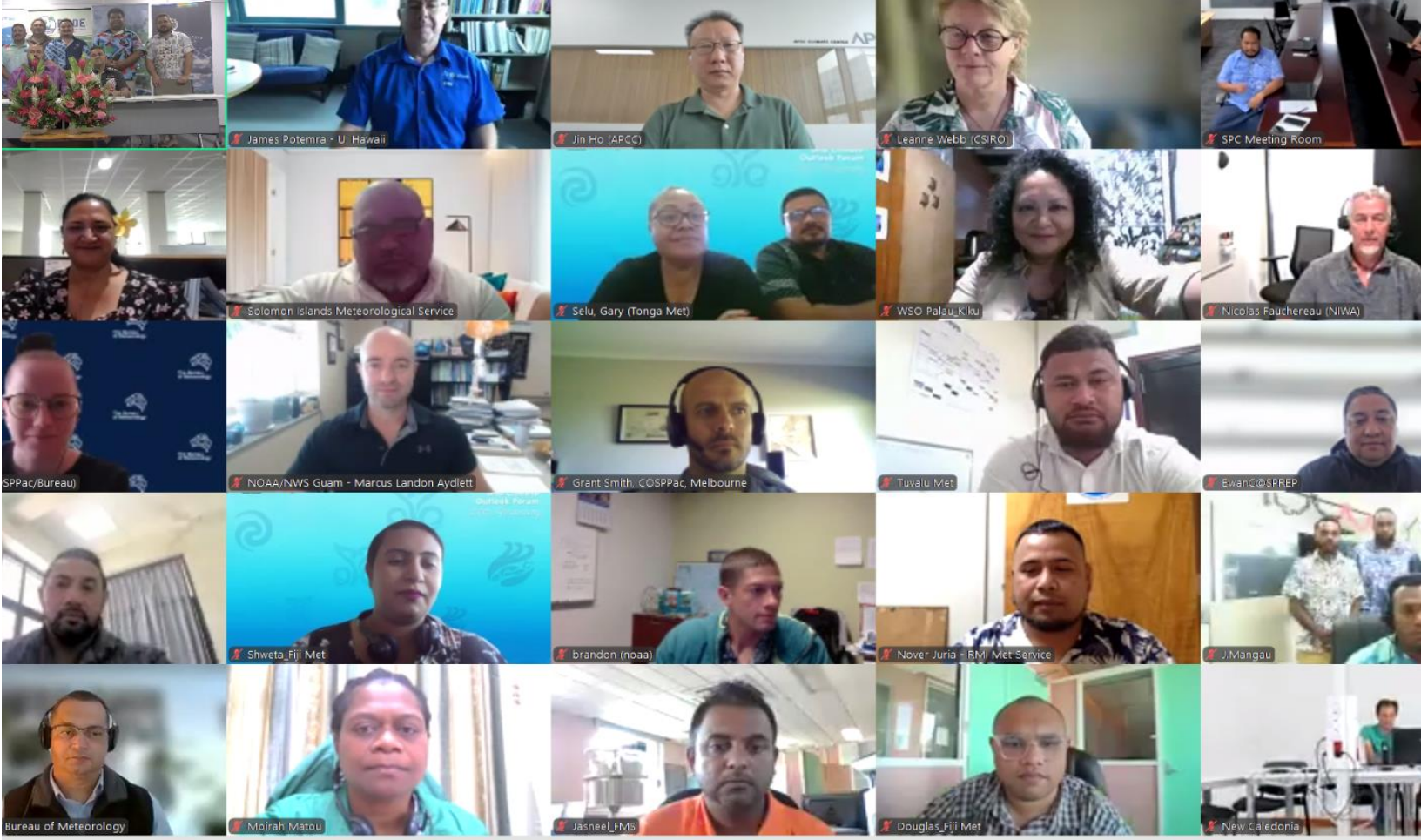

PICOF-16 REPORT

[23 APRIL 2025]

Prepared By:

RCC-N Coordinator

WMO

PACIFIC REGIONAL CLIMATE CENTRE NETWORK

Introduction

Pacific Island Climate Outlook Forums (PICOF) have been held annually in the Pacific since 2015, and biannually since 2020. It is a collaborative initiative that brings together meteorological and climate experts from across the Pacific region to assess and forecast climate conditions for the upcoming season to further support decision making of individuals, communities, governments and climate sensitive sectors such as agriculture, fisheries, disaster management, etc.

The sixteenth forum (PICOF-16) was held virtually on 23 April 2025 and aims to review the climate in the southwest Pacific region from November to April 2025 including impacts, present seasonal climate, ocean and tropical cyclone (TC) outlooks for the period May to October 2025 including long term trends and projections for key selected climate and ocean variables. A regional PICOF statement was produced as an outcome of this forum, summarizing the past six months' climate including the climate, ocean and TC outlooks for the upcoming season. Such a statement will assist and guide NMS/NMHS in the region to develop specific country outlooks for the upcoming season and sectors to plan and make climate sensitive decisions.

This year's PICOF was organized and delivered by the Pacific Regional Climate Centre – Network members, with partial funding from the EU Pacific ClimSA project at the Secretariat of the Pacific Environment Programme (SPREP). Sixty-Eight (68) participants attended this forum.

This report offers a short summary of materials presented during PICOF-16, the key discussion points, and meeting recommendations.

Agenda Items

Opening & setting the scene

Opening Remarks

Prayer: Weather Ready Pacific Manager (Mr Fa'anunu): partnership.
SPREP (Mr Hussein): Sustainability of the PICOF. Support decision making and policy development.
WMO (Mr Taiki): Inclusion of climate change science information and sessions, both at regional and national level during PICOFs'. Track its usage, national development, policy making, etc.

Objectives (Dr McGree)

- Produce climate outlooks and a statement.
- Target groups: NMS, NMHS, Climate Sensitive Sectors & Communities.
- Review the climate and oceanic conditions in the western Pacific region for the period 1 November 2024 to 23 April 2025;
- Present and discuss long-term trends and projections for selected climate and ocean variables;
- Present monthly and seasonal climate, ocean and tropical cyclone outlooks for the western Pacific region for 1 May to 30 October 2025;
- Discuss and review confidence/skill associated with the May to October 2025 outlooks based on the discussions associated with 1-3.

Agenda Item 1: ENSO Update & Outlook

Summary:

1) Since the PICOF-15, La Niña has been developed and is about to end.
   - Cooler than normal SST anomalies remained central equatorial Pacific but weak
   - Eastern, western pacific is warmer than Normal
   - Favorable subsurface structure to persist La Niña is weak.
2) Neutral condition is expected until the next PICOF-17 (Oct 2025).
   - Agreement from the models on sustained near normal SSTs
   - Above 80% chance of ENSO Neutral conditions up to July 2025

Discussion:

a) No questions or discussions.

Agenda Item 2: Look Back (Nov 2024 - Apr 2025)

Atmosphere

Summary:

1) The atmosphere forecast from PICOF-15 was relatively good.
2) Temperatures to the north and southwestern Pacific were 0.5°C to 1.5 °C warmer than average for November to January 2025.
3) Records for dew point and temperature were the highest on records since 1940 over November 2024 to March 2025.
4) There have been persistent dry conditions around the equatorial Pacific and enhance wet conditions around south-western Pacific.
5) There was a strong Madden-Julian Oscillation (MJO) in the Pacific in October 2024 and February 2025 and a weak event in December 2024.

Discussion:

a) ENSO cycle, triple La-Niña, is it okay to conclude that seasons are normal. Seasons vs ENSO phenomena.
b) Recommendation: Pacific RCC-N to have a clear message on ENSO status regardless of the differences in sources. There should be a RCC ENSO dial on the RCC page.

Ocean

Summary:

1) From November 2024 to March 2025 Ocean conditions align with the PICOF 15 outlook. La Niña-like pattern developed at the end of the year, and short lived. Below normal SST observed in part of Kiribati. Elsewhere near to above normal SST.
2) Sea level is generally higher than normal for most Pacific Island Countries. Below average anomalies observed in part of Kiribati.
3) Coral bleaching Alert observed as forecast over PNG from November 2024 to March 2025, Nov-Dec over Palau and FSM, Nov over Nauru and RMI. Observed but not forecast over Solomon Is, Vanuatu, patches over Fiji & Tonga.

Discussion:

a) No discussion

Tropical cyclones (Southwest Pacific)

Summary:

1) With only a few weeks to go, the 2024 – 2025 TC season is likely to be classified as remarkably inactive (miss)
2) Only 11 disturbances overall, and 5 named storms (Alfred, Pita, Rae, Seru, Tam)
3) Impacts include TC Rae affected Fiji, causing significant flooding, and 5 deaths by drowning in NSW caused by TC Tam
4) Lower than normal TC activity in the central Pacific tends to be associated with La Nina conditions

5) The current TC season is therefore consistent with this pattern
6) Indications for below normal TC activity were given in the TC outlooks issued early October 2024

Discussion:

a) Expert to look at this product given the misses we have had over the last few consecutive TC seasons.
b) Analogue approached used, integrate long-term trend information on the TC Outlook methodology.
c) BoM will cease issuing TC seasonal outlooks from next TC season.

Impacts (Southwest Pacific)

Micronesia:

Summary:

1) Water Security
   - Significant water shortages in Majuro (10M gallon drop in reservoir)
   - Dry conditions affected northern and central RMI
   - Water pump disruptions in Palau due to power outages
2) Infrastructure & Energy
   - Power outages and downed lines in Pohnpei and Palau
   - Flooding on Majuro's main road
   - Damage to airstrips and coastal facilities in RMI
3) Fisheries & Marine Transport
   - Coral bleaching reported in Pohnpei and Chuuk
   - High surf and strong winds led to maritime incidents in RMI
   - Impacts on small craft safety and inter-island mobility
4) Ecosystems & Agriculture
   - Browning vegetation in drought-affected atolls (Wotje, Utirik)
   - Coral reef stress due to bleaching and warm sea surface temperatures
5) Health & Education
   - Loss of health workers and schoolteachers in maritime incidents
   - Dusty conditions and heat stress concerns in drought zones
6) Disaster Response & Coordination
   - Active inter-agency coordination across NWS, NDMO, WFO Guam
   - Ongoing monitoring and early warning support from regional partners

Discussion:

a) No discussion.

Melanesia:

Summary:

1) Rainfall conditions varied across the region, ranging from below normal to above normal. Enhanced weather activity was driven by the presence of troughs, low pressure systems, and tropical cyclones, with record breaking atmospheric temperatures recorded in New Caledonia.
2) Impacts varied across the islands, affecting key sectors such as transport, infrastructure, agriculture, water, marine, education, health and properties. Heavy rainfall and tropical systems caused widespread flooding and landslides, leading to road closures, damaged homes, and displacement in Fiji. In New Caledonia, multiple tropical depressions brought inter-island travel and flights to a halt, while water quality was compromised on the east coast. Solomon Islands recorded at least one fatal landslide, while schools and urban areas experienced waterlogging. In Vanuatu, post-earthquake flooding, storm-force winds, and rough seas damaged gardens, disrupted road access, and impacted coastal communities.

Discussion:

a) Posted on the chat that landslides are very common these days.

Polynesia:

Summary:

Cook Islands	▪ No major impacts from recent events Small-scale events with minor impacts: ▪ Mini-flash flooding (Dec 13th - 14th) where most low-level homes experienced inundation. Shallow-rooted vegetation around homes was also damaged. ▪ TD04F/TC Pita (Jan 07th - 11th) – no significant damages observed.
Niue	▪ In general, Niue observed visible impacts from 24/25 Tropical Cyclone season. ▪ Impacts felt by Tropical Disturbances 03F and 04F, with TD04F intensifying into Tropical Cyclone Pita. ▪ TD03F brought strong gale force winds, very rough to high seas, and moderate to heavy damaging swells from the N-NW. ▪ With wind speeds recorded on the 6th of January at Hanan Airport, reaching up to 72km/hr, and gusting to 83km/hr at times. ▪ Majority of the damage was caused by strong force to gale force winds.

	▪ Thunder & lightning was also experienced which resulted in a power outage for the island.
Samoa	▪ No Tropical Cyclones ▪ Average to Above average rainfall for Samoa ▪ Infrastructure Damage was evident (Power lines, Roads, etc.) ▪ Need more Observations from other sectors (Sea Level, Fish yield during severe weather, agriculture, tourism, etc.) ▪ Definition of Rainfall Status in accordance to impacts
Tonga	▪ Heavy cause flash flooding which impacted low lying communities. ▪ Infrastructure & Communications network is heavily affected due the heavy rain and flooding.
Tuvalu	▪ This is a crucial reminder of the issues we encounter every day because of climate change. The threats to our homes, livelihoods, and safety are increasing because of the worsening effects of rising sea levels. ▪ To secure our future, it's essential to act and spread awareness of the realities our island nation faces. Over the past six months northern and central groups have experienced low rainfall as result impacting root crops and households' water storage were shortage. In the southern group of Tuvalu most experienced high rainfall leading to flooding some low-lying areas. ▪ However, during the wet season, Tuvalu was experienced below to above average rainfall during the neutral phase. But there weren't any extreme events that affected the country in the past six months.

Discussion:

a) Discussed landslides and requested some early warning information regarding this phenomenon.

Agenda Item 3: Monthly & Seasonal Outlooks (May-Oct 2025)

Atmosphere

Summary:

1) **Precipitation**:
   - For May – July 2025, below normal rainfall is expected at central equatorial Pacific over Nauru, Phoenix Islands (Kiribati) as well as eastern FSM and RMI. Above normal rainfall is expected over Palau, PNG, Solomon Islands. A tendency for above normal rainfall is forecasted over Vanuatu, Fiji, Samoa.
   - For Aug. – Oct. 2025, Below normal rainfall is expected at southern off-equatorial central Pacific near Tuvalu, Kiribati, northern Cook Islands. Above normal rainfall is favored at the western North Pacific over Palau and FSM.

2) **Temperature**:
   - For May – Oct. 2025, Above normal temperature is expected over the whole Pacific except for the central to eastern equatorial Pacific.

Sub-seasonal:

3) **MJO**:
   - Not significant. Possibility of enhanced convection at the western Pacific in coming weeks.
4) **Weekly Forecast (WMO LC-SSP)**:
   - Below normal rainfall: along the equator and its north
   - Above normal rainfall: Off equatorial south pacific and western end of subtropical Pacific.

Discussion:

1) Nil.

Ocean

Summary:

1) Pacific expected to be entered neutral or possible mild La Nina conditions.
2) North Pacific expected to see slightly higher SST's (1°C) while most locations were neutral to 0.5°C.
3) Sea level anomalies are also low, high in the western N. Pacific then dropping.
4) Coral stress continues.

Discussion:

a) Nil.

Tropical Cyclones (Northern Hemisphere (West Pacific) and American Samoa

Summary:

1) 2024 overview and 2025 thus far: TC activity was largely below normal, with TC metrics and overall distribution that followed a La Niña-like pattern ○ There has been no TC activity in the WNP basin so far in 2025 (JTWC data as of April 21 2025).
2) Per NOAA Climate Prediction Center Diagnostic Discussion 10 April 2024 ○ ENSO Neutral prevails (Final La Niña Advisory issued) and strongly favored next several months ○ Nov 2025 - Jan 2026: 43% chance ENSO neutral, 38 % chance La Niña, 19% chance of El Niño
3) Unofficial forecast is for an average TC season for WNP and CNP basins ○ Important to note that ENSO based tropical cyclone patterns are typical, but not guaranteed, as evidenced by TC activity during the 2023/2024 El Niño
4) Official NOAA TC outlooks for WNP and CNP will be issued next month
   ■ CNP - 15 May 2025 ■ WNP - 22 May 2025

Discussion:

a) Assess the possibility of out-of-season tropical cyclone(s) and include such information into the statement if required/significant.

Agenda Item 4: Long Term Projections

Summary:

Prevention is better than cure!

1) High confidence that lower emissions and meeting the Paris Agreement means slower sea level rise, and less chance of the abrupt changes from ‘tipping points’.
2) The possibility of abrupt and irreversible changes is yet another reason for reaching net zero and minimizing further global warming.

Discussion:

a) Impact of climate change on seasonal predictions/outlooks. ENSO & PDO driven impacts, we need to factor the climate change trends.
b) There are some works which suggested that SLR of up to 2m can be expected by end of this century. How much of this has gained traction?
c) Less interaction with NMHS in virtual mode. PICOF to focus on extreme events.

Agenda Item 5: Summary & Next Steps

Discussion:

a) Development of the regional statement by SPC, SPREP & BoM.
b) M & E on the statement by the COSPPac M&E Advisor.

Conclusion

The sixteenth Pacific Island Climate Outlook Forum (PICOF-16) provided an essential platform for climate experts across the Pacific region to review the climate of the past season (November 2024 to April 2025); evaluate the performance of climate, ocean and tropical cyclone Outlooks; exchange insights on the operational experiences and impacts; present climate, ocean and tropical cyclone Outlooks for the upcoming season (May to October 2025); including climate change historical trends and projection updates.

Key highlights of PICOF-16 are as follows:

1) El Niño Southern Oscillation (ENSO)
   - La-Niña has been developed and is about to end. Neutral conditions are expected to persist until October 2025.
2) Climate, Ocean & Tropical Cyclone Outlooks

Rainfall:

- May – July:
  - ☞ Below normal rainfall is expected in the central equatorial Pacific over Nauru, Phoenix Islands, eastern FSM and RMI.
  - ☞ Above normal rainfall is expected over Palau, PNG, Solomon Islands, Vanuatu, Fiji & Samoa.
- August to October:
  - ☞ Below normal rainfall is expected around the southern off-equatorial central Pacific region near Tuvalu, Kiribati, and Norther Cooks.
  - ☞ Above normal rainfall is favored at the western North Pacific over Palau & FSM.

Temperature:

- May to October:
  - ☞ Above normal temperature is expected over the whole Pacific except for the central to eastern equatorial Pacific.

Sea Surface Temperature:

- May to July:

- ☞ Above normal ocean surface temperatures are favored across most of tropical western Pacific except in the central equatorial Pacific where near normal ocean surface temperatures anticipated.

Sea Level Rise:

- May to July:
  - ☞ Higher than normal in the western north Pacific around Palau, western FSM, Guam and CNMI.
  - ☞ Below normal sea level is favored in the central equatorial Pacific region, and in the vicinity of Tokelau, Cook Islands and French Polynesia.
  - ☞ Pacific NMHSs are requested to note regions where abnormally higher tides are predicted as well as higher than normal sea level. The combination of higher tides and above normal sea levels may elevate the risk of coastal inundation.

Coral Bleaching:

- April to July:
  - ☞ Coral bleaching alerts are in effect for Palau, southern FSM, PNG, Nauru, western Kiribati, Solomon Islands and Vanuatu and are expected to remain in effect until July 2025.

Tropical Cyclones:

- ☞ Near-average number of Tropical Cyclones is expected for the Western North Pacific and Central North Pacific basins.
- ☞ Experts were asked to assess the possibility of out-of-season TCs in the Southwest Pacific region.

Long-term Trends & Projections

- ☞ High confidence that lower emissions and meeting the Paris Agreement means slower sea level rise, and less chance of the abrupt changes from ‘tipping points’.
- ☞ The possibility of abrupt and irreversible changes is yet another reason for reaching net zero and minimizing further global warming.

PICOF-16 was successfully delivered virtually with a statement developed to guide and assist NMS/NMHS to in developing their national climate and ocean outlooks for the upcoming season and support the delivery of National Climate Outlook Forums (NCOF) at the national level.

Recommendations

Enhance National Climate Services

1) National Meteorological and Hydrological Services (NMS/NMHS) are encouraged to utilize the regional PICOF statement to tailor country-specific seasonal outlooks. These should

integrate climate, ocean, and tropical cyclone forecasts to support national planning and early warning systems.

Improve Climate Forecasting and Early Warning Systems

2) The skill of seasonal outlooks for rainfall, air temperature, sea surface temperature, sea level rise, coral bleaching and El-Nino southern oscillation (ENSO) phenomenon were consistent. However, for the last few consecutive seasons, the skill of the tropical cyclone seasonal outlook issued were not consistent. Experts to explore ways to improve the skill of this product and propose a better solution.
3) RCC-N Node for Climate Prediction to offer seasonal outlook information for wind and relative humidity.
4) RCC-N to issue their own ENSO, Climate & Ocean outlooks and not to rely on institutional climate outlooks.
5) Explore the possibility of out-of-season tropical cyclones and issue information if required.
6) Develop an impact database to systematically document weather and climate related impacts

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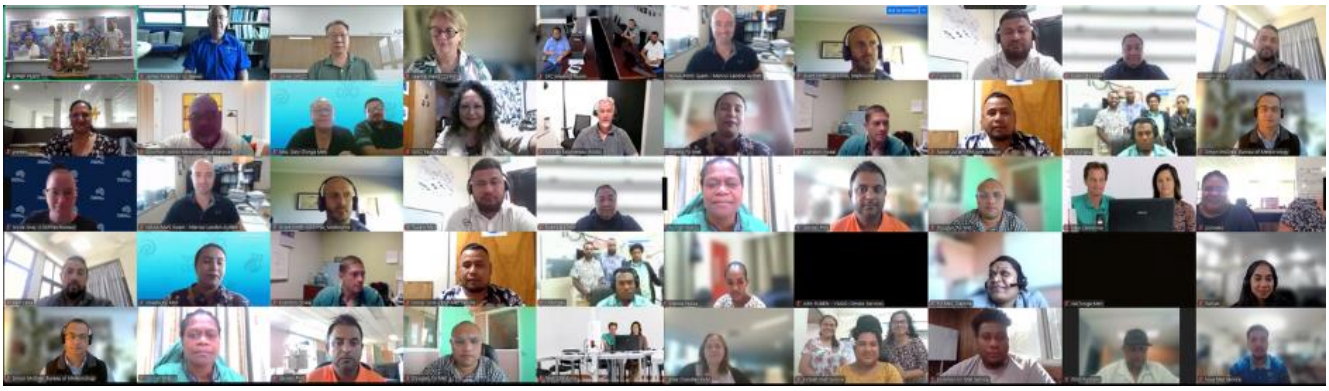
Monitor, Evaluate, and Continuously Improve

7) Strengthen the mechanisms for collecting, reporting climate-related impacts at national and regional levels to support evidence-based forecasting and improve regional services to NMS/NMHS.
8) PICOF statement should be simplify by knowledge broker to reach other uses (regional and national)
9) Use feedback from NMS, NMHS and sectors to improve the delivery and usefulness of regional climate, ocean and tropical cyclone outlooks including the PICOF-16 statement.

Annex 1: Group Photo



Annex 2: Agenda

([Pacific Islands Climate Outlook and Stakeholder Forum (PICOF-16) | Pacific Meteorological Desk & Partnership])

Annex 3: Participant list

Name	Organisation	Gender
Henry Taiki	WMO	Male
Simon McGree	BoM	Male
Ofa Faanunu	SPREP	Male
Naheed Hussein	SPREP	Male
Setefano Finau	SPREP	Male
Tile Tofaeono	WMO	Male
Terry Atalifo	SPREP	Male

Philip Malsale	SPREP	Male
Pomate Skelton Soloi	SPREP	Female
Kotoni Faasau	Samoa Met	Male
Joshua	Samoa Met	Male
Manu	Samoa Met	Male
Dr Moleni Tu ‘uholoaki	SPC	Male
Zulfikar Begg	SPC	Male
Merana Kitione	SPC	Female
Ed Hawkes	SPC	Male
Zahrah Ali		Female
Marcus	NOAA	Male
Jessie Gray	BoM	Female
Jin Ho	APCC	Male
Nicolas Fauchereau	NIWA	Male
Moira Matou	VMGD	Female
Kamaitia Rubetaake	Kiribati Met	Female
Miriam Kataunati	Kiribati Met	Female

Boyd Mackensie	FSM Chuuk NWS	Male
Kiku Mochimaru	Palau NWS	Female
Kaani Kalepo	Tuvalu NMHS	Male
Lucy Obed	VMGD	Femail
Douglas Fong	FMS	Male
Shweta Shiwangni	FMS	Female
Jasneel Chandra	FMS	Male
Arieta Balesolomone	FMS	Female
John Mangau	VMGD	Male
Seluvaia Ilolahia	Tonga NMHS	Female
Gary Vite	Tonga NMHS	Male
Joseph Worwor	VMGD	Male
Wallace Jacobs	FSM Pohnpei NWS	Male
Nover Juria	Marshall Islands NMHS	Male
Max Sitai	Solomon Islands NMHS	Male
MartinTugumana	Solomon Islands NMHS	Male
Christine Tuiotti	SPREP	Female

Sosikeni Lesa	SPRE	Male
Brandon Burunt	NOAA	Male
Leanne Webb	CSIRO	Female
Alexandre Peltier	Meteo France	Male
Olivia	Meteo France	Female
John Ruben	VMGD	Male
Victoire Lurent	Meteo France	Female
Ricky Joram	Nauru Met	Male
Angeline Banga	VMGD	Female
Brian Iarapia	VMGD	Male
John Mangau	VMGD	Male
Winston Jack	VMGD	Male
Grant Smith	BoM	Male
Ewan Cameron	SPREP	Male
Vanda Faasao-Chan Ting	SPREP	Female
Karan Narayan	UN	Male
Raquel Tanaki	Niue Met	Female

Elise Chandler	BoM	Female
Gaby Mayorga	UNDRR	Female
Daeun Jeong	APCC	Female
Hyuen -Ju Lee	APCC	Female
Nicolas Herold	BoM	Male
Bipen Prakash	SPC	Male
Koroi Tadulala	SPC	Male
Ashley Wild	BoM	Male
Claire Yeo	BoM	Female

…End…