Climate and Oceans Monitoring and Prediction (COMP)

Pacific Islands - Online Climate Outlook Forum No. 99
Summary Report

Date: Tuesday 8 December 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 12 January - TBC) and Chair (PNG).

Participants:

The Forum was attended by 9 climate officers from five partner PIC NMSs.

Cook Islands:

Fiji: Arieta Baleisolomone

Kiribati: Mauna Eria

Niue: Rossy Mitiepo, Hingano Laufoli, Mellisa Douglas, Rober Togiamana, Clemencia Sioneholo

Papua New Guinea:

Republic of Marshall Islands:

Samoa:

Solomon Islands:

Tonga: Uinitea Vea

Tuvalu:

Vanuatu: Shanna Joseph

The Bureau team: Adna Kazazic, Grant Smith, Grant Beard and Elise Chandler

OCOF tables were received from 6 participating countries before the meeting.

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[*] 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 September to November 2015 outlooks:

Observed rainfall for the one and three month periods ending November 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
Lautoka Mill, Fiji	Nov	2.4	1	116
Laucala Bay (Suva), Fiji	Nov	45.6	3	74
Nausori Airport, Fiji	Nov	74.4	6	60
Lautoka Mill, Fiji	Sep-Nov	64.3	6	116
Nadi Airport, Fiji	Sep-Nov	115.9	5	73
Laucala Bay (Suva), Fiji	Sep-Nov	271.8	5	74
Lakeba, Fiji	Sep-Nov	113.8	3	67
Labasa Airport, Fiji	Sep-Nov	169.2	5	56
Rotuma, Fiji	Sep-Nov	517.7	3	100
Kiritimati, Kiribati	Nov	454.4	81	82
Tarawa, Kiribati	Sep-Nov	870	60	66
Kirimati, Kiribati	Sep-Nov	829.9	77	80
Kanton, Kiribati	Sep-Nov	620.8	51	55
Sola, Vanuatu	Nov	129.5	4	45
Majuro, Marshall Islands	Nov	135.4	2	62
Majuro, Marshall Islands	Sep-Nov	674.9	2	62
Niuatoputapu, Tonga	Nov	384.3	63	68

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

Validation of forecasts with observed rainfall for the September to November 2015 (OCOF #95) period showed 26 consistent, 3 near-consistent and 1 inconsistent outlooks (30 stations across 6 countries).

The largest inconsistency was at Rotuma, Fiji, where above normal rainfall was observed (517.7 mm) against outlook probabilities of 35/15/50 with very low skill (LEPS=-1.1%). The strongest consistent verification was at Pekoa, Vanuatu, where below normal rainfall was observed (114.6 mm), with outlook probabilities of 97/3/0 and very high skill (LEPS= 34.1%).

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 (NA); Fiji (9C, 1I); Kiribati (3C, 1NC); Niue (1C); PNG (NA); RMI (1C, 1NC); Samoa (NA); Solomon Islands (NA); Tonga (5C, 1NC); Tuvalu (NA) and Vanuatu (7C).

Overall: 26C, 3NC, 1I.

January to March 2016 Outlooks:

Of the 6 countries contributing to OCOF #99, the following predictors and periods were selected: Three-month average NINO3.4 (September-November) – three countries, Two-month average NINO3.4 (October-November) – three countries and one-month average NINO3.4 (November) – no

countries. <u>NINO3.4 two-month average is recommended as this predictor/period is associated with the highest three-month outlook skill on a regional scale</u>.

Eighty-two percent of the 34 stations outlooks had the highest probabilities in tercile 1, 0% in tercile 2 and 18% in tercile 3. There we no near-equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.
POAMA outlooks: Eighty-one percent of the 27 station outlooks favoured tercile 1, 0% tercile 2 and 19% tercile 3. There were no near-equal probabilities in two terciles, near-equal probabilitities in three terciles or a mixed outlook.

ENSO summary for the December 2015 OCOF

ENSO Status and equatorial sea surface temperatures (SSTs)

A strong El Niño continues to dominate the tropical Pacific. In the central tropical Pacific Ocean, sea surface temperatures (SSTs) have remained largely stable over the last few weeks. In terms of comparing this event with past El Niños, it is likely the 2015-16 event will rank in the top three events of the past 50 years. However, several indicators (subsurface temperatures and SOI) currently fall short of other events such as 1982-83 and 1997-98.

November SST anomaly values for NINO3 were +2.4°C (up 0.1°C), NINO3.4 +2.4°C (up 0.2°C) and NINO4 +1.7°C (up 0.4°C). The latest weekly values to 6 December are +2.4°C for NINO3, +2.4°C for NINO3.4 and +1.6°C for NINO4.

Tropical subsurface

The Bureau of Meteorology sub-surface temperature anomalies profile to the end of November shows a large pool of warm anomalies mostly east of the Date Line to a depth of ~200 m. These anomalies were slightly eroded on their western edge during November, with the cool water that has been present in the far western Pacific for several months expanding in both strength and breadth.

The TAO/TRITON sub-surface temperature anomaly profile for the five days ending 5 December shows strong warm anomalies in the central to eastern Pacific, reaching to in excess of +7ºC in the far east. Compared with a month ago, the El Niño warm anomalies have strengthened slightly near the coast of South America. Cool anomalies below –3 ºC have intensified in the last month, although the extent of these anomalies remains largely unchanged.

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 slightly 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 decreased 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 Counter-current anomaly is present from the western to the central Pacific, moving more warm water eastward. However, there has been an increase in intensity in the North Equatorial current (flowing to the west) over the past month.

Southern Oscillation Index (SOI)

The November 2015 SOI was –5.3; the highest monthly value since April. The SOI has risen sharply since mid-November, although remaining firmly negative. The approximate 30-day SOI value to 5

December was –7.6 and the 90-day value –15.4. The SOI has remained negative since May (and largely negative over the last 18 months), with current values typical of an El Niño.

Trade Winds

The TAO/TRITON image of trade winds for the five days ending 5 December 2015 shows enhanced westerly winds to the west of 160°W, with close to normal trade winds in the eastern tropical Pacific. If the westerly wind burst persists it may give the El Niño a late boost.

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 6 December shows strongly suppressed rainfall in the western tropical Pacific over southeastern Papua New Guinea and the Solomon Islands. Conversely, there was enhanced rainfall in the central equatorial Pacific (centred and to the east of 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 Fiji. The ITCZ was enhanced and displaced towards the equator east and near the Date Line.

Madden Julian Oscillation (MJO)

A weak Madden–Julian Oscillation (MJO) signal was present over the Maritime continent at the end of November, but this has broken down during the last week and the MJO is no longer discernible. Some models favour the MJO to reappear over the Maritime continent over the next week.

ENSO Outlook

El Niño is likely approaching its peak, with sea surface temperatures in the central tropical Pacific remaining relatively stable over the last few weeks; although a recent westerly wind burst in the western Pacific may give a late boost to some climate indicators. Model outlooks and experience from past events suggest the El Niño is likely to begin declining in early 2016, although impacts from the event may persist much further into 2016.

Observed Rainfall and Validation

Country	November 2015	September to November 2015	Verification[†] for September-November 2015 outlooks
Cook Islands			
Fiji	Below normal	Below normal	Consistent to inconsistent
Kiribati	Above normal (normal at Butaritari)	Above normal (normal at Butaritari)	Consistent and near consistent
Niue	Normal	Below normal	Consistent
Papua New Guinea			
RMI	Below normal to normal	Below normal to normal	Near consistent to consistent
Samoa			
Solomon Islands			
Tonga	Below normal to above normal	Below normal (normal at Vava'u)	Consistent and near consistent
Tuvalu			
Vanuatu	Below normal (normal at Whitegrass)	Below normal	Consistent

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

Forecast is <u>near-consistent</u> 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 <u>inconsistent</u> when observed and predicted (tercile with the highest probability) differ by two categories (i.e. terciles 1 and 3).