

Climate and Oceans Monitoring and Prediction (COMP)

Pacific Islands - Online Climate Outlook Forum No. 79 Summary Report

Date: Wednesday 16 April 2014

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

Main purpose for the OCOF:

- To provide a regular forum for the eleven participating PIC NMSs to discuss the current ENSO status and their seasonal climate outlooks with the COMP project team.

In addition it will serve as the online training forum on the latest SCOPIC^{*} developments and will give the project team and the NMSs an opportunity to discuss other project related matters/concerns.

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 1 and 3 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. Interactions with stakeholders (new or existing).
7. Next meeting (Thursday 15 May) and Chair (Tuvalu).

Participants:

The Forum was attended by 17 climate officers from 7 PIC NMSs.

Cook Islands: -

Fiji: Arieta Baleisolomone

Kiribati: Kamaitia Rubetaake, Ueneta Toorua

Niue: Rossy Mitiepo, Hingano Laufoli, Robert Togiamana, Sean Tukutama and Melissa Douglas

Papua New Guinea: Kila Kila, Nanao Bouauka and Kisolet Posanau

Republic of Marshall Islands: Nover Juria

Samoa: -

Solomon Islands: -

Tonga: Uinita Ve'a, Mele Lakai and Sione Tu'ungafasi

Tuvalu: Eli Ene and Meelina Ailesi

Vanuatu: -

The Bureau team: Elisabeth Thompson, Simon McGree, Grant Beard, Natalie Newton and Karen Bennett

OCOFC tables were received from nine of the eleven participating countries before 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 2014 outlooks from OCOF #75:

Observed rainfall for the one and three month periods ending March 2014 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
Lautoka Mill, Fiji	March	101.1	5	114
Tokotoko (Navua), Fiji	March	752.5	68	70
Ono-I-Lau, Fiji	March	63.2	3	67
Laucala Bay (Suva), Fiji	Jan-Mar	1582.9	71	73
Tokotoko (Navua), Fiji	Jan-Mar	1879.9	70	70
Kanton, Kiribati	March	326	54	57
Hanan Airport, Niue	March	556.3	61	65
Momote, PNG	March	154.0	5	64
Kwajalein, RMI	March	283.7	67	70
Majuro, RMI	Jan-Mar	706.4	30	33
Kwajalein, RMI	Jan-Mar	731.5	69	70
Munda, Solomon Islands	March	151	4	53
Taro, Solomon Islands	March	109	3	39
Henderson, Solomon Islands	Jan-Mar	1160	37	40
Nukuálofa, Tonga	March	509.9	69	70
Fuaámotu, Tonga	March	507.3	35	35
Haápai, Tonga	Jan-Mar	1065.1	66	68
Nukuálofa, Tonga	Jan-Mar	1110.0	67	70
Fuaámotu, Tonga	Jan-Mar	1086.0	32	35
Pekoa, Vanuatu	March	492.3	41	43
Pekoa, Vanuatu	Jan-Mar	1416.8	41	42

* **Record rainfall** [Note: Quality control of the above data is not complete]

Validation of forecasts with observed rainfall across the region for January to March 2014 showed mostly near consistent results (24 out of 53 stations) at the ten countries. Consistent results slightly outnumbered inconsistent results (16 versus 13 respectively). The largest inconsistency was at Taro, Solomon Islands, where above normal rainfall was observed (977mm) against outlook probabilities of 80/2/18 with moderate skill (LEPS=6.4%). The strongest consistent verification was at Fuaámotu, Tonga, where above normal rainfall was observed (1086.0mm), with outlook probabilities of 7/23/70 and high skill (LEPS=22.3%).

A summary of results (C-consistent, NC-Near Consistent and I-Inconsistent) for each country for the January to March 2014 outlook is as follows:

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

Overall: 16C, 24NC, 13I.

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May to July 2014 Outlooks:

Of the ten countries contributing to the OCOF, four chose the combination of SSTa 1 and 9 over January to March 2014 as the predictors for the May to July 2014 outlook, one chose SSTa 1 and 9 over one month (March), four chose NINO3.4 over January to March 2014, while one chose the January to March 2014 SOI.

SCOPIC outlooks for the coming season mainly favoured tercile 3, i.e. above normal; with 17% of stations with high probabilities in tercile 1; 37% in tercile 2; 40% of the stations with the highest probabilities in tercile 3; 4% of the stations with equal chance of terciles 1 and 3; and 2% of the stations with equal chance of terciles 1, 2 and 3. POAMA outlooks favoured tercile 2 (19 out of 29 stations) for the coming season.

Current climate patterns:

ENSO status and outlook

The El Niño-Southern Oscillation (ENSO) state is trending towards El Niño (becoming El Niño-like) with recent observations showing considerable warming of ocean waters (both at the surface and at depth) in the tropical Pacific in recent weeks and months.

International climate models surveyed by the Bureau indicate that warming of the tropical Pacific is likely to continue in the coming months, with most models showing sea surface temperatures will reach El Niño thresholds during the coming winter season (June-August).

Tropical sea surface temperatures

Equatorial Pacific sea surface temperatures have continued to warm in the last month with much of this region now near average or warmer than average. The cool anomalies that dominated along the equator in the east are barely present. March SST anomaly values were NINO3 +0.1°C (up 0.6°C), NINO3.4 0.0°C (up 0.3 °C) and NINO4 +0.6°C (up 0.2°C). There has been further warming in the last fortnight. The latest weekly anomalies are NINO3 +0.5°C, NINO3.4 +0.3°C, NINO4 +0.5°C.

Tropical subsurface

Since January, a large volume of warmer-than-average water (known as a downwelling Kelvin wave) has progressed from the western Pacific sub-surface to the central Pacific sub-surface and warmed, eroding the cooler waters in the east. Water below the surface in the central Pacific is now more than 4 °C warmer than average and perhaps as high as +6 °C in some places.

The latest TAO/TRITON 5-day subsurface anomalies show positive anomalies in excess of 5 °C at about 50 m in the eastern Pacific and in the central Pacific at about 125 m around 155 °W (near Kiritimati).

When this pool of warmer-than-average sub-surface water rises to the surface in the central/eastern tropical Pacific this will lead to surface warming and the formation of an El Niño event. With regards to intensity there is still a reasonable spread among the models from a modest event to very strong.

Southern Oscillation Index (SOI)

The official SOI for March 2014 was -13.3; a significant fall from the February value of -1.3. The current approximate 30-day SOI value is -4.3, while the 90-day value is -0.1.

Trade Winds

Low-level winds were near average across most of the Pacific Ocean during the first week of April but these have weakened recently with westerly anomalies near Indonesia and north of PNG.

Sea level

Positive sea level anomalies have strengthened in the central and eastern equatorial Pacific over the last 30 days. Sea level anomalies exceeded 10 cm for most of the region between Kiritimati and South America.

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

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Outgoing Longwave Radiation (OLR) and TRMM observations for the last 30 days show enhanced ITCZ activity north of the equator between 5-10 °N, extending from the Philippines east to the Line Islands. Enhanced convection was also present along the equator, near the Date Line.

Over the last 30-days the SPCZ west of Samoa has been displaced to the northeast, to an extent where it has merged with the ITCZ near the Date Line. There was enhanced SPCZ activity further east over Niue, the southern Cook Islands and French Polynesia. In the last week to ten days significant rainfall has been received in the PNG and Solomon Islands region.

MJO

An active phase of the Madden-Julian Oscillation (MJO) has moved eastward across the Maritime Continent recently and entered the Pacific (but has weakened over the last few days). Tropical cyclone risk will be enhanced in the Coral Sea over the next week. As mentioned earlier, the MJO has been associated with a suppression of the equatorial Trade Winds and westerly anomalies near Indonesia. Considering that April is late in the South Pacific wet season it is uncertain how much the influence of the MJO will be felt south of the equator.

ENSO Update (Issued on 8th April 2014)

It is now likely (estimated at a greater than 70% chance) that an El Niño will develop during the southern hemisphere winter. Although the El Niño–Southern Oscillation (ENSO) is currently neutral, surface and sub-surface ocean temperatures have warmed considerably in recent weeks, consistent with a state of rapid transition. International climate models surveyed by the Bureau indicate continued warming of the central Pacific Ocean in coming months. Most models predict sea surface temperatures will reach El Niño thresholds during the coming winter season.

El Niño is often, but not always, associated with below normal rainfall across large parts of southern and inland eastern Australia during the second half of the year. The strength of an El Niño does not always indicate how much it will influence Australian rainfall. Historically there are examples where weak events have resulted in widespread drought across large parts of Australia, while at other times strong events have resulted in relatively modest impacts. It is too early to determine the strength of this potential El Niño. Daytime temperatures tend to be above normal over southern Australia during El Niño.

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

Additional Discussions:

The COSPPac team has distributed media statement templates and will provide any desired support to those who would like assistance responding to local media and stakeholder queries in regards to the possible development of an El Niño.

Participants were reminded that nominations are due for the COSPPac Regional Workshop in June.

It has been recommended that the partner PICs begin to transition towards the use of 2 month NINO3.4 SST anomalies as their default SCOPIC predictor. For example using the NINO3.4 February to March 2014 time period for the May to July 2014 outlook.

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Observed Rainfall and Validation

Country	March	Jan-Mar 2014	Outlooks Issued for Jan-Mar 2014 (skill level)	Verification [†] for Jan-Mar 2014 outlooks
Cook Islands	Below Normal to Normal	Below Normal	Normal (low to very high skill)	Near Consistent
Fiji	Below Normal to Above Normal	Below Normal to Above Normal	Normal to Above Normal (very low to very high skill)	Inconsistent to Near Consistent Consistent [Yasawa-I-Rara & Laucala Bay]
Kiribati	Below Normal and Above Normal	Below Normal to Normal Above Normal [Kanton]	Below Normal to Normal (moderate to high skill)	Near Consistent to Consistent Inconsistent [Kanton]
Niue	Above Normal	Above Normal	Above Normal (good skill)	Consistent
Papua New Guinea	Below Normal to Normal Above Normal [Madang]	Below Normal to Normal Above Normal [Wewak]	Normal to Above Normal (very low to good skill) Below Normal (low skill) [Kavieng]	Near Consistent to Consistent Inconsistent [Vanimo]
RMI	Normal to Above Normal	Above Normal	Normal (high to very high skill)	Near Consistent
Samoa	N/A	N/A	N/A	N/A
Solomon Islands	Below Normal to Normal	Normal to Above Normal Below Normal [Lata]	Below Normal to Normal (very low to very high skill)	Inconsistent to Near Consistent
Tonga	Normal to Above Normal Below Normal [Niuafóú]	Normal to Above Normal	Normal to Above Normal (moderate to very high skill)	Near Consistent to Consistent
Tuvalu	Below Normal to Normal	Below Normal Above Normal [Funafuti]	Below Normal (moderate to high skill) Above Normal (very low skill) [Niulakita]	Inconsistent Consistent [Nui]
Vanuatu	Normal to Above Normal Below Normal [Aneityum]	Normal to Above Normal	Below Normal to Normal (very low to moderate skill) Above Normal (very low skill) [Sola]	Inconsistent to Near Consistent Consistent [Aneityum]

[†] 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).