

Climate and Oceans Monitoring and Prediction (COMP)

Pacific Islands - Online Climate Outlook Forum No. 93 Summary Report

Date: Tuesday 16 June 2015

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

Chair: Vanuatu

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 14 July) and Chair (Republic of Marshall Islands).

Participants:

The Forum was attended by 22 climate officers from 11 partner PIC NMSs.

Cook Islands: Arona Ngari

Fiji: Bipen Prakash and Swastika Devi

Kiribati: Kamaitia Rubetaake

Niue: Mellisa Douglas, Rossy Mitiepo, Robert Togiamana

Papua New Guinea: Kila Kila and Nanao Bouauka

Republic of Marshall Islands: Nover Juria

Samoa: Faapisa Aiono, Junior Lepale and Faagalo Key

Solomon Islands: Max Norman and Lloyd Tahani

Tonga: Uinita Vea and Mele Lakai

Tuvalu: Meelina Ailesi, Eli Ene and Nico Iona

Vanuatu: Daphne Nalawas, Shanna Joseph

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

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

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

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Observations and Verification of March to May 2015 outlooks from OCOF #93:

Observed rainfall for the one and three month periods ending May 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	May	53.1	7	78
Lautoka Mill, Fiji	May	10.0	11	116
Nadi Airport, Fiji	May	2.8	4	73
Yasawa-i-rara, Fiji	May	8.6	3	63
Laucala Bay, Fiji	May	92.9	7	74
Lakeba, Fiji	May	20.3	3	66
Vunisea, Fiji	May	438.5	79	80
Rotuma, Fiji	May	125.0	10	102
Penang Mill, Fiji	Mar-May	317.4	5	105
Lautoka Mill, Fiji	Mar-May	203.7	6	115
Nadi Airport, Fiji	Mar-May	251.3	4	72
Yasawa-i-rara, Fiji	Mar-May	102.8	1	63
Laucala Bay, Fiji	Mar-May	359.1	2	74
Nausori Airport, Fiji	Mar-May	461.4	2	59
Tokotoko, Fiji	Mar-May	421.8	1	71
Labasa Airport, Fiji	Mar-May	277.6	3	60
Kiritimati, Kiribati	May	423.7	91	91
Tarawa, Kiribati	May	439.6	65	66
Kiritimati, Kiribati	Mar-May	800.3	84	89
Tarawa, Kiribati	Mar-May	1175	64	66
Majuro, RMI	May	438.7	57	61
Majuro, RMI	May	1375.4	59	61
Kwajalein, RMI	Mar-May	1371.6	71	71
Port Moresby, PNG	May	157.2	114	124
Momote, PNG	Mar-May	444.4	2	65
Kavieng, PNG	Mar-May	443.8	3	82
Port Moresby, PNG	Mar-May	572.4	109	121
Faleolo, Samoa	Mar-May	533.1	49	53
Auki, Solomon Islands	May	511	52	53
Henderson, Solomon Islands	May	324	39	40
Honiara, Solomon Islands	May	322	58	61
Kirakira, Solomon Islands	May	1191	49	49
Munda, Solomon Islands	May	369	48	54
Auki, Solomon Islands	Mar-May	1481	53	53

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Kirakira, Solomon Islands	Mar-May	1824	48	48
Lata, Solomon Islands	Mar-May	1785	40	40
Munda, Solomon Islands	Mar-May	1306	50	54
Vava'u, Tonga	Mar-May	368.6	6	69
Ha'apai, Tonga	Mar-May	290.9	6	68
Whitegrass, Vanuatu	May	310.6	43	44
Bauerfield, Vanuatu	Mar-May	1159.2	42	43
Port Vila, Vanuatu	Mar-May	1175.7	62	63

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

Validation of forecasts with observed rainfall for the March to May 2015 period showed 25 consistent, 19 near-consistent and 12 inconsistent outlooks (56 stations across 11 countries).

The largest inconsistency was at Misima, PNG, where above normal rainfall was observed (1069.4 mm) against outlook probabilities of 49/35/16 with high skill (LEPS=22.1%). The strongest consistent verification was at Kirimati, Kiribati, where above normal rainfall was observed (800.3 mm), with outlook probabilities of 23/28/49 and good skill (LEPS= 12.2%).

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

Overall: 25C, 19NC, 12I.

July to September 2015 Outlooks:

Of the 11 countries contributing to OCOF #93, the following predictors and periods were selected: Three-month average NINO3.4 (March-May) – three countries, Two-month average NINO3.4 (April-May) – seven countries and one-month average NINO3.4 (May) – 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.

Fifty-three percent of the 59 stations outlooks had the highest probabilities in tercile 1, 14% in tercile 2 and 20% in tercile 3. The remaining 13% had either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

POAMA outlooks: twenty-five percent of the 48 station outlooks favoured tercile 1, 63% tercile 2 and 6% tercile 3. The remaining 6% had either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

ENSO summary for the June 2015 OCOF

Ocean monitoring

Sea surface temperatures (SSTs)

The 2015 El Niño continues to develop. Most oceanic and atmospheric indicators are consistent with El Niño. Sea surface temperatures in the tropical Pacific have continued to warm. However, the Southern Oscillation Index (SOI) is currently rising due to local weather, not climate factors. Cloudiness near the Date Line has also eased towards more normal levels, but this shift may only be short-lived. May NINO index SST anomaly values were: NINO3 +1.2°C (up 0.4°C), NINO3.4 +1.1°C (up 0.3°C) and NINO4 +1.1°C (stable). The latest weekly values to 10 May were +1.6°C for NINO3, +1.3°C for NINO3.4 and +1.2°C for NINO4. In the far east Pacific NINO 1 & 2 anomalies were above +2.0°C

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Tropical subsurface

The Bureau of Meteorology sub-surface temperature anomalies profile for to 11 June shows a large pool of warm anomalies largely east of the Date Line to a depth of ~250 m. This pool of warm water has continued to intensify in the last fortnight. Cool anomalies below -2°C are present to the west of the Date Line.

The TAO/TRITON sub-surface temperature anomaly profile for the 5 days ending 13 June presents a similar picture in the central and eastern Pacific, with anomalies in excess of $+6^{\circ}\text{C}$ in the eastern Pacific centred on 110°W .

Coral Bleaching Status

The coral bleaching status has reached 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. According the coral bleaching forecast, this level is likely to persist for the next three months at least.

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.

Atmosphere monitoring

Southern Oscillation Index (SOI)

The May 2015 SOI was -13.7 , a fall of about 10 points from -3.8 in April. The approximate 30-day SOI value to 13 June is -1.1 and the 90-day value -7.6 .

Trade Winds

In what may be a short-term fluctuation, trade winds have eased towards more average values over the past fortnight. This is evident in the image for the five days ending 13 June 2015. In general, 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 15 June 2015 shows an enhanced ITCZ in the central and eastern Pacific and suppressed rainfall in the far west Pacific.

In the south Pacific, the SPCZ was enhanced and displaced southward over the New Guinea islands and Solomon Islands, but it was and displaced northeastward further east. Rainfall has been suppressed over Vanuatu, Fiji, Tonga and northern Cook Islands and enhanced to the northeast of Samoa.

Madden Julian Oscillation (MJO)

The Madden-Julian Oscillation (MJO) recently strengthened over Africa and the Indian Ocean after being indiscernible for much of April and most of May. The strength and position of the MJO is consistent with enhanced convection over the tropical Indian Ocean. Most models suggest the signal will weaken as the MJO moves across the Indian Ocean. While it may act to enhance tropical activity over the tropical Indian Ocean for a few more days, its influence on tropical weather will reduce after this week. However, a strong shift in the cloud and wind patterns due to El Niño can make an MJO signal difficult to detect.

ENSO Outlook

The latest NINO3.4 forecasts (initialised in May) 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 October is high at $+2.4^{\circ}\text{C}$. Since 1980, the only times NINO3.4 has been this high were 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/>

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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	May 2015	March to May 2015	Verification [†] for March-May 2015 outlooks
Cook Islands	Below normal to normal	Normal to above normal	Near consistent to inconsistent
Fiji	Below normal to normal [above normal at Vunisea]	Below normal [normal at Vunisea]	Consistent to inconsistent
Kiribati	Above normal	Above Normal	Consistent
Niue	Below normal	Below normal	Consistent
Papua New Guinea	Normal to above normal [below normal at Wewak]	Below normal to above normal	Consistent to inconsistent
RMI	Above normal	Above normal	Inconsistent
Samoa	Above normal [normal at Faleolo]	Normal [below normal at Nafanua]	Consistent to inconsistent
Solomon Islands	Above normal [normal at Taro]	Below normal to above normal	Consistent to inconsistent
Tonga	Below normal to normal	Below normal to normal	Consistent to near consistent
Tuvalu	Normal to above normal [below normal at Nanumea]	Above normal [normal at Nanumea]	Consistent to near consistent
Vanuatu	Normal to above normal	Normal to above normal [below normal at Aneityum]	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).