

The Island Climate Update

El Niño/Southern Oscillation (ENSO)

- ENSO diagnostics indicate La Niña conditions that existed in the Equatorial Pacific Ocean have diminished and that the event has drawn to a close. Some remnant anomalies from this event may exist in the transition to austral winter. Most dynamical and statistical climate models suggest ENSO neutral conditions for late autumn and early winter.

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

Tropical cyclone forecast for 2011 - 12 season

- Normal or below average numbers are likely for most islands during the remainder of the southwest Pacific tropical cyclone season (February - April).
- TC Daphne (still active at the time of this forecast) formed in late March 2012, bringing the seasonal total for the ICU forecast region to five named storms.

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

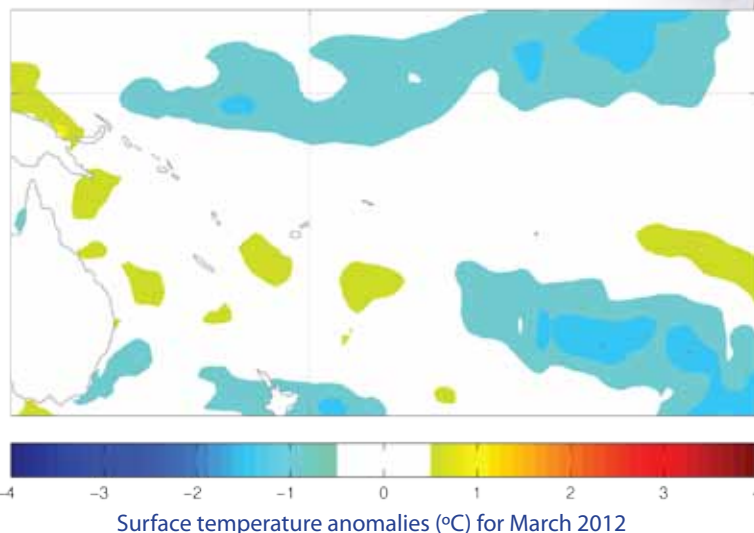
- Normal or below normal rainfall is forecast for Tuvalu, Tokelau, the Society Islands, Samoa and the Northern Cook Islands in the coming three months.
- Above normal rainfall is expected for Papua New Guinea.
- The sea surface temperature anomalies associated La Niña are more muted relative to prior months. Below normal sea surface temperatures (SSTs) are forecast for Eastern Kiribati.



El Niño/Southern Oscillation (ENSO)

The recent La Niña event weakened during February–March, and present conditions in the tropical Pacific are near ENSO–neutral. The SOI remained near zero at +0.1 for March (+0.1 in February), while sea surface temperature anomalies eased further: in March, NINO3 was -0.1°C (based on only 3 weeks of March) and NINO4 -0.6°C (weakening from -1.0°C in January). Equatorial sea surface temperature anomalies are weakly positive in the far eastern Pacific, between about 120°W and the South American coast, and primarily south of the Equator. The sub–surface warm anomaly near 150m depth in the western Pacific has made no further progress eastwards, and if anything has retreated west by about 20° longitude. The TRMM ENSO index became significantly more negative (more La Niña–like) during the month, from -0.5 in February to -1.6 in March (30 days to 26 March). This is primarily an indication of much wetter conditions over the Maritime Continent and northern Australia.

Eight of the ten dynamical models, and four of the five statistical models NIWA monitor predict ENSO–neutral conditions for late autumn (AMJ), with the others projecting weak La Niña conditions to persist. Five of the dynamical models indicate development of an El



Niño event in the following JAS period. The latest IRI technical summary of 15 March expects the existing weak La Niña to dissipate in early April. They forecast a 8% chance of La Niña and 92% chance of neutral conditions for April–June as a whole, moving to 73% chance of neutral and 27% chance of El Niño in July–September.

Southwest Pacific tropical cyclone guidance for the 2011 - 12 season

Normal or below normal tropical cyclone (TC) activity is likely for most islands in the southwest Pacific during the remainder of the 2011 – 2012 season. February through April (the late season) is typically the most active part of the TC season, although some storms have occurred outside of this time frame in the past. A total of five named storms have occurred since the start of the season, with one active system (TC Daphne) in the southwest Pacific basin existing at the time this ICU issue was released.

On average, nine tropical cyclones occur each year for the southwest Pacific, and are grouped into classes ranging from 1 to 5, with 5 being the most dangerous. For the coming season, at least one cyclone is forecast to reach at least Category 3, with mean wind speeds of at least 64 knots or 118 km/h and one system may reach at least Category 4 strength, with mean wind speeds of at least 86 knots or 159 km/h. The ICU TC forecast update indicates 8 – 10 named TCs are likely for whole season, with six to eight named storms forecast for the late season.

Places like Vanuatu and New Caledonia typically experience the greatest TC activity, with an average of about 3 or 4 TCs passing close to those countries each year (see Table, right for late season averages). Near normal to below normal TC activity for the remainder of the 2011–12 season is likely for most islands. Historical cyclone tracks indicate that TCs can affect parts of southwest French Polynesia, including the Society and Austral Islands, and the southern Cook Islands during La Niñas, especially late in the season. The forecast update indicates extra-tropical trajectories to the south of the Austral Islands and Society Islands are likely during the latter half of the TC season. All islands should remain vigilant as the current La Niña continues to evolve with progression into autumn. More details about this

forecast and the science underpinning it can be found at <http://www.niwa.co.nz>. In the Pacific Islands, consult with your local meteorological service for tropical cyclone guidance as the season progresses.

Location	All Years (std. error)	Selected years (std. error)	Activity level
Vanuatu	2.4 (0.24)	2.3 (0.88)	Normal
New Caledonia	2.2 (0.23)	2.4 (0.89)	Normal
Fiji	2.0 (0.22)	1.2 (0.64)	Normal
S. Cooks	1.1 (0.16)	0.8 (0.52)	Normal
New Zealand	0.7 (0.13)	0.4 (0.37)	Normal
Society Is	0.5 (0.11)	0.3 (0.32)	Normal
Tuvalu	0.8 (0.14)	0.3 (0.32)	Normal-below
N. Cooks	0.6 (0.12)	0.2 (0.24)	Normal-below
Tonga	1.5 (0.19)	0.7 (0.49)	Below
Solomons	1.5 (0.19)	0.5 (0.42)	Below
Wallis & Futuna	1.5 (0.19)	0.6 (0.44)	Below
Niue	1.2 (0.17)	0.3 (0.31)	Below
Samoa	1.1 (0.17)	0.1 (0.22)	Below
Papua New Guinea	0.9 (0.15)	0.2 (0.29)	Below
Northern NZ	0.7 (0.13)	0.2 (0.29)	Below
Tokelau	0.6 (0.12)	0.0 (0.00)	Below
Austral Is	0.5 (0.11)	0.1 (0.19)	Below
Fr. Polynesia	0.5 (0.11)	0.0 (0.07)	Below
Tuamotu	0.3 (0.08)	0.2 (0.23)	Unlikely
Pitcairn	0.2 (0.08)	0.1 (0.20)	Unlikely
Marquesas	0.1 (0.04)	0.0 (0.00)	Unlikely
E. Kiribati	0.0 (0.01)	0.0 (0.00)	Unlikely
W. Kiribati	0.0 (0.00)	0.0 (0.00)	Unlikely

Average number of TCs passing within 5° of the main island groups between November - April. Activity level (and associated risk) are indicative of how many storms might be expected for any given island group for the current season.

Tropical rainfall and SST outlook: April to June 2012

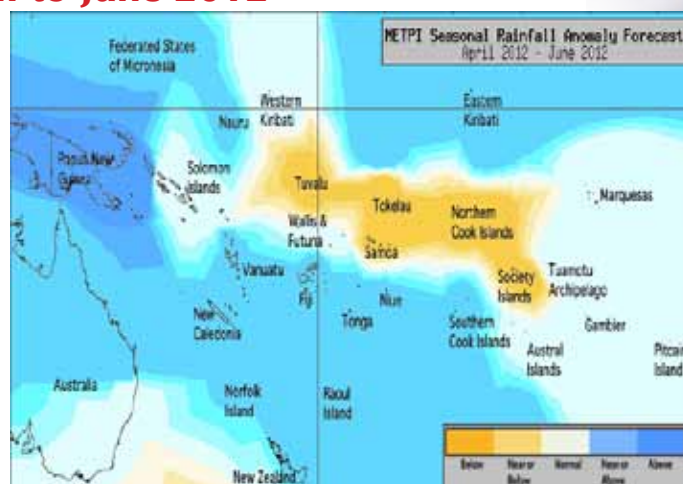
While ENSO is expected to be in a neutral state over the forecast period, some remnant anomalies from the event are expected to persist, including increased rainfall in a broad horseshoe-shaped zone affecting the Tropical western Pacific west of the Dateline and parts of the southwest Pacific region. Relatively dry conditions are expected for the eastern part of the Maritime Continent and the SPCZ is still expected to be displaced slightly southwest of normal during the forecast period. As of late, indications are that the SPCZ will probably return to its climatological position by winter. Above normal rainfall is forecast for Papua New Guinea. Near or above average rainfall is expected for Fiji, New Caledonia, Tonga, Vanuatu and Niue. Near normal rainfall is forecast for the Austral islands, Western Kiribati, the Marquesas, Pitcairn, The Solomon Islands, the Tuamotu Archipelago and Wallis & Futuna. Average or below average rainfall is expected for Samoa, the Society Islands, the Northern Cook Islands, Tokelau and Tuvalu. No clear guidance is given for the Southern Cook Islands and Eastern Kiribati.

La Niña SST anomaly signals that have existed in past months have eased. For the coming three months, below normal sea surface anomalies are expected to the east of the Dateline near Eastern Kiribati. Normal or below normal SSTs are forecast for Western Kiribati, Wallis & Futuna, Tuvalu, the Tuamotu Archipelago, the Society Islands, the Northern Cook Islands, Tokelau, the Marquesas and Samoa. Near normal or above normal sea surface temperatures are forecast for Papua New Guinea, Vanuatu, Fiji, Tonga, the Austral Islands and Niue. Near normal SSTs are forecast for the Solomon Islands, New Caledonia, the Southern Cook Islands and Pitcairn Island.

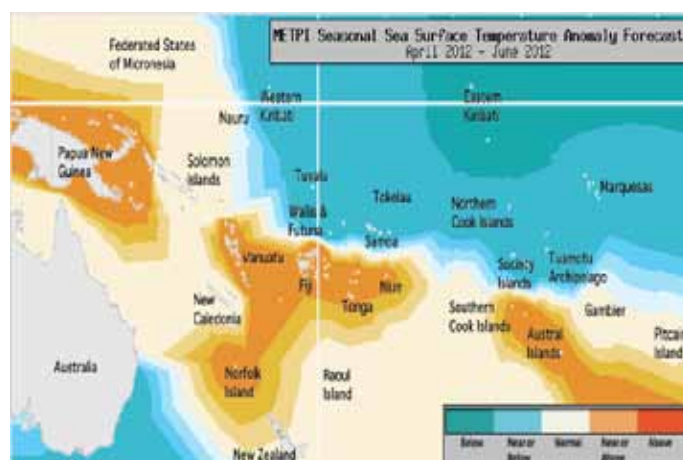
The confidence for the rainfall outlook is moderately high. The average region-wide hit rate for rainfall forecasts issued in April is 57%, six percent lower than the long-term average for

NOTE: Rainfall and sea surface temperature 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	Island Group	SST Outlook	Confidence
Papua New Guinea	20:35:45 (Above)	Moderate-High	Austral Islands	25:40:35 (Normal or Above)	Moderate-High
Fiji	25:35:40 (Normal or Above)	Moderate-High	Fiji	25:40:35 (Normal or Above)	High
New Caledonia	25:35:40 (Normal or Above)	High	Niue	25:40:35 (Normal or Above)	High
Tonga	25:35:40 (Normal or Above)	Moderate-High	Papua New Guinea	25:40:35 (Normal or Above)	High
Vanuatu	25:35:40 (Normal or Above)	Moderate-High	Tonga	25:40:35 (Normal or Above)	High
Niue	25:40:35 (Normal or Above)	High	Vanuatu	25:40:35 (Normal or Above)	Moderate-High
Cook Islands (Southern)	30:35:35 (Climatology)	Moderate	Cook Islands (Southern)	30:40:30 (Near normal)	High
Kiribati (Eastern)	30:35:35 (Climatology)	Moderate	New Caledonia	30:40:30 (Near normal)	High
Austral Islands	30:40:30 (Near normal)	High	Pitcairn Island	30:40:30 (Near normal)	High
Kiribati (Western)	30:40:30 (Near normal)	High	Solomon Islands	30:40:30 (Near normal)	High
Marquesas	30:40:30 (Near normal)	Moderate-High	Samoa	35:40:25 (Normal or Below)	High
Pitcairn Island	30:40:30 (Near normal)	High	Society Islands	35:40:25 (Normal or Below)	High
Solomon Islands	30:40:30 (Near normal)	High	Tokelau	35:40:25 (Normal or Below)	Moderate-High
Tuamotu Islands	30:40:30 (Near normal)	High	Tuamotu Islands	35:40:25 (Normal or Below)	High
Wallis & Futuna	30:40:30 (Near normal)	High	Tuvalu	35:40:25 (Normal or Below)	High
Samoa	35:40:25 (Normal or Below)	High	Wallis & Futuna	35:40:25 (Normal or Below)	High
Society Islands	35:40:25 (Normal or Below)	High	Cook Islands (Northern)	40:40:20 (Normal or Below)	High
Cook Islands (Northern)	40:35:25 (Normal or Below)	High	Kiribati (Western)	40:40:20 (Normal or Below)	Moderate-High
Tokelau	40:35:25 (Normal or Below)	High	Marquesas	40:40:20 (Normal or Below)	Moderate
Tuvalu	40:35:25 (Normal or Below)	Moderate-High	Kiribati (Eastern)	45:35:20 (Below)	Moderate

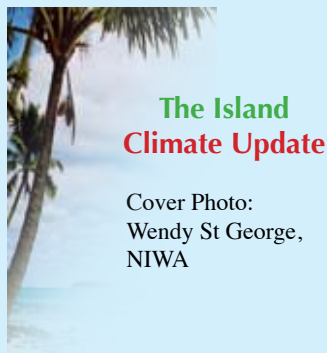


Rainfall anomaly outlook map for April to June 2012



SST anomaly outlook map for April to June 2012

all months combined. The SST forecast uncertainty is greatest near the Marquesas and Eastern Kiribati.



The Island Climate Update

Cover Photo:
Wendy St George,
NIWA

Visit The Island Climate Update at:
www.niwasience.co.nz/ncc/icu

Your comments and ideas about The Island Climate Update are welcome. Please contact:

Dr Andrew Lorrey, NIWA,
41 Market Place, Auckland, New Zealand
E-mail: a.lorrey@niwa.co.nz

Forecasts:

Dr. Andrew Lorrey and Dr. Nicolas Fauchereau (South Pacific rainfall and SST forecasts) and the NIWA National Climate Centre (ENSO wrap)

ICU Editorial team:

Andrew Lorrey: a.lorrey@niwa.co.nz
James Renwick: j.renwick@niwa.co.nz
Nicolas Fauchereau: n.fauchereau@niwa.co.nz

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.

The contents of The Island Climate Update may be freely disseminated, provided the source is acknowledged.

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/>