Climate and Oceans Monitoring and Prediction (COMP)

Pacific Islands - Online Climate Outlook Forum No. 94
Summary Report

Date: Tuesday 14 July 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 11 August) and Chair (Republic of Marshall Islands).

Participants:

The Forum was attended by 12 climate officers from seven partner PIC NMSs.

Cook Islands: Bates Manea

Fiji: Bipen Prakash

Kiribati:

Niue: Hingano Laufoli, Robert Togiamana, Sean Tukutama

Papua New Guinea: Kisolel Posanau and Nanao Bouauka

Republic of Marshall Islands:

Samoa: Junior Lepale and Tile Tofaeono

Solomon Islands:

Tonga: Mele Lakai

Tuvalu:

Vanuatu: Daphne Nalawas, Shanna Joseph

The Bureau team: Simon McGree, Grant Smith and Elise Chandler

OCOF tables were received from 10 participating countries before and during the meeting.

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

Observations and Verification of April to June 2015 outlooks:

Observed rainfall for the one and three month periods ending June 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	Years of Record
Penrhyn, Cook Islands	June	36	6	77
Pehrhyn, Cook Islands	Apr-Jun	523.5	2	75
Lautoka Mill, Fiji	Apr-Jun	83.4	4	116
Nadi Airport, Fiji	Apr-Jun	112.1	5	73
Yasawa-i-rara, Fiji	Apr-Jun	67.6	3	63
Laucala Bay, Fiji	Apr-Jun	228.1	1	74
Nausori Airport, Fiji	Apr-Jun	369.8	4	59
Tokotoko, Fiji	Apr-Jun	468.4	4	71
Lakeba, Fiji	Apr-Jun	153.0	5	65
Ono-i-lau, Fiji	Apr-Jun	121.1	5	65
Labasa Airport, Fiji	Apr-Jun	84.4	2	59
Beru, Kiribati	June	183.3	56	62
Butaritari, Kiribati	June	509.9	75	77
Kirimati, Kiribati	June	395	88	90
Tarawa, Kiribati	June	382.1	66	66
Kirimati, Kiribati	Apr-Jun	1119	89	89
Tarawa, Kiribati	Apr-June	1122.9	64	66
Kwajalein, Marshall Islands	Apr-Jun	984.2	64	71
Misima, PNG	June	15.6	2	89
Vava'u, Tonga	Apr-Jun	192	4	69
Whitegrass, Vanuatu	June	18.4	4	44
Aneityum, Vanuatu	June	47.5	3	64
Aneityum, Vanuatu	Apr-Jun	244.3	3	63

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

Validation of forecasts with observed rainfall for the April to June 2015 (OCOF #90) period showed 24 consistent, 13 near-consistent and 7 inconsistent outlooks (44 stations across 10 countries).

The largest inconsistency was at Penrhyn, Cook Islands, where below normal rainfall was observed (139 mm) against outlook probabilities of 19/35/46 with good skill (LEPS=14.2%). The strongest consistent verification was at Ono-i-lau, Fiji, where below normal rainfall was observed (121.1 mm), with outlook probabilities of 52/29/19 and good skill (LEPS= 17.9%).

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

Cook Islands (1C,1I); Fiji (10C, 1I); Kiribati (3C); Niue (1C); PNG (1C,3NC); RMI (2I); Samoa (1C,2NC,1I); Solomon Islands (NA); Tonga (4C, 2NC); Tuvalu (1C, 2NC,1I); and Vanuatu (2C, 4NC, 1I).

Overall: 24C, 13NC, 7I.

August to October 2015 Outlooks:

Of the 10 countries contributing to OCOF #94, the following predictors and periods were selected: Three-month average NINO3.4 (April-June) – three countries, Two-month average NINO3.4 (May-June) – seven countries and one-month average NINO3.4 (June) – zero countries. NINO3.4 two-month average is recommended as this predictor/period is associated with the highest three-month outlook skill on a regional scale.

Fifty-eight percent of the 52 stations outlooks had the highest probabilities in tercile 1, 5% in tercile 2 and 29% in tercile 3. The remaining 8% had either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

POAMA outlooks: twenty-four percent of the 42 station outlooks favoured tercile 1, 52% tercile 2 and 19% tercile 3. The remaining 5% had either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

ENSO summary for the July 2015 OCOF

Ocean monitoring

Sea surface temperatures (SSTs)

The 2015 El Niño has strengthened during early July, largely due to recent tropical cyclone activity which caused strong westerly wind anomalies in the western and central Pacific. Sea surface temperatures in the central and western Pacific have continued to warm and cool anomalies in the western Pacific sub-surface have eroded during July.

June SST anomaly values for NINO3 were +1.6°C (up 0.4°C), NINO3.4 +1.3°C (up 0.2°C) and NINO4 +1.1°C (stable). The latest weekly values to 5 July are +1.8°C for NINO3, +1.4°C for NINO3.4 and +1.0°C for NINO4. In the far east Pacific NINO 1 & 2 anomalies are above 2.0°C

Tropical subsurface

The Bureau of Meteorology sub-surface temperature anomalies profile for to 9 July 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 eroded in its extent during July from that of previous months, although large warm anomalies still exist just below the surface in the eastern Pacific between approximately 130° W and 100° W. Weak cool anomalies are present to the west of the Date Line; these too have eroded in strength and extent from the June anomalies.

The TAO/TRITON sub-surface temperature anomaly profile for the 5 days ending 11 July presents a similar picture of weakening cool anomalies in the western Pacific along with weakening warm anomalies in the central and eastern, with anomalies in excess of +4ºC being confined to the far eastern Pacific, which when compared with a month ago has both weakened in strength and extent.

Coral Bleaching Status

The coral bleaching status remains at alert level 2 across Kiribati which includes the Phoenix Islands, the Gilbert Islands, and the Line Islands. At this alert level, coral mortality can be expected for many coral species. The coral bleaching forecast shows the thermal stress moving across much of the Gilbert Islands in the next four weeks.

Sea Level Anomaly

The central and eastern Pacific is experiencing higher than normal sea levels ranging from 5cm to 15 cm. A significantly lower sea level can be observed over much of the Palau and FSM exclusive economic zones, down 30cm in some locations. The central and eastern Pacific is experiencing higher than normal sea levels, but the intensity has dropped over the past month from a maximum of +15 cm to +5 cm. Significantly lower sea levels persist over much of the Palau and FSM exclusive economic zones, dropping further from last month from -30 cm to -45 cm in FSM and -40 cm in Palau. This can be observed at the Real Time Data Display tide gauge for FSM.
(http://www.bom.gov.au/cosppac/rtdd/q1c7o0hj48yu/)

Atmosphere monitoring

Southern Oscillation Index (SOI)

The June 2015 SOI was –12. The approximate 30-day SOI value to 11 July is –16.5 and the 90-day value –11.4. The SOI has been influenced by local weather over recent months, with some large fluctuations, although it has recently fallen to values typical of an El Niño after short increase into positive territory during mid-June.

Trade Winds

Trade winds for the 5 days ending 11 July 2015 are showing the influence of a strong MJO event that has moved through the western and central Pacific. Westerly winds anomalies are present across almost the entire equatorial Pacific out to 110° W. 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 TRMM 30-day rainfall anomaly map to 12 July 2015 shows an enhanced ITCZ across the Pacific. In the south Pacific, the SPCZ was slightly enhanced in the western Pacific and relatively weak east of the Date Line. Rainfall has been enhanced over the Solomon Islands, then suppressed further southeast over Vanuatu and Fiji. To the east of the Date Line rainfall has been closer to the climatological normal.

Madden Julian Oscillation (MJO)

A strong Madden-Julian Oscillation (MJO) was present over the western Pacific in early July. It has weakened over recent days as it moved through the central Pacific and is now considered of moderate strength. The strength and position of the MJO is consistent with enhanced rainfall over the western Pacific and recent weather activity including a rare winter southern hemisphere cyclone that generated heavy rainfall for the Solomon Islands. In the northern hemisphere, an active monsoon flow in association with the MJO passage developed several low-pressure systems including Typohoon Chn-horn which has impacted Guat, southern Japan and mainland China.

The MJO is forecast to move eastwards and continue to weaken. As this occurs there will be less influence on tropical weather, including an increase in the strength of the trade winds, although they're still likely to be weaker than average due to the El Niño. A strong shift in the cloud and wind patterns due to El Niño can make an MJO signal difficult to detect and forecast.

ENSO Outlook

The latest NINO3.4 forecasts (initialised in June) indicate the tropical Pacific Ocean is likely to remain above El Niño thresholds at least for the remainder of the year. The average of the model forecasts for November is high at +2.4 °C; this value of NINO3.4 has only been observed on a few occasions since 1980; during the 1982-83 and 1997-98 El Niño events. Individual model output ranges between +1.6 and +2.9 for October; all well above the El Niño threshold.

For up to date information on the state of ENSO please refer to the links below;
BoM ENSO Wrap Up - http://www.bom.gov.au/climate/enso/
BoM model survey - http://www.bom.gov.au/climate/ahead/ENSO-summary.shtml
IRI model summary - http://iri.columbia.edu/climate/ENSO/currentinfo/SST_table.html

Observed Rainfall and Validation

Country	June 2015	April to June 2015	Verification† for April-June 2015 outlooks
Cook Islands	Below normal to normal	Below normal	Consistent to inconsistent
Fiji	Below normal to normal	Below normal	Consistent to inconsistent
Kiribati	Above normal [below normal at Kanton]	Above Normal	Consistent
Niue	Below normal	Below normal	Consistent
Papua New Guinea	Below normal to normal	Normal [Below normal at Wewak]	Consistent to near consistent
RMI	Above normal	Above normal	Inconsistent
Samoa	Below normal to normal	Normal [below normal at Nafanua]	Consistent to inconsistent
Solomon Islands			
Tonga	Normal [below normal at Vava'u]	Below normal to normal	Consistent to near consistent
Tuvalu	Below normal to above normal	Normal [below normal at Nanumea]	Consistent to inconsistent
Vanuatu	Below normal	Below normal to normal [above normal at Whitegrass]	Consistent to inconsistent

† 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).