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Current status of operations of Pacific Islands Climate Outlook Forum (PICOF)

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World Meteorological Organization
Organisation météorologique mondiale

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PICOF background

Environment and Climate Change Canada | Environnement et Changement climatique Canada

- PICOF is held annually in the September-October months prior to the SW Pacific Cyclone season and the onset of the wet season.
- WMO Global Framework for Climate Services Project funded by Environment and Climate Canada provided funding in 2015 to hold PICOF-1 and cost-savings were also used to partially fund PICOF-2
- The RESPAC project implemented by the UNDP in Fiji provided funding to SPREP in 2016 for PICOF-2, PICOF-3 and PICOF-4.
- **coordinating institution(s):**
  - SPREP, WMO, Fiji Met Service, NIWA, BoM, NOAA
- **collaborating partner institutions;**
  - SPREP, WMO, SPC, USP, BoM, NIWA, NOAA, CSIRO, APCC, UNDP, IFRC
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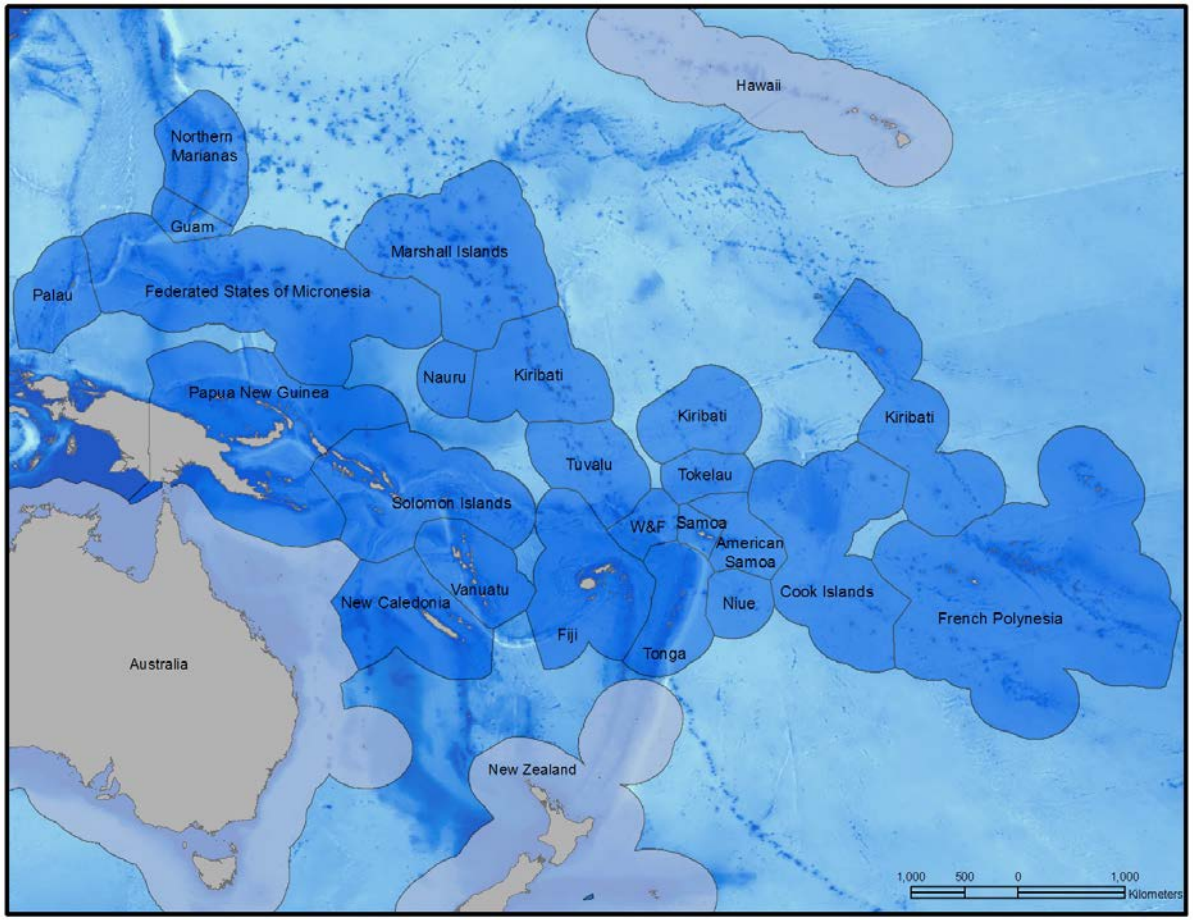
Pacific Islands Countries and Territories

American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, France, French Polynesia, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United Kingdom, United States of America, Vanuatu, Wallis and Futuna.



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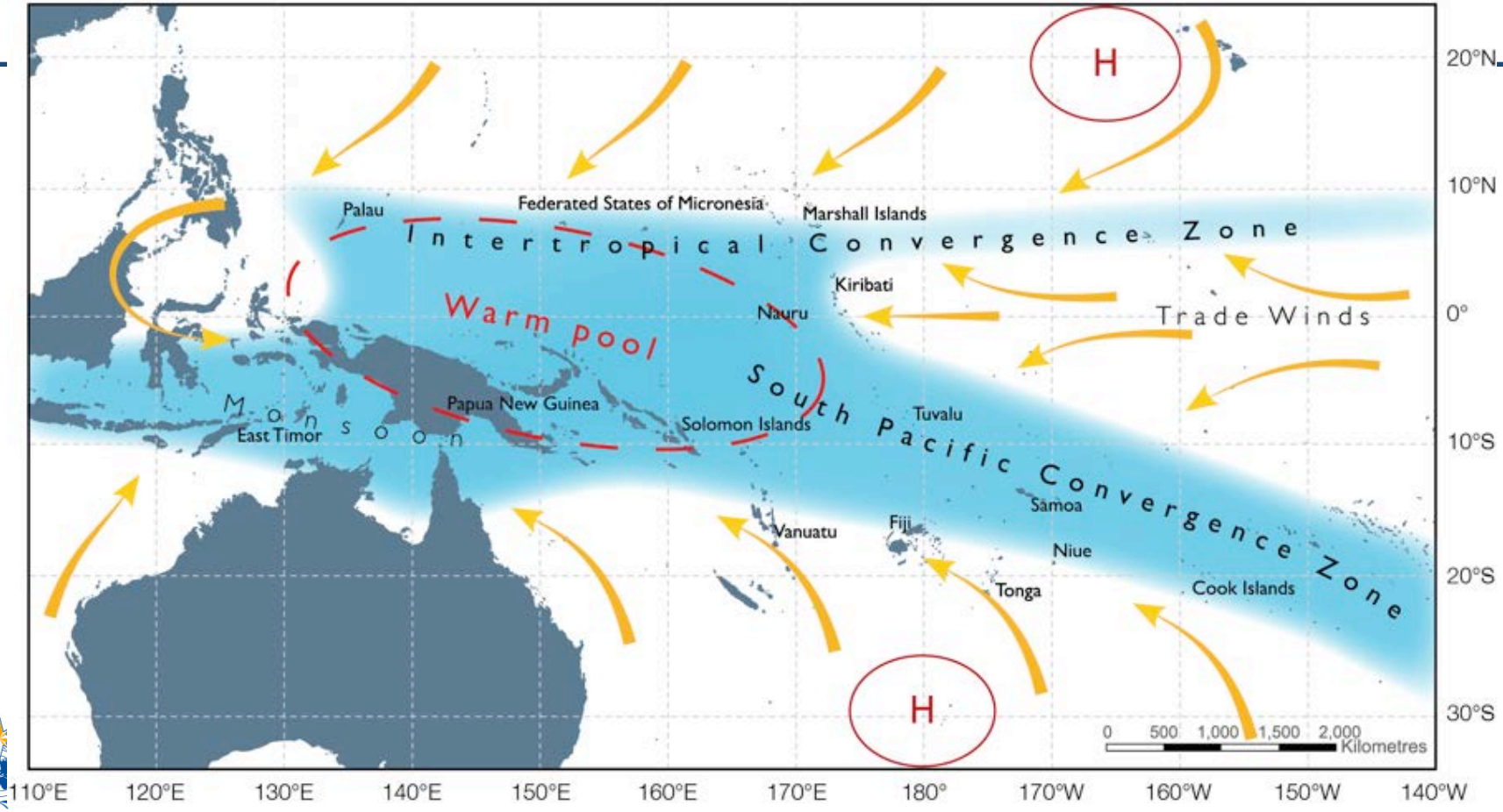
Features that drives the variability in the Pacific Region

The average positions of the major climate features of the region in November to April.

ENSO, MJO, ITCZ, SPCZ, West Pacific Monsson

Cyclone Season : October-April

Wet Season: November-March Dry Season: June- September



PICOF-1 (2015)

Focus: Water Sector

PICOF-2 (2016): DRR Sector

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui de:
Environment and Climate Change Canada
Environnement et Changement climatique Canada

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The PICOF process (1/2)

- **Seasonal Forecasts and Consensus Outlook Methodology**
- **Tropical Cyclone Forecast: (BoM, NIWA, NOAA)**
- **ENSO Forecast;** IRI, NASA, GFS, ECMWF models
- **Precipitation and Temperature**
  - **SW Pacific: POAMA, SCOPIC, ICU and APCC Multi-model ensembles** (CMCC, MSC, NASA, NCEP, CWB, PNU, POAMA)
  - **North Pacific:** Pacific ENSO Applications Climate Center
    - **PEAC Ensembles** (UKMO, ECMWF, NCEP CA/Coupled, NASA GMAO, IRI, APCC MME, PEAC CCA)

The PICOF process (2/2)

Model verification skill scores of temperature and rainfall seasonal outlooks, tropical cyclone forecasts, and ENSO forecasts (IRI, NASA, GFS, ECMWF models) were presented and discussed.

Accuracy of Consensus Outlook- evaluated by performing a comparative analysis of the seasonal forecast versus the actual climatological observations.

National Climate Outlook Forums (NCOFs) such as recent ones held in **Papua New Guinea (2015**), **Kiribati and Vanuatu (2016)** and upcoming scheduled NCOFs in **Fiji, Samoa, and Tonga (2017)** provide further dissemination of climate outlooks to stakeholders at a national scale.

Regional Statement on the Impacts of the 2015/16 El Niño and 2016/17 Climate and Tropical Cyclone Outlook for the Pacific Islands

Key Messages:

2015/16 El Niño

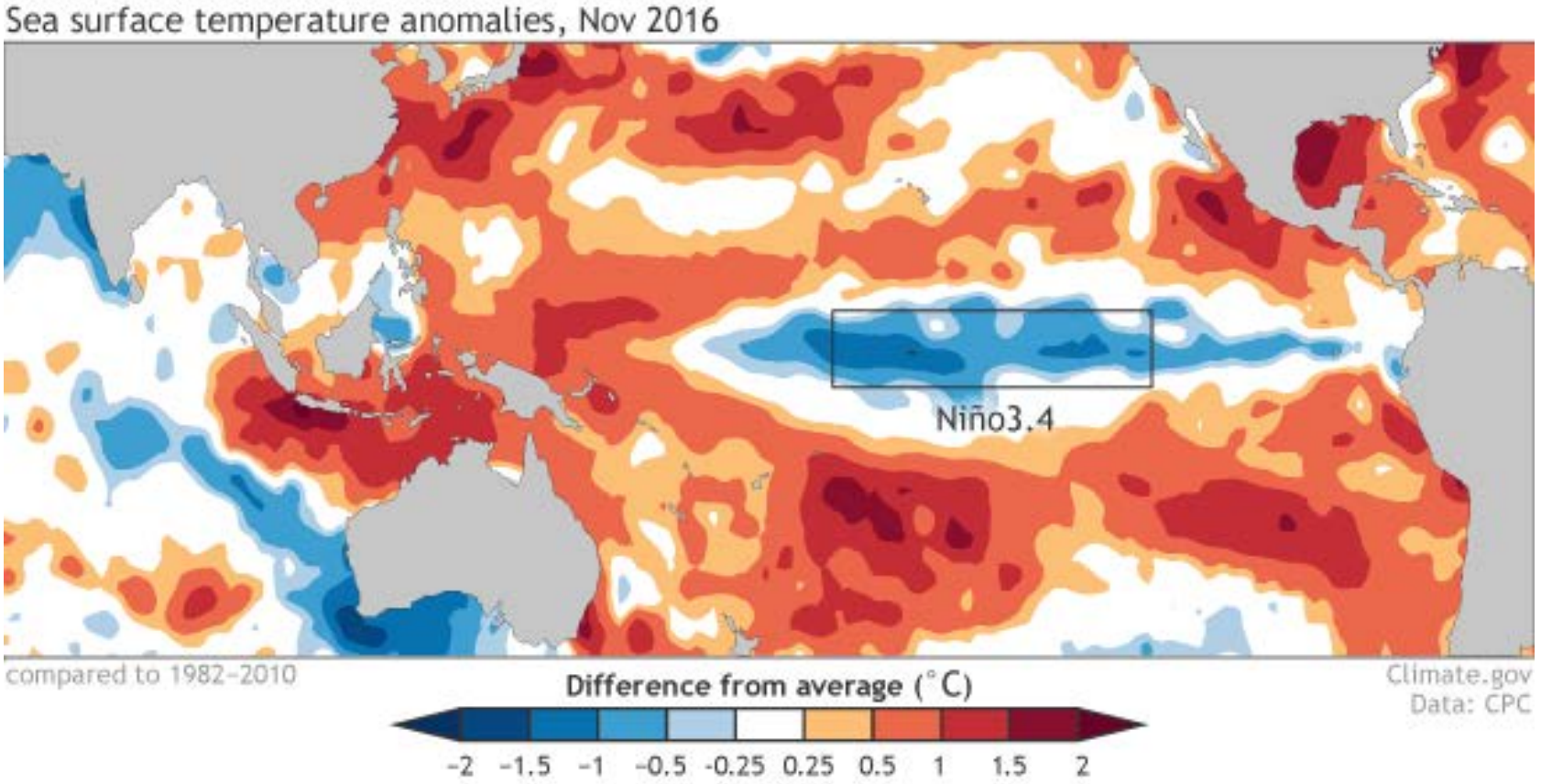
- The strong El Niño in 2015/16 was similar to previous events in 1997/98 and 1982/83.
- Significant impacts associated with the 2015/16 El Niño were anticipated and experienced across the Pacific Islands region, mainly associated with below normal rainfall and reduced sea level in the southwest Pacific. The central Pacific experienced increased rainfall and elevated sea level.
- These impacts came on the back of "El Niño like" conditions experienced throughout most of the region in 2014.

2016/17 Outlook

- For November 2016 to January 2017, weak La Niña to neutral conditions are expected.
- Below normal rainfall is forecast for the central Pacific (moderate-high confidence), and normal or above normal rainfall is possible for the islands in the northwest tropical Pacific and the region from Papua New Guinea southeast to the southern Cook Islands (moderate confidence).
- 8 to 10 named tropical cyclones are expected for the southwest Pacific region for the period November 2016 to April 2017 (this is near the long-term average).
- Typhoon activity for the western north Pacific is expected to be below normal to normal, from October to December 2016.

2015/16 El Niño Impacts:

ENSO Forecast (weak La Nina to neutral-Nov 16-Jan 2017)



Current Oceanic Nino Index (ONI) in Nino 3.4 = -0.7 C in August-October 2016 (NOAA CPC)

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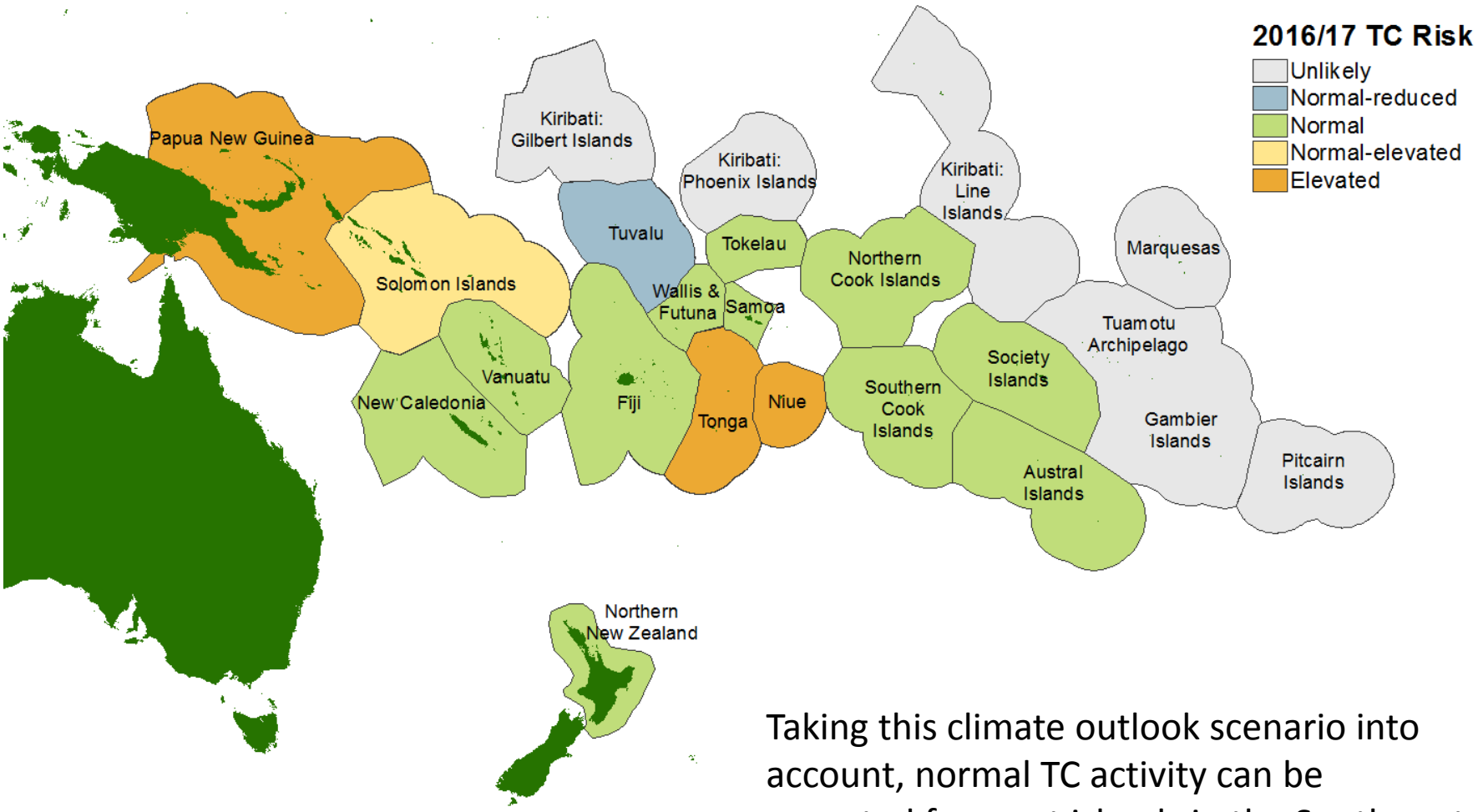
Map of tropical cyclone risk



Taking this climate outlook scenario into account, normal TC activity can be expected for most islands in the Southwest Pacific, with 8 to 10 named TCs forming across the region during the November 2016–April 2017 period.

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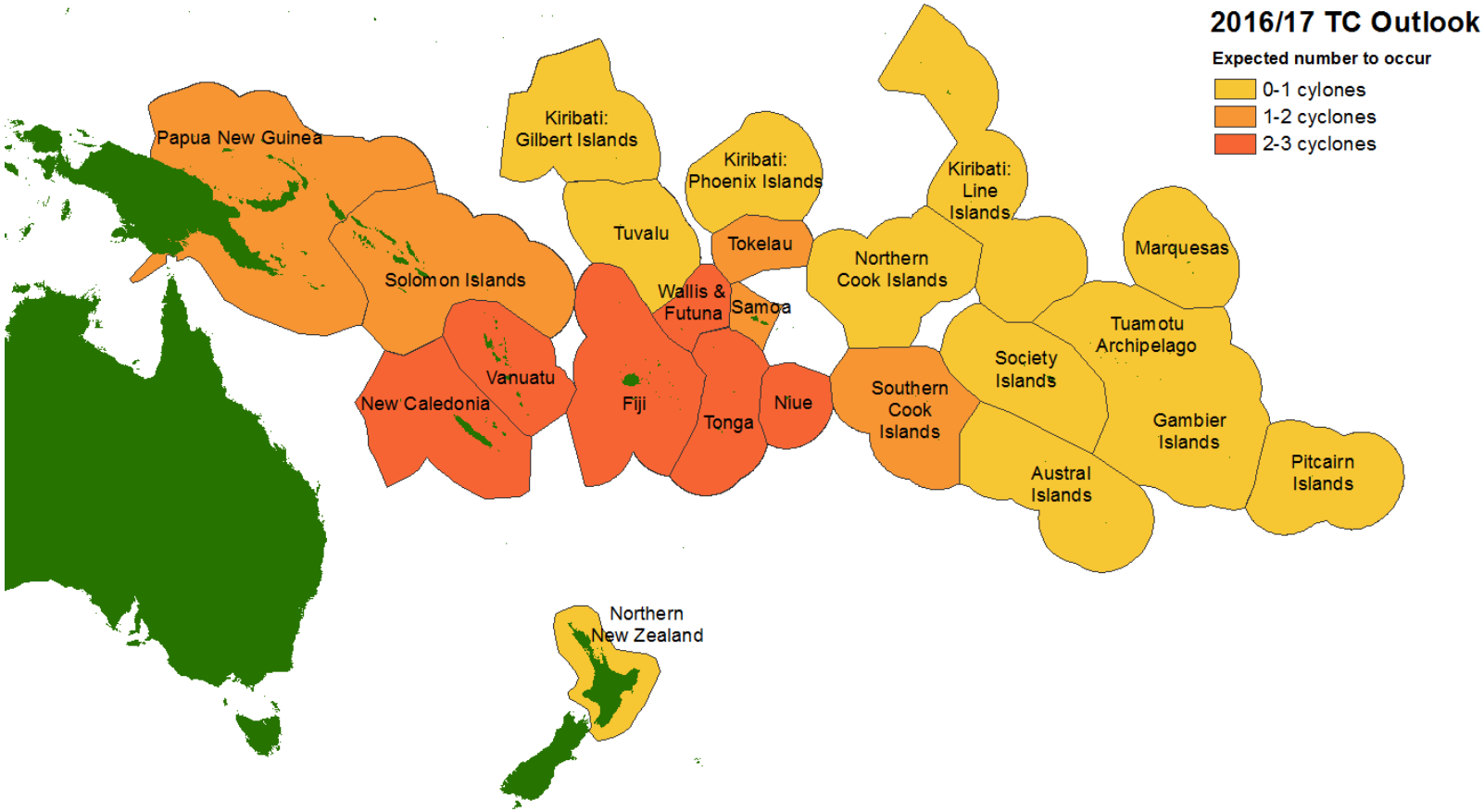
Number of Named storms interacting with an island group



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Verification of TC Outlook and Summary of 2016-2017 Pacific Tropical Cyclone Season

Source/Record	Tropical Cyclone	Severe Tropical Cyclone
Record high:	1997–98: **16**	1982–83: **10**
Record low:	2011–12: **3**	2008–09: **0**
Average (1969-70 - 2015-16):	**7.3**	—
NIWA October	**8-10**	**>5**
Fiji Meteorological Service	**5-7**	**3-5**
NIWA February	**6**	**2**

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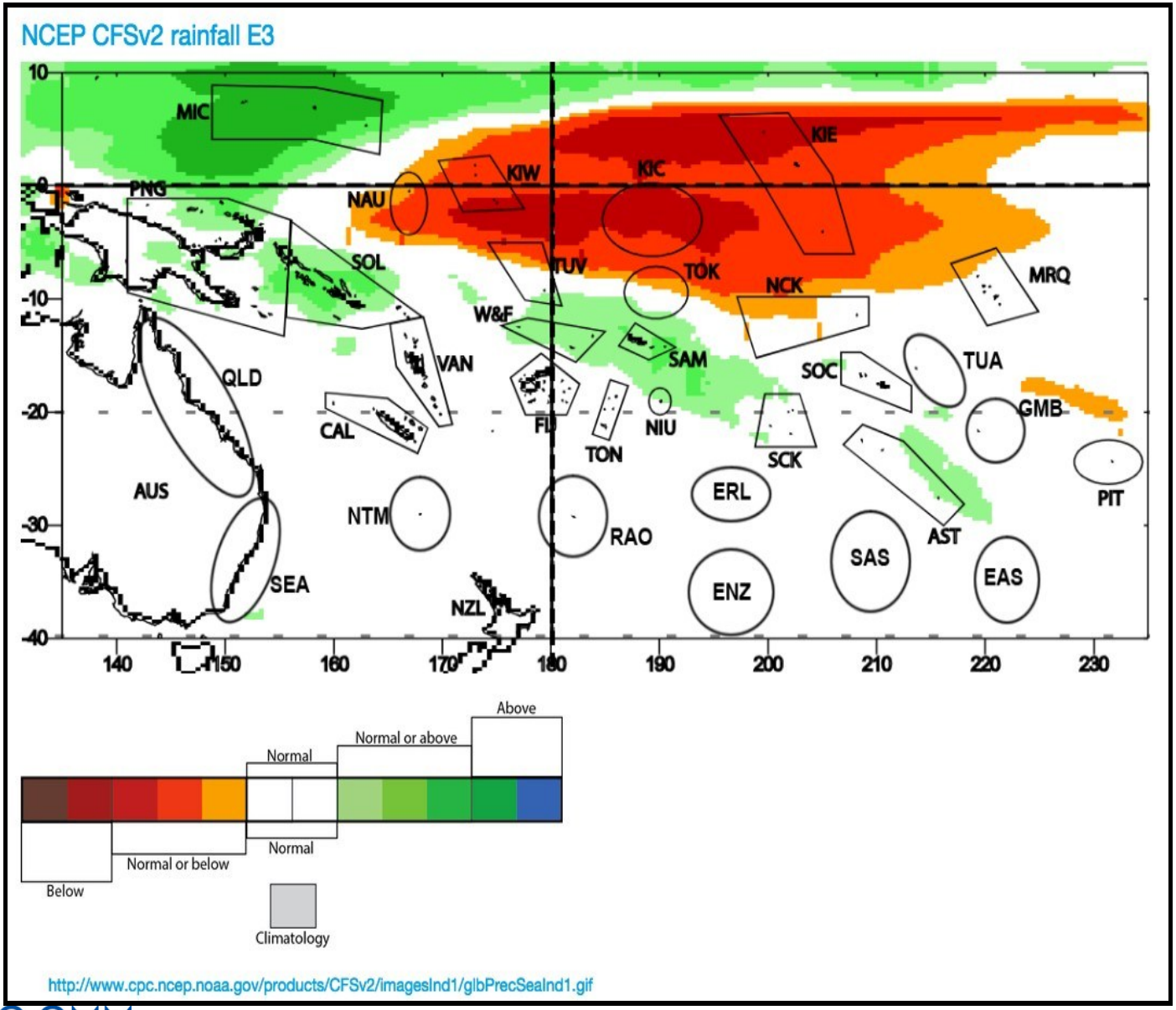
Bart	February 19 – 22	Category 1 tropical cyclone	75 km/h (45 mph)	994 hPa (29.35 inHg)	Cook Islands
Cook	April 6 – 11	Category 3 severe tropical cyclone	155 km/h (100 mph)	961 hPa (28.38 inHg)	Vanuatu, New Caledonia, New Zealand
Donna	May 1 – 10	Category 5 severe tropical cyclone	205 km/h (125 mph)	935 hPa (27.61 inHg)	Solomon Islands, Vanuatu, New Caledonia, NZ
Ella	May 7 – 15	Category 2 tropical cyclone	110 km/h (70 mph)	977 hPa (28.85 inHg)	Samoan Islands, Tonga, Wallis and Futuna

PICOF-2 Seasonal Outlook Nov 2016-Jan 2017 Precipitation



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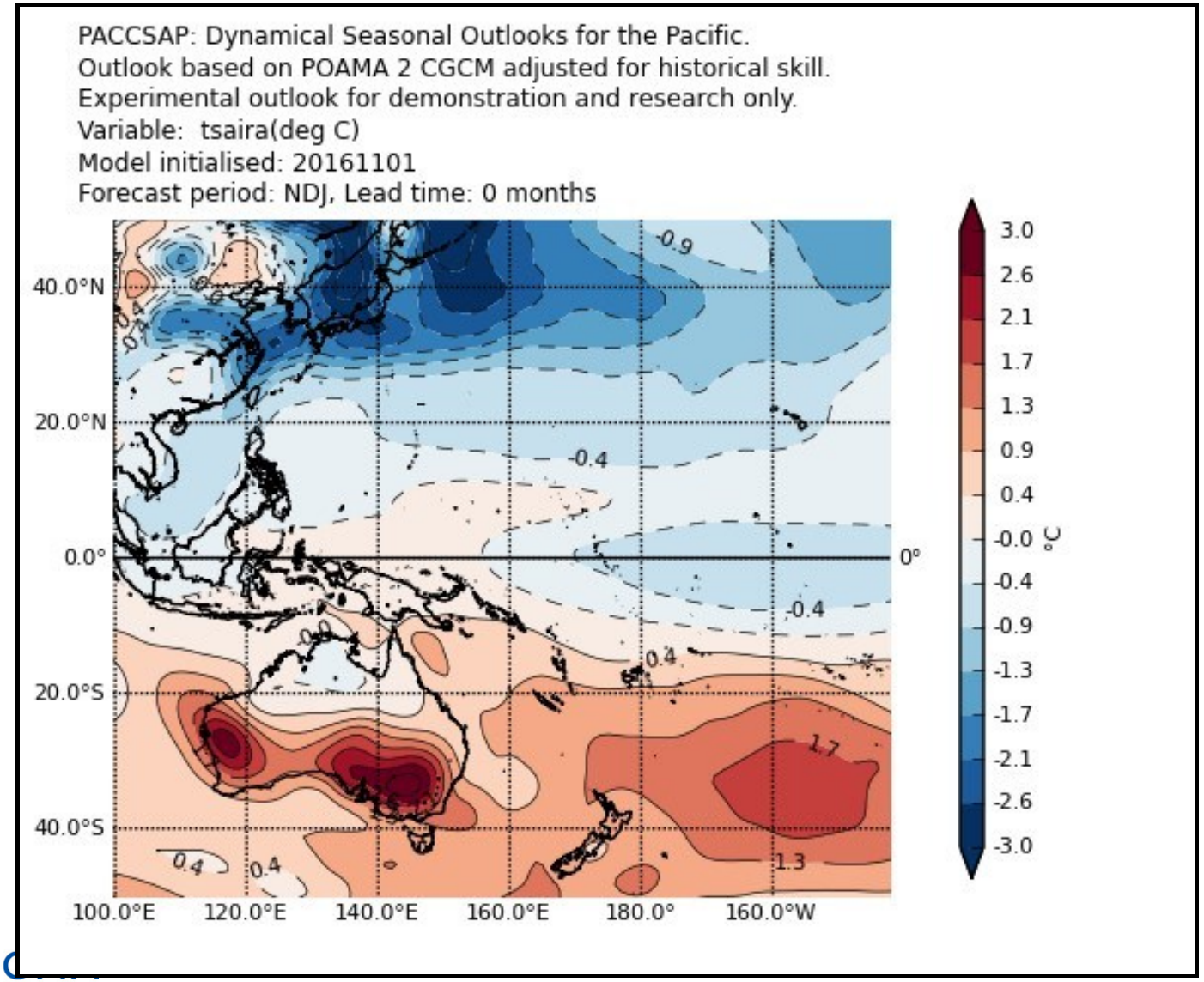
PICOF-2 Seasonal Outlook Nov 2016-Jan 2017-Air temperature



Capacity Development activities

- The PICOF structure:
  - Technical Trainings, Climate Experts, NHMHs and Sector Presentations, Panel and Plenary Discussions, as well as Group Work that was used to disseminate climate and seasonal outlook information and stimulate discussions.
- NMHSs and National Sectors present on how inter-sectoral coordination was conducted during the current ENSO phase season.
- Country presentations on National Seasonal Outlooks, Methodology of Forecast, Modes of Delivery, Prediction Skill Forecast, Verification Approach, Sector-user feedback, Challenges/Lessons Learned with Sectors, Gaps and Priorities, Future improvements (NHMS/ National Sectors)

Capacity Development needs and activities

- **National sectors** (Water and DRR, Health, Agriculture)
  - **Needs:** Improved communication processes and dissemination of information
  - **Activities**: PICOF group work and discussions, media trainings, PICOF Statement/Report and Seasonal/Tropical Cyclone Outlook
- **NMHSs:**
  - **Needs:** Additional funding and training in seasonal climate forecasting and increased technical modeling capacity
  - **Activities:** PICOF technical trainings and climate model infrastructure (SCOPIC, CLEWS, CliDEsc, CLIKP and PICASO)

PICOF User Involvement

Main Regional Users Involved:

- **NMHSs**
- **National Sectors** (Water, DRR, Health, Agriculture, Tourism, Energy, Fisheries)
- **Development Partners** (NOAA, BoM, NIWA, SPC, SPREP, WMO, USP, CSIRO, APCC, UNDP)

- **User Needs:**
- Open discussion sessions so user can provide their needs to NMHSs as well as regional partners.
- User needs are captured during the PICOFs and documented in PICOF report.
- PICOF report is then disseminated to all participants, NMHSs and relevant partners so user needs can be addressed and products and services improved.

PICOF-User Involvement

- Information sharing, best practices, and lessons learnt.
- Linked to the functions of the WMO Pacific Islands Regional Climate Centre (RCC), when this becomes established.
- Pre-PICOF technical trainings
- Continue to strengthen close working relationships between PICs NMHSs and sectors (water, DRR, health, agriculture, fisheries, energy, tourism) are critical to effective warning of climate hazards leading to early preparedness.
- Cluster group meetings and NCOFs.

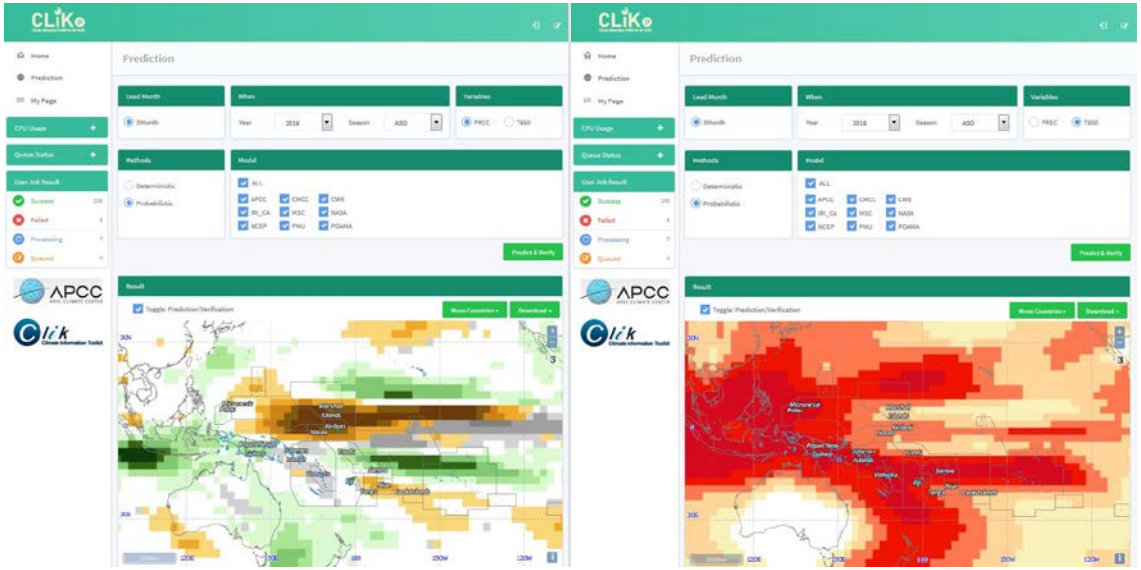
PICOF-SWOT analysis

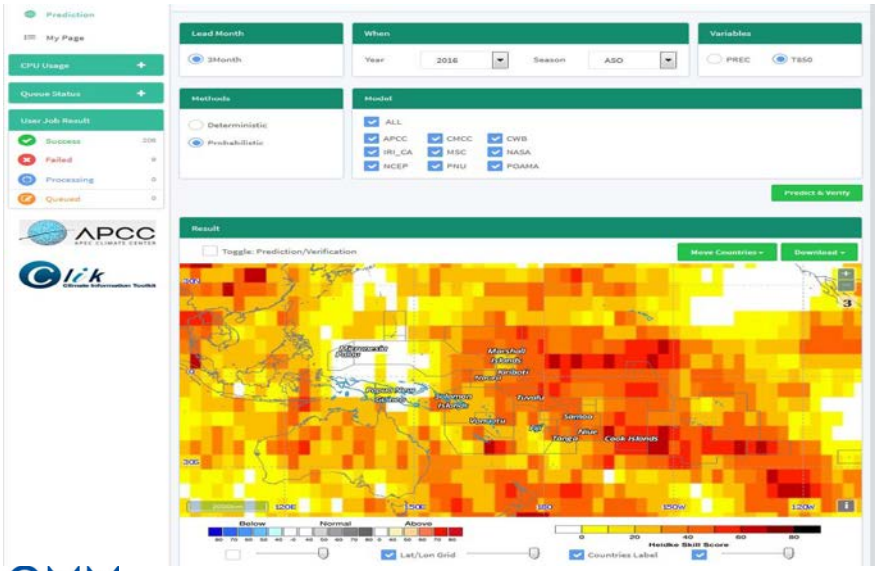
- **Strengths**
  - Regional coordination of PICs
  - NMHS and National Sector support
  - Support from Regional and Global Development Partners
  - Production of annual Tropical Cyclone Outlook and Seasonal Outlooks
- **Weaknesses**
  - Improved communication dissemination of information
  - Need additional training in seasonal climate forecasting and increased technical modeling capacity
- **Opportunities**
  - Secured funding for PICOF-3, PICOF-4
  - Development of Consensus Climate Forecast (Dynamic and Statistical)
  - Establishment of WMO PI-RCC
  - NCOFs
- **Threats**
  - Long-term funding for PICOF-5 and future PICOFs
  - Sustainability of PICOFs and NCOFs

Way Forward

- PICOF-3 (27-29 September 2017, Samoa) Health Sector
- WMO RA-V Pacific Island Regional Climate Centre Network (PI-RCC Network)
- Future PICOFs (other sector focuses)
- Improving seasonal forecast skill and sub-seasonal forecast skill
- Impact-based seasonal forecasting (sectors)
- Generating consensus climate seasonal forecasts (dynamical and statistical).
- Products and information from RCOFs should be used during in-country NCOFs

Way Forward-Seasonal Consensus Climate Forecasts





APCC-CLIKP Climate Models Can generate **Temperature, Rainfall Forecasts**

Can generate **Immediate Verification of the Forecasts**

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Thank you
Merci

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