

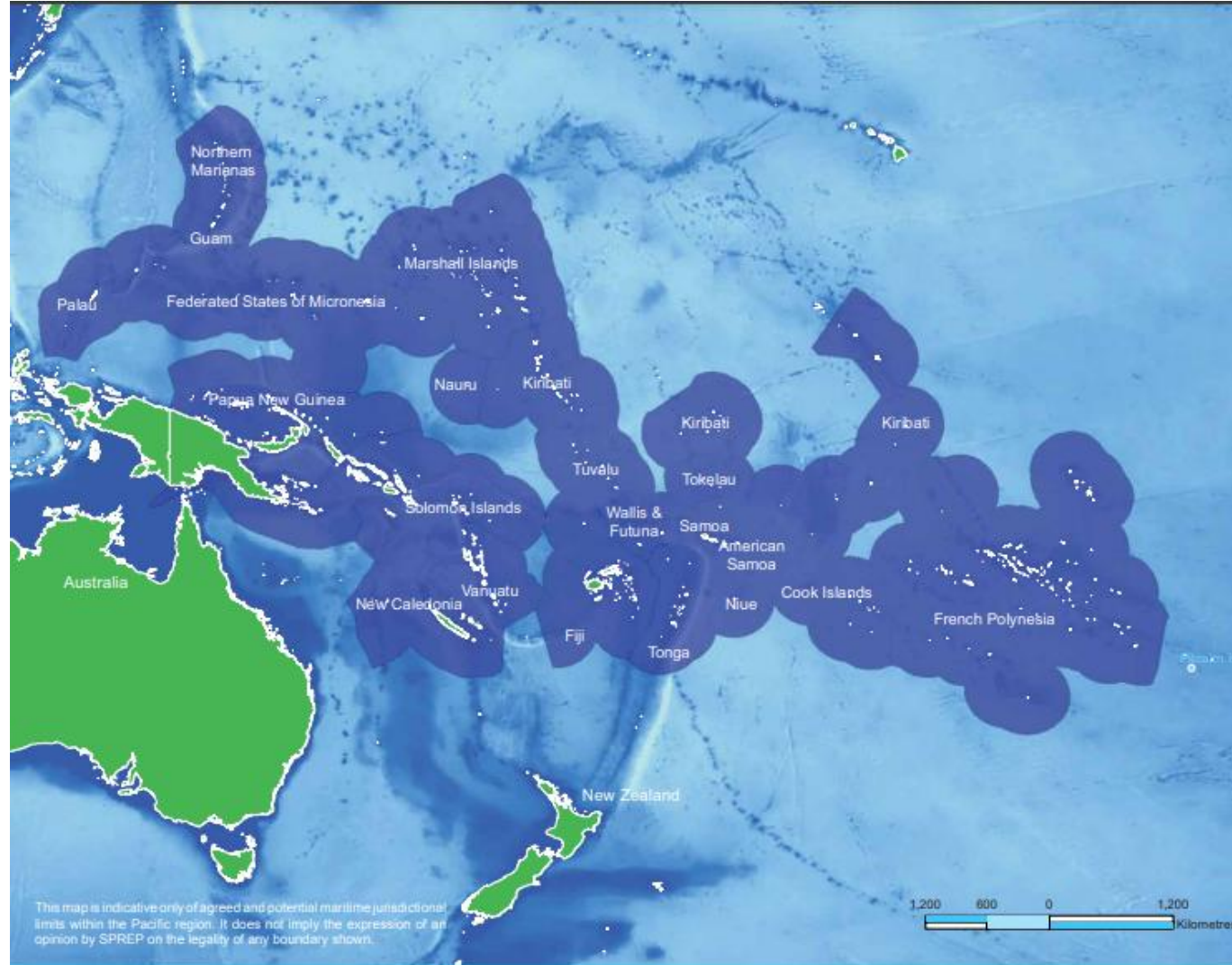
# WMO Consultation on climate data homogenization

**Use case from:** Pacific Regional Climate Centre Network  
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**Date:** 16/11



# Homogenization: region of responsibility



# Homogenization: data and methods

## Data processes

### Variables

- ✓ Precipitation, Tmax, Tmin, MSLP?
- ✓ Daily undergoes QA/QC, but homogeneity testing only undertaken at monthly level

### Data

- ✓ Station observations and metadata
- ✓ ERA5 sometimes used as reference series
- ✓ Also HadISST1 1° or similar

## Methods


- ✓ RHtestV4, RHtestV5, Prodiges
- ✓ Detection and adjustment using reference series where possible (where neighbouring stations not available, use SST, DTR)
- ✓ Precipitation tested but not adjusted

## People involved

- ✓ Nicholas Herold and myself (Australian Bureau of Meteorology), Earth Sci New Zealand in the past



# Homogenization: products and services

 **Climate Indices for Pacific Sectoral Applications Portal** About 100% Login

The Climate Indices for Pacific Sectoral Applications (CIPSA) Portal formerly known as the Pacific Climate Change Data Portal provides site-specific historical climate information and trends in mean and extreme climate indices. Current support, including enhancements delivered in 2025, are provided through the third phase of the [Climate and Ocean Support Program in the Pacific \(COSPPac\)](#), funded by the Australian and New Zealand Governments. The portal was originally developed in 2009 with funding from Australian Aid through the Pacific Climate Change Science and Pacific-Australia Climate Change Science and Adaptation Planning Programs. Its design is modelled on a similar tool developed for [Australia](#). The climate extremes indices are calculated using [Climpact](#), associated with the [WMO Expert Team on Climate Services Information Systems for Decision Support](#). The portal also forms part of the Bureau of Meteorology's contribution to the [WMO RA-V Pacific Regional Climate Centre Network](#), as a Consortium member for the Node on Climate Monitoring.

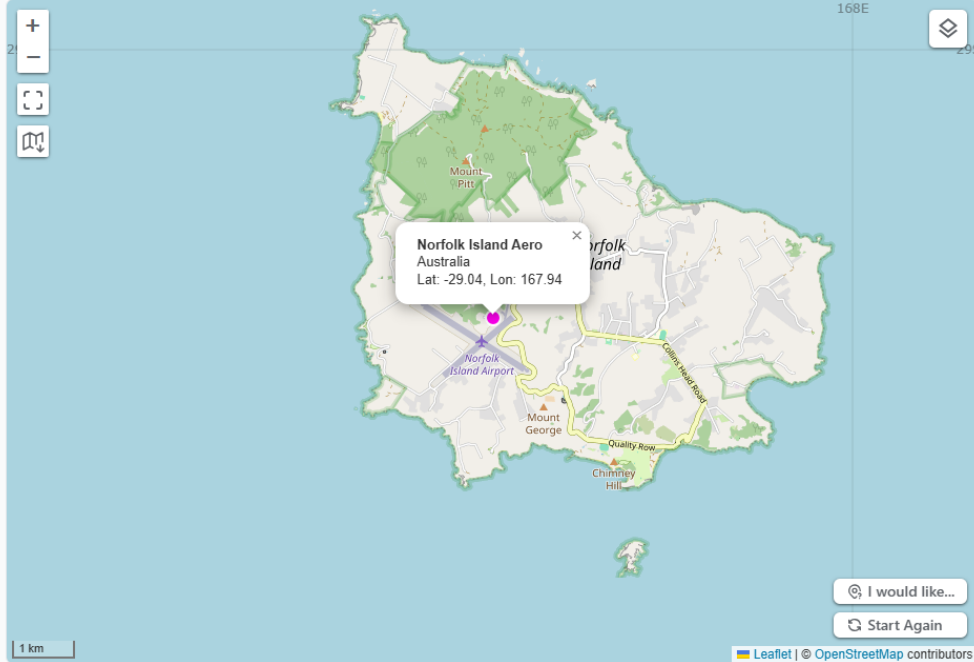
**Norfolk Island Aero**  
Australia



Local Number: 200288 WMO Number: 94996  
Lat: -29.04 Lon: 167.94  
Nearest Stations:

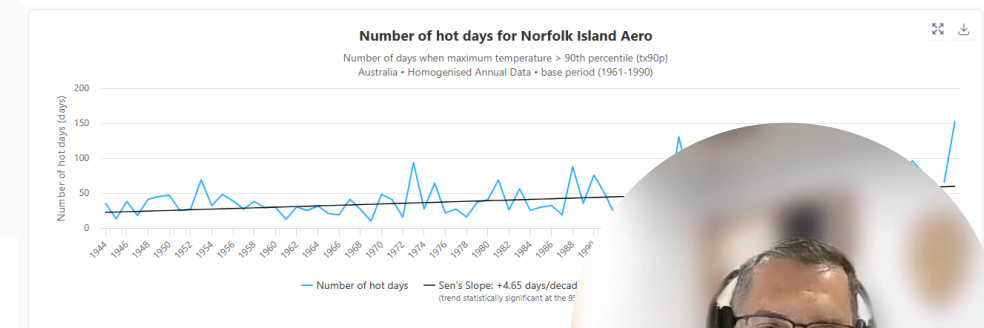
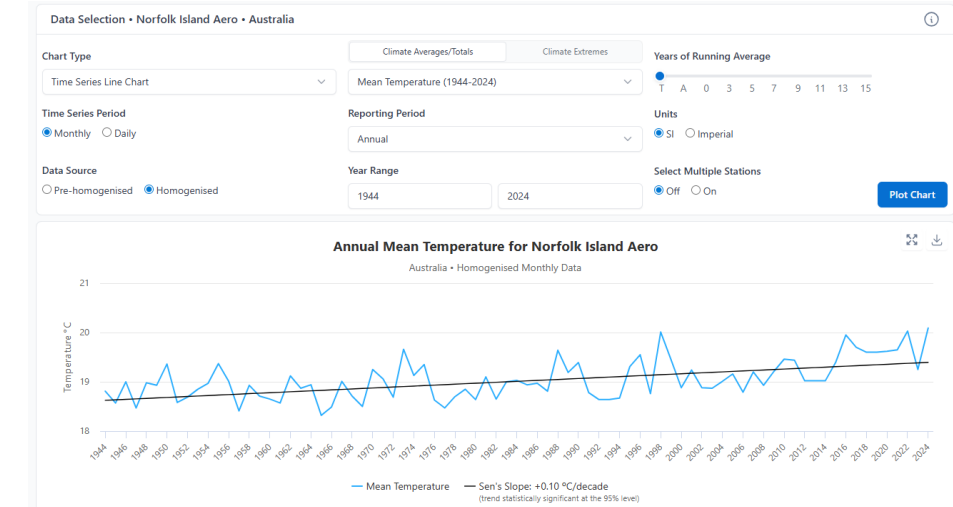
Country	Station	Distance
Noumea		766km
La Tontouta		799km
La Foa		843km

All Countries

COUNTRY	STATION
American Samoa (USA)	Pago Pago
Australia	Lord Howe Island Aero
Australia	Norfolk Island Aero
Australia	Willis Island
Cook Islands	Aitutaki

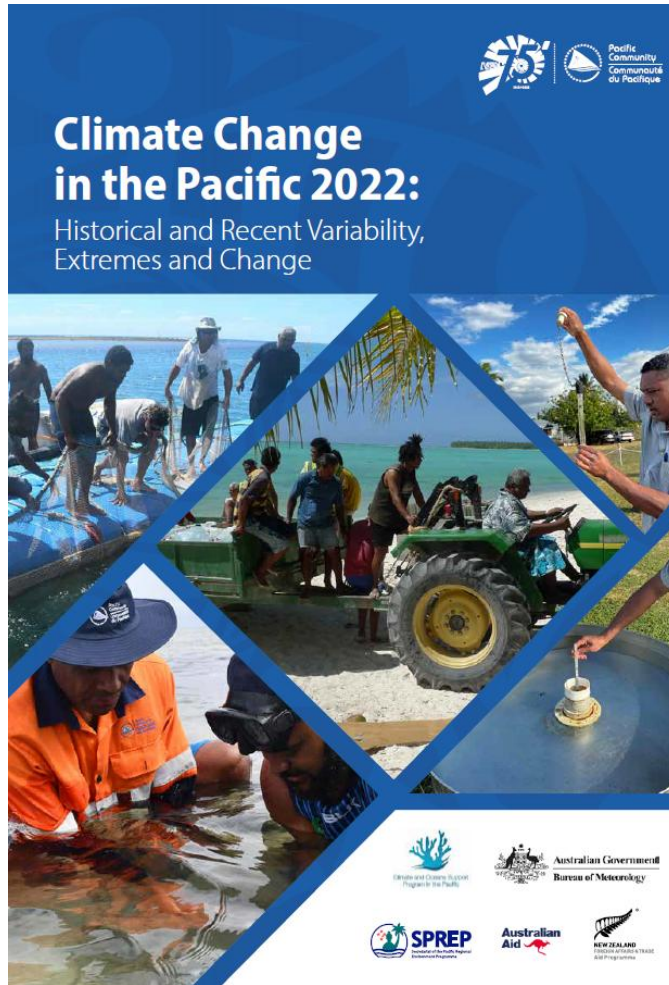
 **Norfolk Island Aero**  
Australia  
Lat: -29.04, Lon: 167.94

1 km   contributors

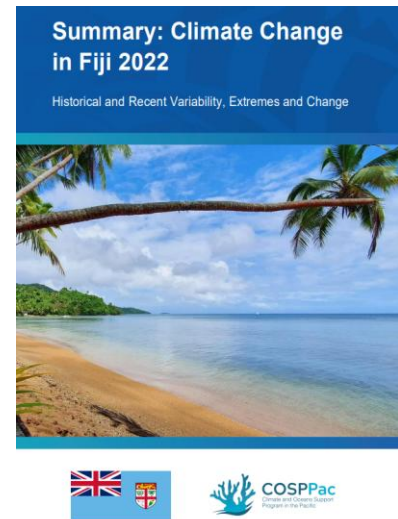




# Homogenization: products and services



- Peer-review Pacific Island climate science report containing country scale historical climate and ocean variability and trends information
- Update of PCCSP *Climate Change in the Pacific: Scientific Assessment and New Research, Volume 2, Country Reports* (2011) and PACCSAP Program *Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports* (2014)
- Country specific chapters for program partner countries and territories.
- Country chapters designed to be standalone reports



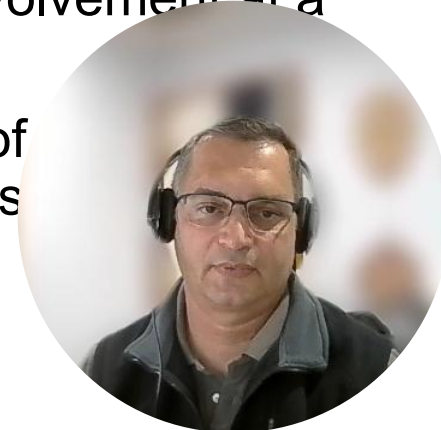
# Homogenization: projects, needs and issues

## Projects

- ✓ COSPPac3 (Climate Indices for Pacific Sectorial Applications activity)

## Needs and Issues

- ✓ Insufficient attention with regards to QA/QC at a CDMS level
- ✓ Address decline in quality and quantity of station observations
- ✓ Address absence of metadata
- ✓ Need stable funding to undertake homogenisation and indices generation work going forward
- ✓ Need to determine level of involvement at a national level
- ✓ Need more/better promotion of policy and community level (vs produce scientific papers)



# References

- ✓ Climate Indices for Pacific Sectorial Applications Portal - <https://www.bom.gov.au/climate/cipsap/>
- ✓ McGree S, Herold N, Alexander L, Schreider S, Kuleshov Y, Ene E, Finaulahi S, Inape K, Mackenzie B, Malala H, Ngari A, Prakash B, Tahani L. 2019. Recent Changes in Mean and Extreme Temperature and Precipitation in the Western Pacific Islands. Journal of Climate. American Meteorological Society, 32(16): 4919–4941. <https://doi.org/10.1175/JCLI-D-18-0748.1>.
- ✓ McGree S, Whan K, Jones D, Imielska A, Alexander L, Diamond H, Ene E, Finaulahi S, Inape K, Jacklick L, Kumar R, Laurent V, Malala H, Malsale P, Moniz T, Ngemaes M, Peltier A, Porteous A, Pulehetoa-Mitiepo R, Seuseu S, Skilling E, Tahani L, Teimitsi F, Toorua U, Vaiimene M. 2014. An updated assessment of trends and variability in total and extreme rainfall in the western Pacific. Int. J. Climatol., 34: 2775–2791. doi: 10.1002/joc.3874.
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- ✓ McGree S, Kruk M, Marra JJ, Chandler E, Diamond H, Lutu-McMoore E. 2022. Atmosphere. In: Marra et al. (Eds.), Pacific Climate Change Monitor: 2021. The Pacific Islands-Regional Climate Centre (PI-RCC) Network Report to the Pacific Islands Climate Service (PICS) Panel and Pacific Meteorological Council (PMC). <https://doi.org/10.5281/zenodo.6965142>
- ✓ McGree S, Smith S, Chandler E, Herold N, Begg Z, Kuleshov Y, Malsale P and Ritman M. 2022. Climate Change in the Pacific 2022: Historical and Recent Variability, Extremes and Change. Climate and Oceans Support Program in the Pacific. Pacific Community, Suva, Fiji. <https://gem.spc.int/resources/publications/climate-change-in-the-pacific-2022-historical-and-recent-variability>

