

Climate and Oceans Monitoring and Prediction (COMP)

Pacific Islands - Online Climate Outlook Forum No. 91 Summary Report

Date: Tuesday 14 April 2015

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

Chair: Tonga

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 May) and Chair (Tuvalu).

Participants:

The Forum was attended by 20 climate officers from nine partner PIC NMSs.

Cook Islands: Turi Tutai, Arona Ngari

Fiji: Arieta Baleisolomone and Swastika Devi

Kiribati: Kamaitia Rubetaake

Niue: Rossy Mitiepo, Robert Togiamana, Sean Tukutama

Papua New Guinea: Kila Kila, Agnes Diap and Nanao Bouauka

Republic of Marshall Islands: Nover Jueia

Samoa: Tile Tofaeono, Faapisa Aiono and Junior Lepale

Solomon Islands: Max Norman and Lloyd Tahani

Tonga: Seluvaia Finaulahi

Tuvalu:

Vanuatu: Daphne Nalawas, Shanna Joseph

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

OCOFC tables were received from ten 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 January to March 2015 outlooks from OCOF #91:

Observed rainfall for the one and three month periods ending March 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
Tokotoko, Fiji	Mar	89.3	1	71
Nabouwalu, Fiji	Mar	152.2	7	98
Kwajalein, RMI	Mar	593.6	70	71
Kwajalein, RMI	Jan-Mar	752.9	70	71
Bauerfield, Vanuatu	Mar	800.1	43	43
Whitegrass, Vanuatu	Mar	43.1	1	44
Port Vila, Vanuatu	Mar	792.8	63	63
Pekoa, Vanuatu	Jan-Mar	398	2	45
Lemap, Vanuatu	Jan-Mar	474.9	4	54
Bauerfield, Vanuatu	Jan-Mar	1554.5	42	43
Port Vila, Vanuatu	Jan-Mar	1579.2	63	63

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

Validation of forecasts with observed rainfall for the January to March 2015 period showed 19 consistent, 15 near-consistent and 11 inconsistent outlooks (45 stations across ten countries, not including Tuvalu).

The largest inconsistency was at Kwajalein, RMI, where above normal rainfall was observed (752.9 mm) against outlook probabilities of 53/32/15 with very high skill (LEPS=32.4%). The strongest consistent verification was at Yasawa-i-rara, Fiji, where below normal rainfall was observed (549 mm), with outlook probabilities of 53/30/17 and very high skill (LEPS= 26%).

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

Cook Islands (1C, 1I); Fiji (7C, 5NC, 1I); Kiribati (1C); Niue (1C); PNG (2C,3I); RMI (2I); Samoa (1C, 3NC); Solomon Islands (2C, 3NC, 2I); Tonga (2C, 4NC); Tuvalu (NA); and Vanuatu (2C, 2I).

Overall: 19C, 15NC, 11I.

May to July 2015 Outlooks:

Of the nine countries contributing to OCOF #91, the following predictors and periods were selected: Three-month average NINO3.4 (January-March) – 4 countries, Two-month average NINO3.4 (February-March) – 5 countries and one-month average NINO3.4 (March) – 1 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 percent of the 53 stations outlooks had the highest probabilities in tercile 1, 2% in tercile 2 and 9% in tercile 3 (Tuvalu not included). The remaining 29% had either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

POAMA outlooks: forty-one percent of the 41 station outlooks favoured tercile 1, 49% tercile 2 and 10% tercile 3. There were no outlooks with either near equal probabilities in two terciles, near equal probabilities in three terciles or a mixed outlook.

ENSO summary for the April 2015 OCOF

Ocean monitoring

Sea surface temperatures (SSTs)

The tropical Pacific Ocean remains in a neutral ENSO state but there are strong indications of the early stages of an El Niño event.

Positive SST anomalies have persisted across the western and central Pacific in recent months and have now expanded into the eastern Pacific. March SST anomaly values for NINO3 were +0.3°C (up 0.1°C), NINO3.4 +0.6°C (up 0.1°C) and NINO4 +1.1°C (up 0.1°C). The latest weekly values to 12 April are +0.7°C for NINO3 and NINO3.4 and +1.0°C for NINO4.

Tropical subsurface

The Bureau of Meteorology sub-surface temperature anomalies profile for 1-9 April shows a pool of warm anomalies largely east of the Date Line down to a depth of approximately 200 m. This pool of warm water has intensified significantly in the last fortnight and spread further east when compared with the sub-surface anomalies for March. Cool anomalies are no longer present in the eastern Pacific.

The TAO/TRITON sub-surface temperature anomaly profile for the 5 days ending 9 April presents a similar picture in the central and eastern Pacific, with anomalies in excess of +4°C between 115°-155°W.

Coral Bleaching Status

The coral bleaching alert is at level 2 for much of the region surrounding Samoa. This patch of ocean warming is also starting to reach across into the northern part of Tonga's EEZ. The Cooks Islands' EEZ is mostly at watch level, with a significant patch of 'warning' status in the central region. The Gilbert Islands also have reach the bleaching status of alert level 2 and the four week outlook shows additional stress accumulating along the equator.

Sea Level Anomaly

There are elevated sea levels up to 10cm higher across the central equatorial Pacific. Conversely, much of the western Pacific is experiencing reduced sea levels, with parts of FSM 25 cm lower. The Solomon Islands, Palau and the Marshall Islands are experiencing a 15 cm drop in sea level.

Atmosphere monitoring

Southern Oscillation Index (SOI)

The March 2015 SOI was -11.2; a fall of about 12 points from +0.6 in February. The approximate 30-day SOI value to 11 April is -9.7 and the 90-day value -7.1.

Trade Winds

The equatorial trade winds were weaker than average in the western half of the tropical Pacific (TAO/TRITON 5 day mean ending 9 April). Westerly wind anomalies (weakened trades) have been present for at least 90 days now; this is a possible indicator of El Niño development.

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 April 2015 shows a stronger than normal ITCZ from north of the Solomon Islands to the far east Pacific. In the south Pacific, the SPCZ was also enhanced and displaced northeastward between the Solomon Islands and Samoa. In the western Pacific rainfall

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was largely suppressed over PNG, eastern Indonesia, northern Australia and east to Fiji. The ITCZ and SPCZ merged close to the Date Line which was most likely due to the strong warm SST anomalies in this region. The above pattern is typical during El Niño years.

Madden Julian Oscillation (MJO)

With active convection from the MJO over the Indian Ocean, the western Pacific has seen suppressed cloudiness and rainfall in the last week. Most models agree that the MJO will weaken as it moves closer to Australia. If the MJO weakens it will have little influence on weather in the western Pacific; neither suppressing nor enhancing rainfall.

ENSO Outlook

All climate models monitored by the Bureau forecast the tropical Pacific Ocean to reach or exceed El Niño thresholds by June. These models also predict the central Pacific Ocean will continue to warm past mid-year, with all the August forecasts for NINO3.4 more than 1 °C above normal. Model forecasts spanning the traditional ENSO transition period, February to May, generally have lower accuracy than forecasts made at other times of year – these forecasts should be treated with caution. However, on this occasion, all eight models are consistent in their outlooks for a warming to occur over the coming months in the tropical Pacific Ocean.

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

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Observed Rainfall and Validation

Country	March 2015	January to March 2015	Verification[†] for January-March 2015 outlooks
Cook Islands	Above normal	Above normal	Consistent to inconsistent
Fiji	Below normal [normal at Leakeba, above normal at Ono-i-lau]	Below normal to normal	Consistent to inconsistent
Kiribati	Above normal [below normal at Kiritimati]	Above Normal	Consistent
Niue	Below normal	Below normal	Consistent
Papua New Guinea	Above normal [below normal at Momote, normal at Wewak]	Below normal to above normal	Consistent to inconsistent
RMI	Above normal	Above normal	Inconsistent
Samoa	Normal [above normal at Faleolo]	Normal [below normal at Faleolo]	Consistent to near consistent
Solomon Islands	Below normal to above normal	Below normal to above normal	Consistent to inconsistent
Tonga	Below normal to normal [above normal at Fuaamotu]	Below normal to normal	Consistent to near consistent
Tuvalu			
Vanuatu	Below normal to above normal	Below normal to normal	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).