°W) between November 2010 and April 2010. On average, nine tropical cyclones occur each year for the southwest Pacific region, which are grouped into classes ranging from 1 to 5, with 5 being the most dangerous. For this season, activity seen thus far has matched the October 2010 forecast that at least three cyclones would reach at least Category 3, and one system would reach at least Category 4, with mean wind speeds of at least 64 knots or 118 km/h.

Each year, TCs have a significant impact on the southwest Pacific. Projections continue to show an increased risk of TCs for the remainder of the 2010–11 season over the Coral Sea and to the southwest of Fiji, particularly for Papua New Guinea, the Solomon Islands, Vanuatu, and New Caledonia. New Zealand is also at higher risk of experiencing an ex-tropical cyclone interaction, even late in the season. While risk is generally reduced for islands to the east of the International Date Line during La Niña, historical cyclone tracks indicate that TCs can affect parts of southwest French Polynesia, including the Society and Austral Islands, and the Cook Islands during La Niñas. All islands should remain vigilant as La Niña continues to evolve with progression through austral autumn. The analogue years used in the 2010–11 forecast indicate the TC season may also extend into May, while the forecast update issued in February indicated that the season total would approach at least 12 named TCs. .

Island Group	TC occurrence (All years)	TC forecast (Analogue years)	Risk
Papua New Guinea	0.5	0.7	Elevated
New Caledonia	2.6	3.6	Elevated
Solomon Islands	1.3	1.6	Elevated
New Zealand	0.9	1.1	Elevated
Vanuatu	2.9	3.5	Elevated
Austral Islands	0.8	0.7	Near normal
Fiji	2.3	2.0	Near normal
Tonga	2.0	1.7	Near normal
French Polynesia	0.7	0.5	Reduced
Pitcairn	0.3	0.2	Reduced
Wallis & Futuna	1.8	1.2	Reduced
Niue	1.8	1.2	Reduced
Samoa	1.5	1.0	Reduced
Society Islands	0.8	0.5	Reduced
Southern Cook Isl.	1.5	0.7	Low
Tokelau	0.8	0.3	Low
Tuvalu	1.1	0.4	Low
Northern Cook Isl.	0.8	0.2	Low
Tuamotu	0.4	0.1	Low
Marquesas	0.1	0	Unlikely
Eastern Kiribati	0	0	Unlikely
Western Kiribati	0	0	Unlikely

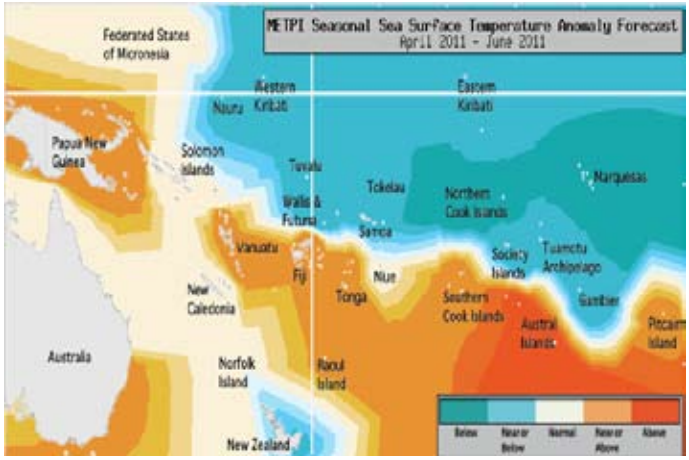
Tropical rainfall and SST outlook: April to June 2011

During April – June 2011, a region of suppressed convection is likely in the southwest Pacific encompassing Tuvalu, Tokelau, the Tuamotu Archipelago, the Society Islands and the Northern Cook Islands. Below average rainfall is expected for those island groups. Average or below average rainfall is expected for Wallis & Futuna, Samoa, the Marquesas and Eastern Kiribati. The Southwest Pacific Convergence Zone is expected to be displaced slightly to the southwest of normal for the forecast period. Papua New Guinea, Tonga, Niue and the Austral Islands are expected to receive above normal rainfall for the coming three months. Near or above average rainfall is forecast for New Caledonia, the Solomon Islands, Vanuatu, Fiji and the Southern Cook Islands. Near normal rainfall is expected for Western Kiribati and Pitcairn Island.



Rainfall anomaly outlook map for April to June 2011

Many global models show weakening and contraction of the equatorial Pacific SST cold anomalies that exist close to the International Dateline in the coming months. In addition, the warm anomalies in and around the Coral Sea are expected to diminish. For April – June, above average SSTs are forecast for the Austral Islands. Average or above average sea surface temperatures are forecast for Papua New Guinea, Vanuatu, Tonga, Fiji, Pitcairn Island and the Southern Cook Islands. Near normal or below normal SSTs are forecast for Tuvalu, Wallis & Futuna, Western Kiribati, Eastern Kiribati, Samoa, the Society Islands, Tokelau, and the Tuamotu Archipelago. The Northern Cook Islands and the Marquesas are expected to experience below normal SSTs. Near normal SSTs are forecast for Niue, New Caledonia and the Solomon Islands.



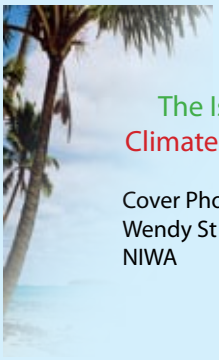
SST anomaly outlook map for April to June 2011

The forecast confidence for the rainfall outlook is moderately high. The average region–wide hit rate for rainfall forecasts issued in April is 55%, 6% lower than all months combined. The SST forecast confidence is mostly high, with uncertainty localised 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
Papua New Guinea	15:35:50 (Above)	Moderate-High
Austral Islands	20:35:45 (Above)	Moderate-High
Niue	20:35:45 (Above)	Moderate-High
Tonga	20:35:45 (Above)	Moderate-High
New Caledonia	20:40:40 (Near or Above)	Moderate-High
Solomon Islands	20:40:40 (Near or Above)	Moderate-High
Vanuatu	20:40:40 (Near or Above)	Moderate-High
Fiji	25:40:35 (Near or Above)	Moderate-High
Cook Islands (Southern)	25:40:35 (Near or Above)	Moderate-High
Kiribati (Western)	30:40:30 (Near normal)	Moderate
Pitcairn Island	30:40:30 (Near normal)	High
Kiribati (Eastern)	35:40:25 (Near or Below)	Moderate-High
Marquesas	40:35:25 (Near or Below)	Moderate-High
Samoa	40:35:25 (Near or Below)	Moderate-High
Wallis & Futuna	40:35:25 (Near or Below)	Moderate-High
Society Islands	45:35:20 (Below)	Moderate-High
Cook Islands (Northern)	45:35:20 (Below)	Moderate-High
Tokelau	45:35:20 (Below)	Moderate-High
Tuamotu Islands	45:35:20 (Below)	Moderate-High
Tuvalu	50:35:15 (Below)	High

Island Group	SST Outlook	Outlook confidence
Austral Islands	15:35:50 (Above)	Moderate-High
Fiji	25:35:40 (Near or Above)	Moderate-High
Papua New Guinea	25:35:40 (Near or Above)	High
Pitcairn Island	20:40:40 (Near or above)	High
Cook Islands (Southern)	25:40:35 (Near or Above)	High
Tonga	25:40:35 (Near or Above)	High
Vanuatu	25:40:35 (Near or Above)	High
New Caledonia	30:40:30 (Near normal)	High
Niue	30:40:30 (Near normal)	High
Solomon Islands	30:40:30 (Near normal)	High
Kiribati (Western)	35:40:25 (Near or Below)	High
Samoa	35:40:25 (Near or Below)	High
Tuvalu	35:40:25 (Near or Below)	High
Wallis & Futuna	35:40:25 (Near or Below)	High
Kiribati (Eastern)	40:40:20 (Near or Below)	Moderate
Tuamotu Islands	40:40:20 (Near or Below)	High
Society Islands	40:35:25 (Near or Below)	Moderate-High
Tokelau	40:35:25 (Near or Below)	Moderate-High
Cook Islands (Northern)	45:35:20 (Below)	High
Marquesas	50:30:20 (Below)	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/