

Climate and Oceans Monitoring and Prediction (COMP)

Pacific Islands - Online Climate Outlook Forum No. 98 Summary Report

Date: Tuesday 10 November 2015

Time: Australian Eastern Daylight Time 11:00AM (01:00 UTC)

Chair: Bureau of Meteorology

Main purpose for the OCOF:

- To provide a regular forum for the 11 participating PIC NMSs to discuss the current ENSO status, recent one and three-month rainfall, drought (if present) and their seasonal climate outlooks with other countries and the COMP project team.

In addition it serves as an online training forum for recent SCOPIC^{*} development and gives the project team and the NMSs an opportunity to discuss other project related matters.

Agenda:

1. Brief introduction of PIC participants and the Bureau team.
2. Brief report on current ENSO status.
3. Each NMS report on their past one and three months rainfall in relation to the current ENSO situation (include ranking and verification), and their three-month outlooks. Wherever appropriate NMS to report on their drought status.
4. Round-table discussion: addressing general concerns/queries on outlooks and SCOPIC.
5. Feedback on COSPPac products and services.
6. Country statements with regards to drought or drought-like conditions, drought module issues/concerns.
7. Next meeting (Tuesday 8 December - TBC) and Chair (Niue).

Participants:

The Forum was attended by 13 climate officers from seven partner PIC NMSs.

Cook Islands:

Fiji: Arieta Baleisolomone, Bipend Prakash, Yogesh Maharaj

Kiribati: Mauna Eria

Niue: Rossy Mitiepo, Hingano Laufoli, Mellisa Douglas

Papua New Guinea: Agnes Diap, Kisolet Posanau

Republic of Marshall Islands:

Samoa: Junior Lepale

Solomon Islands

Tonga: Seluvaia Finaulahi, Mele Lakai

Tuvalu:

Vanuatu: Shanna Joseph

The Bureau team: Simon McGree and Elise Chandler

OCOFC tables were received from 11 participating countries before the meeting.

* Seasonal Climate Outlooks in the Pacific Island Countries: climate prediction software developed under the PI-CPP.

Australian Aid Project: Climate and Oceans Support Program in the Pacific (COSPPac)

Observations and Verification of August to October 2015 outlooks:

Observed rainfall for the one and three month periods ending October 2015 were discussed for each PIC. This month, several countries experienced extreme rainfall as shown in the following table:

Station	Period	Rainfall Amount (mm)	Rainfall Rank	Year of record
Tokotoko (Navua), Fiji	Oct	128.8	7	71
Lakeba, Fiji	Oct	12.5	4	67
Ono-i-lau, Fiji	Oct	9.0	4	70
Kanton, Kiribati	Oct	216.9	53	56
Kirimati, Kiribati	Oct	250.6	88	91
Tarawa, Kiribati	Aug-Oct	831.6	57	66
Kirimati, Kiribati	Aug-Oct	547.2	83	88
Honiara, Solomon Is	Oct	28.0	3	59
Kirakira, Solomon Is	Oct	47.0	3	48
Lata, Solomon Is	Oct	101	3	41
Taro, Solomon Is	Oct	135	3	37
Honiara, Solomon Is	Aug-Oct	102	1	59
Kirakira, Solomon Is	Aug-Oct	237	1	45
Lata, Solomon Is	Aug-Oct	531	2	41
Taro, Solomon Is	Aug-Oct	460	2	36
Nanumea, Tuvalu	Oct	366.3	71	75
Nui, Tuvalu	Oct	421.0	66	70
Sola, Vanuatu	Oct	33.3	3	45
Pekoa, Vanuatu	Oct	13.7	3	45
Lemap, Vanuatu	Oct	12.0	3	55
Port Vila, Vanuatu	Oct	10.6	3	63
Sola, Vanuatu	Aug-Oct	258.9	2	39
Lemap, Vanuatu	Aug-Oct	67.9	2	55
Bauerfield, Vanuatu	Aug-Oct	89.2	3	43
Port Vila, Vanuatu	Aug-Oct	74.8	4	63
Nukualofa, Tonga	Oct	10.1	2	72
Fuaamotu, Tonga	Oct	19.6	1	36
Niuaotupapu, Tonga	Aug-Oct	124.6	6	67
Niuafoou, Tonga	Aug-Oct	132.3	1	45
Momote, PNG	Oct	85.0	4	67
Kavieng, PNG	Oct	29.6	3	88
Vanimo, PNG	Aug-Oct	339.8	5	54
Goroka, PNG	Aug-Oct	114.0	2	50

Australian Aid Project: Climate and Oceans Support Program in the Pacific (COSPPac)

Momote, PNG	Aug-Oct	344.6	4	66
Kavieng, PNG	Aug-Oct	119.8	2	82
Port Moresby, PNG	Aug-Oct	4.0	1	109

[Note: The above data may not have undergone quality control]

Validation of forecasts with observed rainfall for the August to October 2015 (OCOF #94) period showed 35 consistent, 13 near-consistent and 7 inconsistent outlooks (55 stations across 11 countries).

The largest inconsistency was at Funafuti, Tuvalu, where below normal rainfall was observed (548.6 mm) against outlook probabilities of 7/21/72 with good skill (LEPS=13.9%). The strongest consistent verification was at Tarawa, Kiribati, where above normal rainfall was observed (841.6 mm), with outlook probabilities of 1/15/84 and very high skill (LEPS= 34.8%).

A summary of results (C-consistent, NC-Near Consistent, I-Inconsistent, NA-not available) for each country for the August to October 2015 outlook is as follows:

Cook Islands (1C,1I); Fiji (9C, 1NC,1I); Kiribati (2C, 1NC, 1I); Niue (1C); PNG (5C, 1NC,2I); RMI (1NC, 1I); Samoa (2C, 1NC,1I); Solomon Islands (5C, 2NC); Tonga (2C, 4NC); Tuvalu (2C, 1NC) and Vanuatu (6C, 1NC).

Overall: 35C, 13NC, 7I.

December to February 2016 Outlooks:

Of the 11 countries contributing to OCOF #98, the following predictors and periods were selected: Three-month average NINO3.4 (August-October) – four countries, Two-month average NINO3.4 (September-October) – six countries and one-month average NINO3.4 (October) – one country. NINO3.4 two-month average is recommended as this predictor/period is associated with the highest three-month outlook skill on a regional scale.

Sixty-six percent of the 59 stations outlooks had the highest probabilities in tercile 1, 12% in tercile 2 and 19% in tercile 3. The remaining 3% had either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

POAMA outlooks: Sixty percent of the 45 station outlooks favoured tercile 1, 0% tercile 2 and 38% tercile 3. The remaining 2% had either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

ENSO summary for the October 2015 OCOF

ENSO Status and equatorial sea surface temperatures (SSTs)

A strong El Niño in the Pacific and a positive Indian Ocean Dipole are dominating the climate of countries that border and are within the Pacific and Indian oceans. In the central tropical Pacific Ocean, sea surface temperatures (SSTs) continue to warm, but at a markedly slower pace than earlier this year.

October SST anomaly values for NINO3 were +2.3°C (up 0.1°C), NINO3.4 +2.2°C (up 0.2°C) and NINO4 +1.3°C (up 0.2°C). The latest weekly values to 8 November are +2.3°C for NINO3, +2.3°C for NINO3.4 and +1.5°C for NINO4. Weekly tropical Pacific Ocean temperature anomalies (i.e. difference from normal) in the central Pacific are now at their highest values since 1997–98, though still remain more than half a degree below the peak observed during 1997–98.

Tropical subsurface

The Bureau of Meteorology sub-surface temperature anomalies profile to 5 November shows a large pool of warm anomalies largely east of the Date Line to a depth of ~200 m. This pool of warm water has remained largely unchanged since May, with consistent warmth east of the Date Line in regions exceeding +4°C. Cool anomalies west of the Date Line have strengthened over the last fortnight, although the extent of these anomalies has remained largely unchanged since August.

The TAO/TRITON sub-surface temperature anomaly profile for the 5 days ending 7 November shows warm anomalies in the central to eastern Pacific, reaching to in excess of +6°C in the far east. Compared with a month ago, the El Niño warm anomalies have strengthened in extent and intensity. Cool anomalies below -2 °C have expanded in the last month.

Coral Bleaching Status

The coral bleaching status remains at Alert level 2 in the equatorial regions central and eastern Kiribati. At this alert level, coral mortality can be expected for many coral species. The coral bleaching forecast shows the thermal stress expanding west and southward.

Sea Level Anomaly

The sea level patterns are fairly stable compared to the previous month. The central Pacific maximum sea level anomaly area is +30 cm; this area has increased in size over the past month. Negative anomalies in the tropical northwest Pacific are below -30 cm in parts of this region.

Ocean Currents

Pacific Ocean currents are impacted by the change in wind patterns relating to El Niño. A strong north equatorial surface current anomaly is present from the western to the central Pacific, moving more warm water eastward.

Southern Oscillation Index (SOI)

The October 2015 SOI was -20.2; the lowest monthly value for the current El Niño. The last time monthly SOI values were consistently below -15 for three consecutive months was February to April 1998. The approximate 30-day SOI value to 7 November was -15.6 and the 90-day value -18.7. The SOI has remained firmly negative since May (and largely negative over the last 17 months), with current values typical of an El Niño.

Trade Winds

The TAO/TRITON image of trade winds for the 5 days ending 7 November 2015 shows they remain weak east 160°W and in some places have reversed direction, i.e. westerly wind anomalies. Trade winds have been consistently weaker than average, and on occasion reversed in direction, since the start of 2015.

Modes of Variability

South Pacific Convergence Zone (SPCZ), West Pacific Monsoon (WPM), Intertropical Convergence Zone (ITCZ)

The 30-day OLR and TRMM rainfall anomaly maps for the 30 days to 8 November shows strongly suppressed rainfall in the western tropical Pacific and enhanced rainfall in the central equatorial Pacific (centred on the Date Line) as would be expected during El Niño. To the east of the Solomon Islands the SPCZ was displaced northeastward and enhanced as far east as northern French Polynesia, according to the TRMM (satellite based rainfall) observations. The northeast displacement resulted in below normal rainfall in a broad swathe extending southeast from Papua New Guinea to Niue. The ITCZ was enhanced and displaced towards the equator east and near the Date Line and suppressed over much of the northwest Pacific.

Madden Julian Oscillation (MJO)

A strong positive phase of the Madden–Julian Oscillation (MJO) is present over the eastern side of the Indian Ocean. Models favour the MJO rapidly breaking down in the coming week.

ENSO Outlook

El Niño continues to strengthen with sea surface temperatures in the central tropical Pacific approaching peak values observed during the strong 1997-98 El Niño. Model outlooks, as well as all atmospheric and oceanic indicators, indicate further intensification is likely.

Temperatures in the NINO3.4 area of the central tropical Pacific are now 2.2 °C warmer than average. The all-model average forecast suggests this area could warm to 2.8 °C above average in November and December - equalling and exceeding peak values of the 1982-83 and 1997-98 El Niños respectively - before weakening in early 2016.

Observed Rainfall and Validation

Country	October 2015	August to October 2015	Verification [†] for August-October 2015 outlooks
Cook Islands	Normal	Below normal	Consistent to inconsistent
Fiji	Below normal (normal at Vunisea)	Below normal (normal at Ono-i-lau)	Consistent to inconsistent
Kiribati	Above normal (normal at Butaritari)	Above normal (normal at Butaritari)	Consistent and near consistent
Niue	Below normal	Below normal	Consistent
Papua New Guinea	Below normal	Below normal	Consistent to inconsistent
RMI	Below normal to normal	Above normal	Near consistent and inconsistent
Samoa	Below normal to normal	Below normal	Consistent to inconsistent
Solomon Islands	Below normal to normal	Below normal (normal at Munda)	Consistent and near consistent
Tonga	Below normal	Below normal to normal	Consistent and near consistent
Tuvalu	Above normal (normal at Funafuti)	Above normal (normal at Funafuti)	Consistent to inconsistent
Vanuatu	Below normal (normal at Aneityum)	Below normal (normal at Whitegrass)	Consistent and near consistent

[†] Forecast is consistent when observed and predicted (tercile with the highest probability) categories coincide (are in the same tercile).

Forecast is near-consistent when observed and predicted (tercile with the highest probability) differ by only one category (i.e. terciles 1 and 2 or terciles 2 and 3).

Forecast is inconsistent when observed and predicted (tercile with the highest probability) differ by two categories (i.e. terciles 1 and 3).