



Joint GCOS – WMO Integrated Global Observing System Workshop for the Pacific Small Island Developing States (SIDS)

9-12 October 2017, Nadi, Fiji.

GCOS Secretariat, WMO



WMO



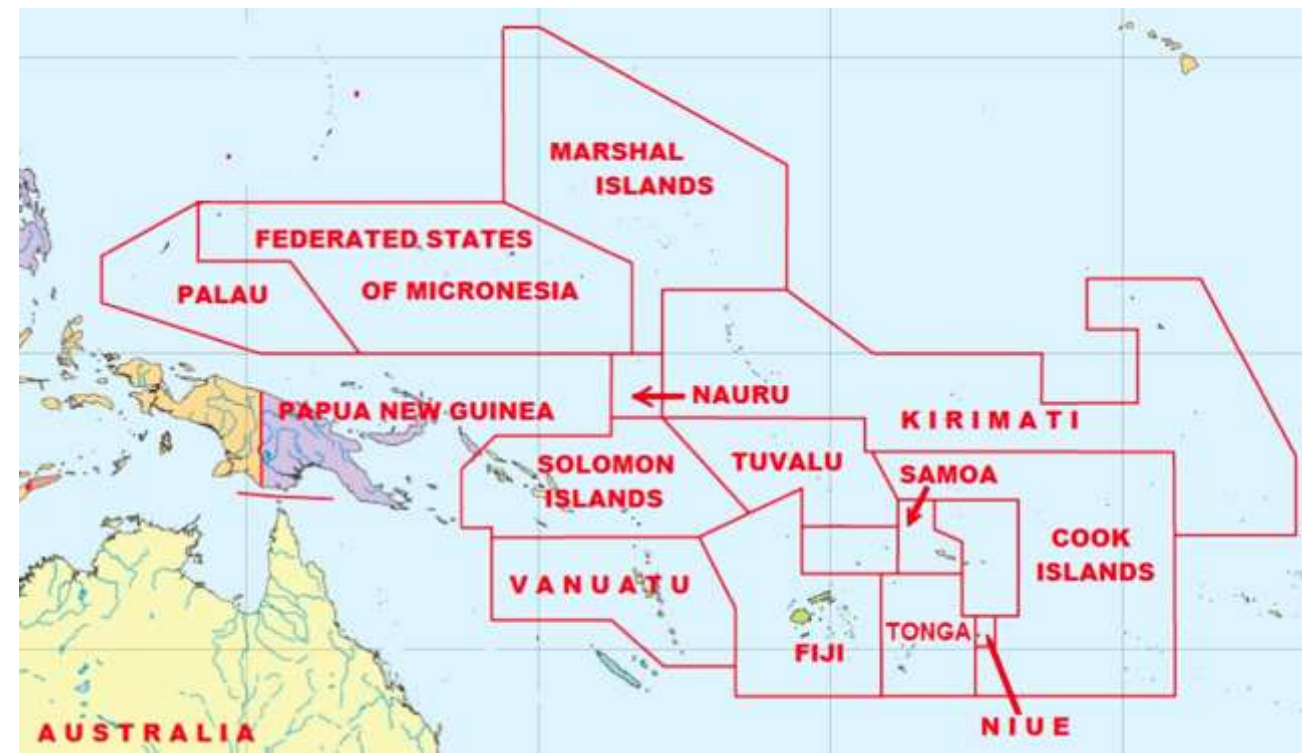
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2016 UNFCCC considered the GCOS Implementation Plan

- decision 19/CP.22
 - *the need to maintain, strengthen and build capacities for climate observations...*
 - *Encourages **Parties to work towards the full implementation** of the [GCOS] implementation plan ...*
 - *Invites **United Nations agencies and international organizations to support the full implementation** of the [GCOS] implementation plan...*
- SBSTA 45 conclusions (FCCC/SBSTA/2016/4)
 - *noted the **need for regional workshops**, as identified by the GCOS 2016 implementation plan, [...] and invited the GCOS to organize such workshops, taking into consideration the benefit of organizing these workshops in collaboration with relevant partners*
 - *also encouraged Parties and relevant organizations to strengthen and maintain observation networks and capabilities in all countries, especially in developing countries, including the LDCs and **small island developing States***



- From most islands nations
- Held jointly with the WMO Integrated Global Observing System (WIGOS)
- Hosted by the Fiji Meteorological Office
- Supported by The Secretariat of the Pacific Region Environment Programme (SPREP)



Fiji Meteorological Service
RSMC Niue-Tropical Cyclone Centre
"Official source of reliable 'first-look' information on tropical cyclones occurring in the South-West Pacific Ocean. All products on this site are on Fiji Standard Time = (UTC + 12:00)
Fiji Daylight Saving Time (DST) = (UTC + 13:00)
ISO 9001:2008 certified provider of Aviation Meteorological Services



- Upper Air measurements
 - **Systematic upper air observations, lead to global benefits**, underpinning forecasting and climate reanalyses which form the basis of much of our understanding of climate and climate change;
 - These observations in the Pacific region have the **highest impact, of all ground-based measurements**, on the global quality of weather and climate analysis and prediction.
 - Both the spatial density and observing frequency currently fall short of GCOS and WMO requirements and a beyond the resources of SIDS.
- Precipitation
 - Changes in extreme events are significant impacts of climate change
 - Water related issues are significant adaptation challenges in most countries (floods, droughts, storms, and in islands rising sea level and salt water intrusion)

	Land Area	Area of EEZ	Population	GDP	GDP per km ²	Population Density including EEZ	Pacific Islands
	km ²	million km ² including land area	thousands, UN Estimate for 2017	World Bank. 2016, US\$	US\$ per km ²	km ² per person	
Cook Islands	240	1.80	17	311 ^a	0.00017	0.01	 <p>Tuvalu</p>
Federated States of Micronesia	702	3.00	106	322	0.00011	0.04	
Fiji	18,274	1.30	906	4632	0.00360	0.70	
Kiribati	811	3.44	116	166	0.00005	0.03	
Marshall Islands	181	1.99	53	183	0.00009	0.03	
Nauru	2	0.31	11	102	0.00033	0.04	
Niue	26	0.39	2	10 ^b	0.00003	0.00	
Palau	535	0.60	22	293	0.00048	0.04	
Papua New Guinea	45,258	2.87	8,251	16929	0.00590	2.88	
Samoa	283	0.13	196	786	0.00600	1.50	
Solomon Islands	2,799	1.62	611	1202	0.00074	0.38	 <p>Cook Islands</p>
Tonga	72	0.66	108	395	0.00060	0.16	
Tuvalu	3	0.75	11	34	0.00005	0.01	
Vanuatu	12,300	0.68	276	774	0.00110	0.41	
Total above	81,486	20	10,687	26,139	0.00130	0.55	
USA	9,525,067	11.35	325,958	18,569,100	1.60	28.72	
Japan	377,930	4.48	126,670	4,939,384	1.10	28.28	

Global importance of upper air observations

- The ECMWF Deputy Director of Forecasts noted in September 2017 regarding the potential value of rehabilitating the upper air network over Papua New Guinea:

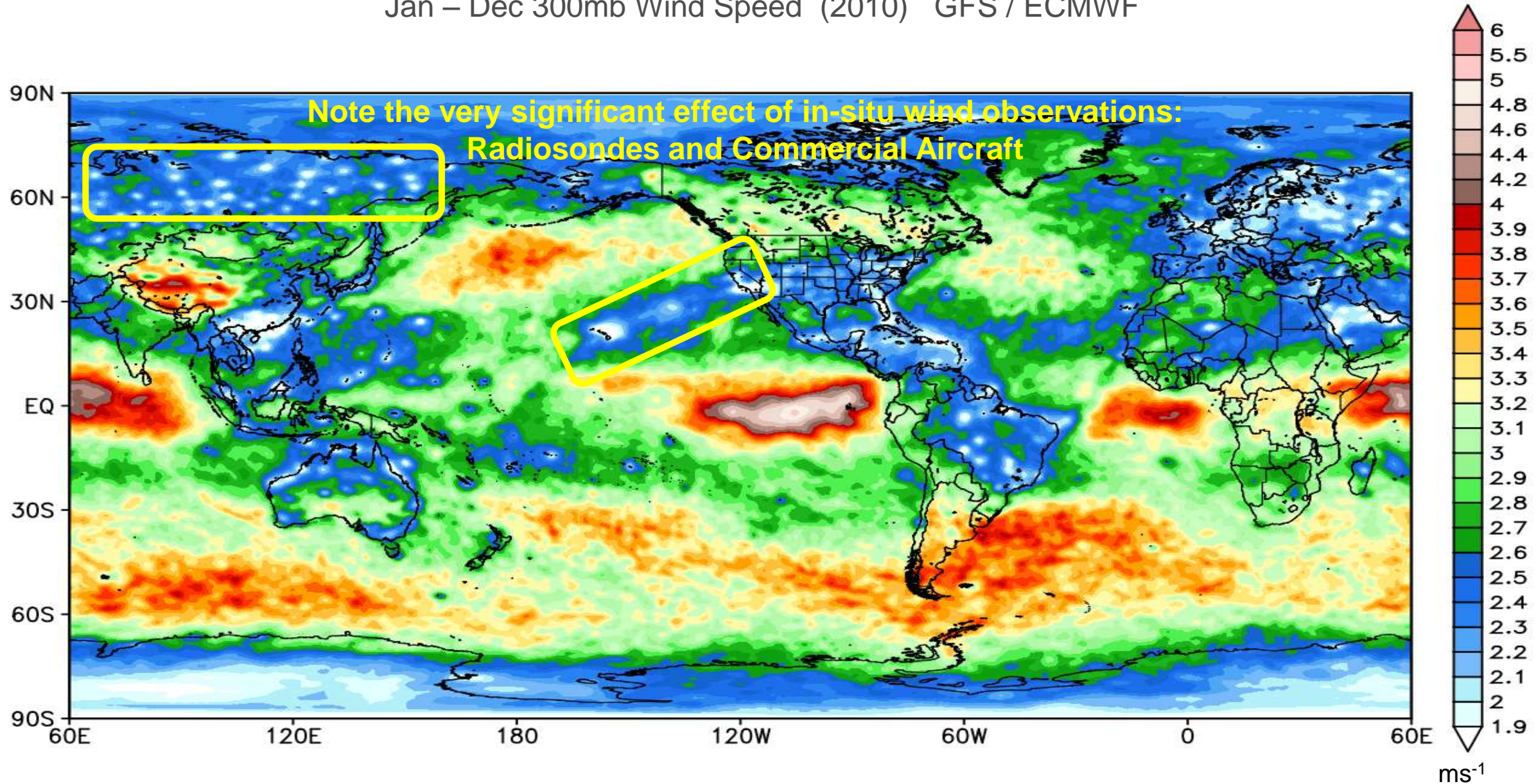
“Radiosondes in PNG can ... help predict when Rossby wave trains may be triggered from that area, and then propagate across the Pacific to N. America, and where they influence the mid-latitude storms tracks and ultimately the weather in Europe”

“Isolated radiosondes are individually much more valuable and bring much more benefit to forecast quality than observations in a dense network (benefit per station that is!)”



Root-Mean Square of Analysis Differences: 300mb Wind Speed

Jan – Dec 300mb Wind Speed (2010) GFS / ECMWF



SOURCE: Langland et al.; from 5th WMO Impact Workshop, Sedona 2012

Key Outcomes

- **Systematic upper air observations, lead to global benefits,** underpinning forecasting and climate reanalyses which form the basis of much of our understanding of climate and climate change;
- These observations in the Pacific region have the **highest impact, of all ground-based measurements,** on the global quality of weather and climate analysis and prediction.
- Both the spatial density and observing frequency currently fall short of GCOS and WMO requirements and a beyond the resources of SIDS.
- **These observations are a global good and therefore the upper air network over the South Pacific therefore needs sustained international support.**
- Support should be based on **transparent processes** and a commitment to **free and open data sharing** in accordance with WMO Resolutions 40 and 60 and the GCOS Monitoring Principles.
- Ensuring **sustainability is of paramount importance.**
- The draft plan will be developed by GCOS and WMO in collaboration with Secretariat of the Pacific Regional Environmental Programme (SPREP), the Pacific Islands Communication and Infrastructure Panel (PICI), and Pacific Meteorological Council, and submitted to COP 24.

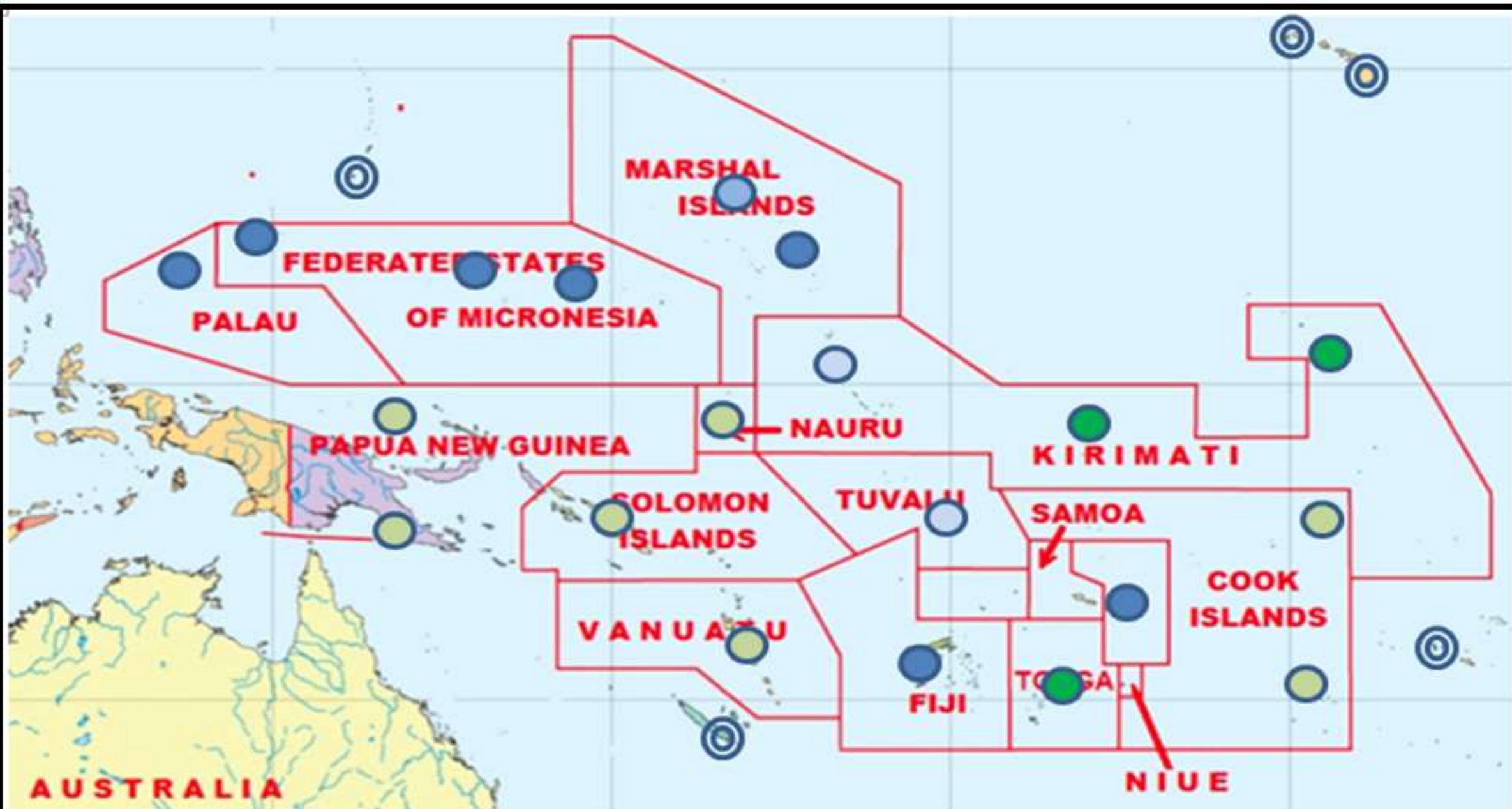


Considerations to be included in the plan

- **Sustainable funding for upper air measurements is needed**, acknowledging this is beyond the capabilities of the individual countries in the region and will provide global benefits
- **Communications.** Many of the islands are remote and communications are not straightforward. “Chatty Beetles” provide a suitable option and their use should be encouraged.
- **Transport.** The distances involved and the need to use infrequent ships mean that repairs and maintenance are often delayed and the distances lead to additional costs.
- **Precipitation** is an important parameter both in mountainous islands where issues include flooding and drought, and atolls where drought and sea water intrusion are large concerns.
- **National precipitation observations** are often insufficient and unrepresentative. Typical metrological stations do not reflect the variable nature of precipitation on many islands and simpler, cheaper voluntary observing systems should be considered to address some of these needs.
- **Assistance** in procurement to ensure cost-effective solutions are purchased that meet requirements specified by WMO is needed. A joint purchase of equipment and consumables for several countries is may be part of the solution.
- **Training** is a vital part of ensuring sustainability. Suitable facilities to do this are available in Samoa (SPREP) and Fiji (the Metrological Office).




- Development of a plan to address these issues for COP 24 and for WMO.
 - Highlight the global benefits of these observations and need for continuing support
 - Identification of potential sources of funding
- Next year the programme of regional workshops will continue in other regions
 - We will look to collaborate with suitable partners globally and regionally



- Criteria 1
- Criteria 2
- Criteria 3
- Criteria 4
- Criteria 5



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SOURCE: ESA



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