

# Action Plan on Early Warning Systems for All

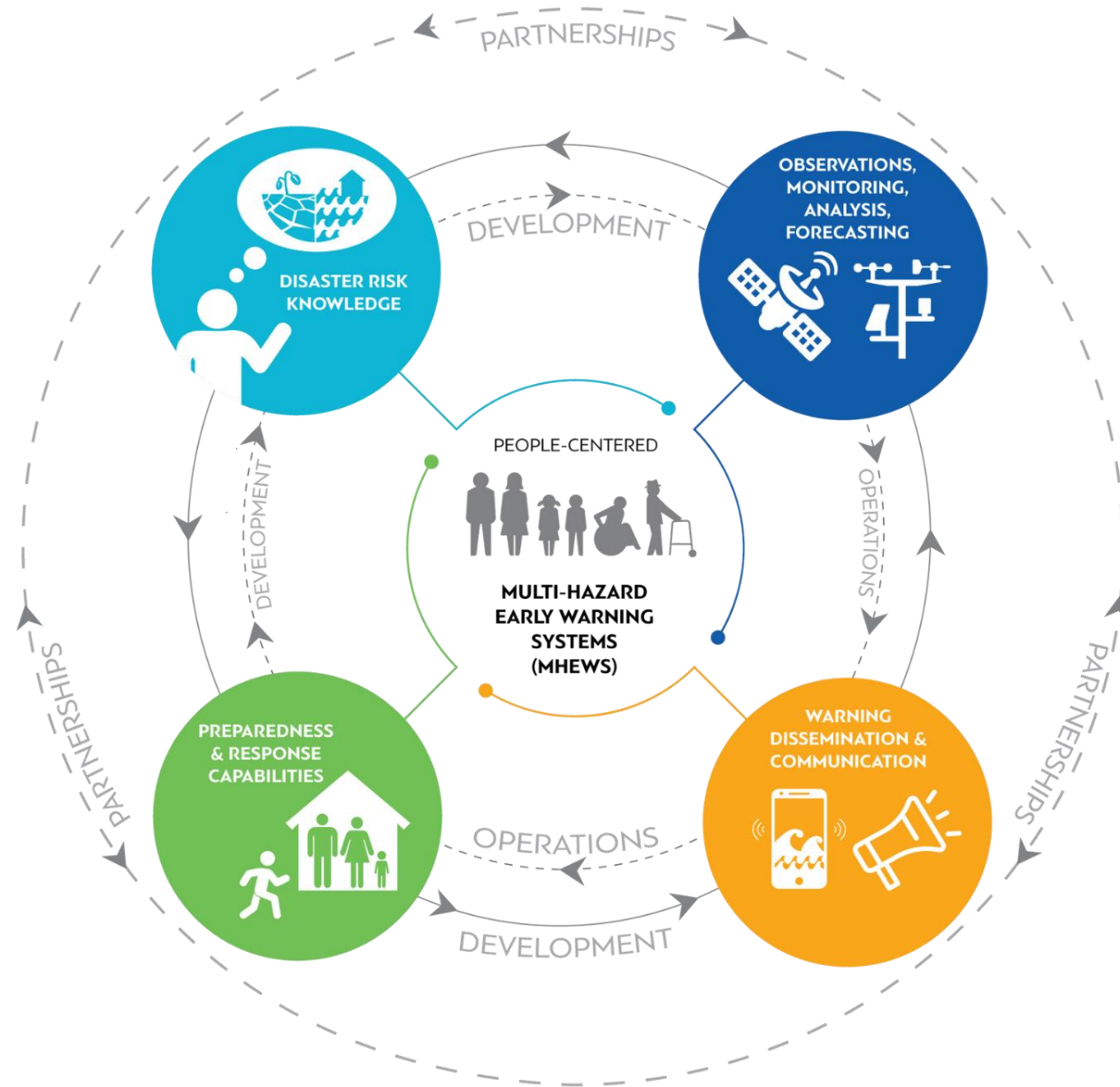
**Dr. Johan Stander**  
Director of Service Department



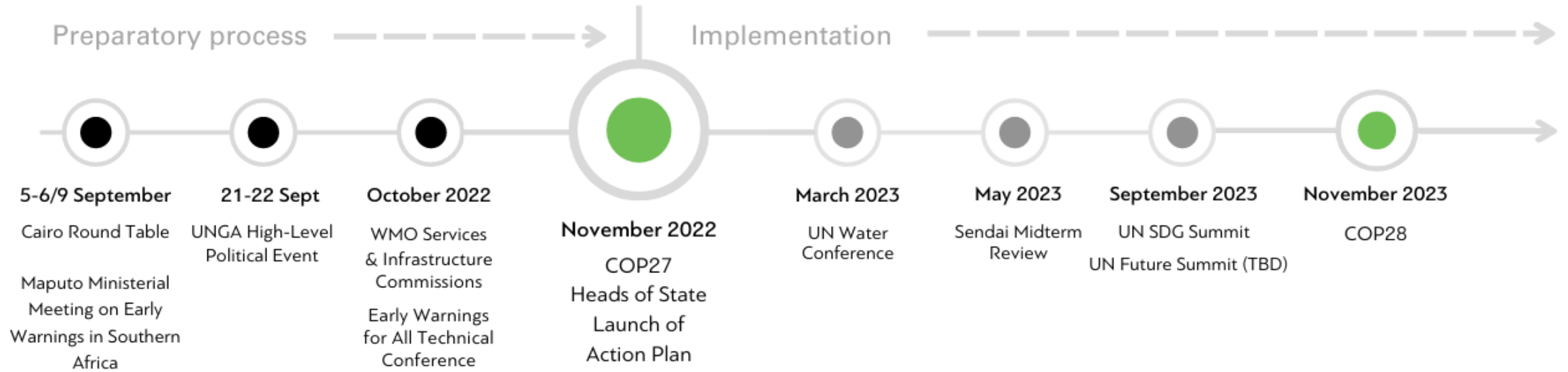
**WMO OMM**

World Meteorological Organization  
Organisation météorologique mondiale

# Full Multi-Hazard Early Warning System value cycle

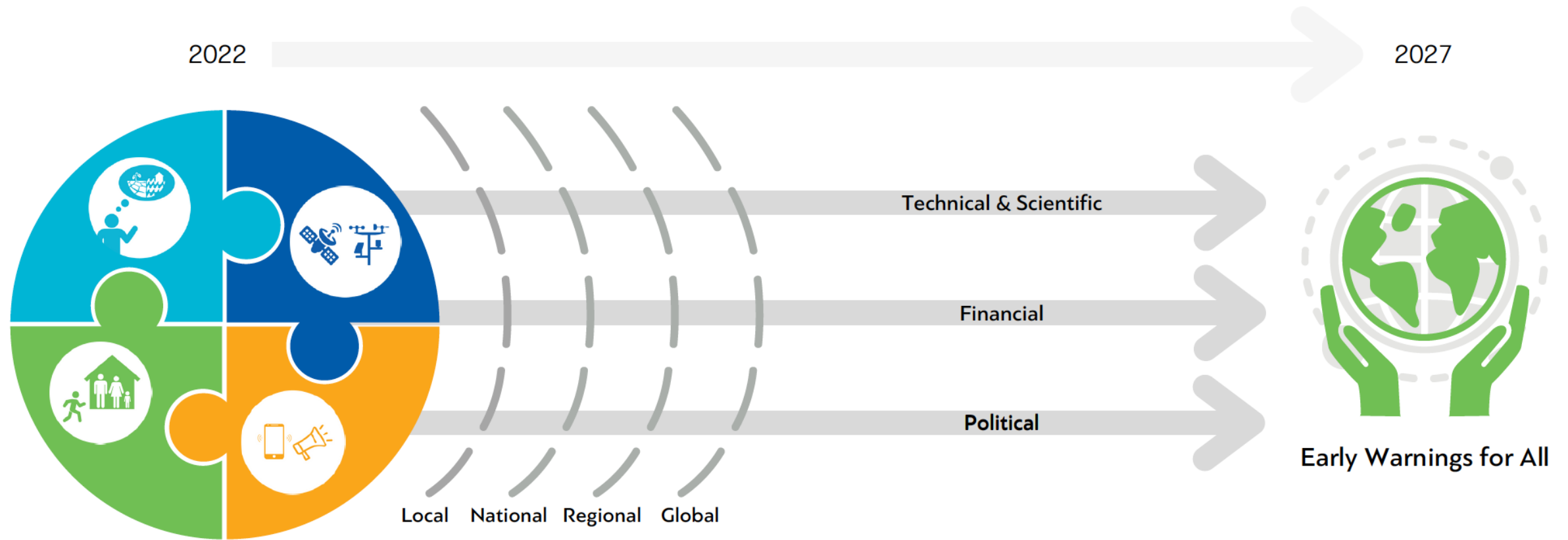


# Milestones to COP27 and beyond

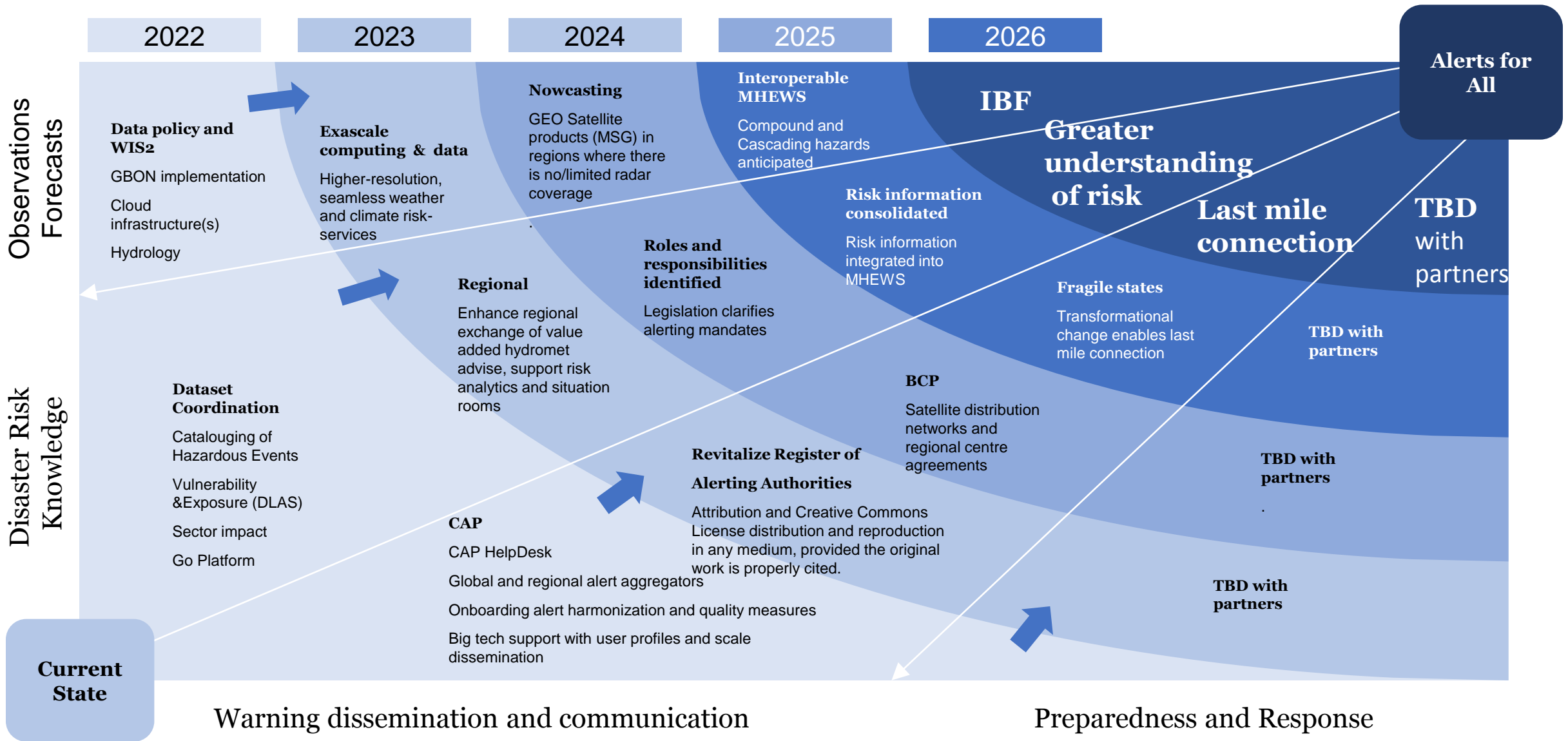


## Initiative Architecture to deliver on the five year goal

WMO is developing with key partners transformation plans for each of the four components of the early warning value chain (see Figure 1), demonstrating the steps required to deliver on the five year goal, across the global, regional, national, and local level. These transformation plans will be developed according to the architecture shown below. The development of the plan is based on globally agreed guidance on MHEWS and will address the technical/scientific, financial, and political tracks required, for the hydro-meteorological, disaster risk and early action communities to work together to ensure every person on Earth is protected by early warnings within five years.



# Accelerating alerting capabilities to cover all in 5-years





# Financing Solutions

- CREWS portfolio is USD 84M
- SOFF portfolio is USD 45M
- GCF Climate information and early warning systems portfolio is USD 648M



Weather and climate information for the global public good





WMO OMM

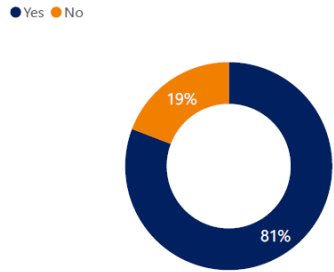
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# THANK YOU!

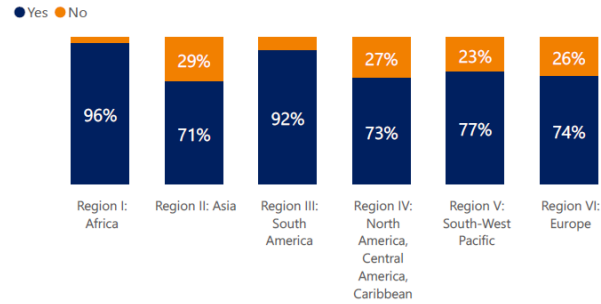
# EWS Initiative | Response rates | WMO Performance Monitoring System, July 2022

## EWS & DRR

EWS & DRR | Global response rate

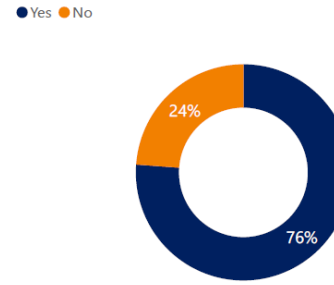


EWS & DRR | response rate by Region

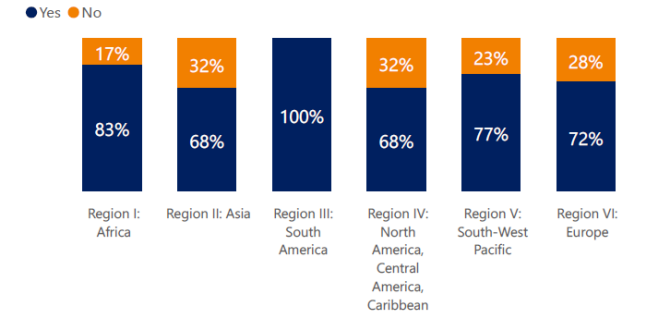


## Hydrological Services

Hydrological Services | Global response rate

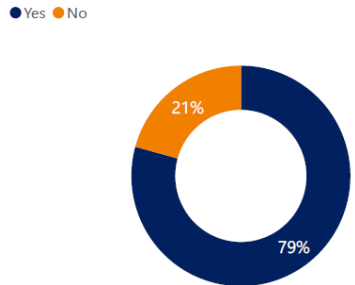


Hydrological Services | response rate by Region

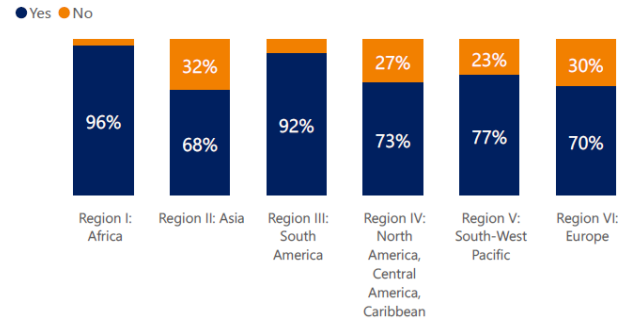


## Warning Services

Warning Services | Global response rate



Warning Services | response rate by Region



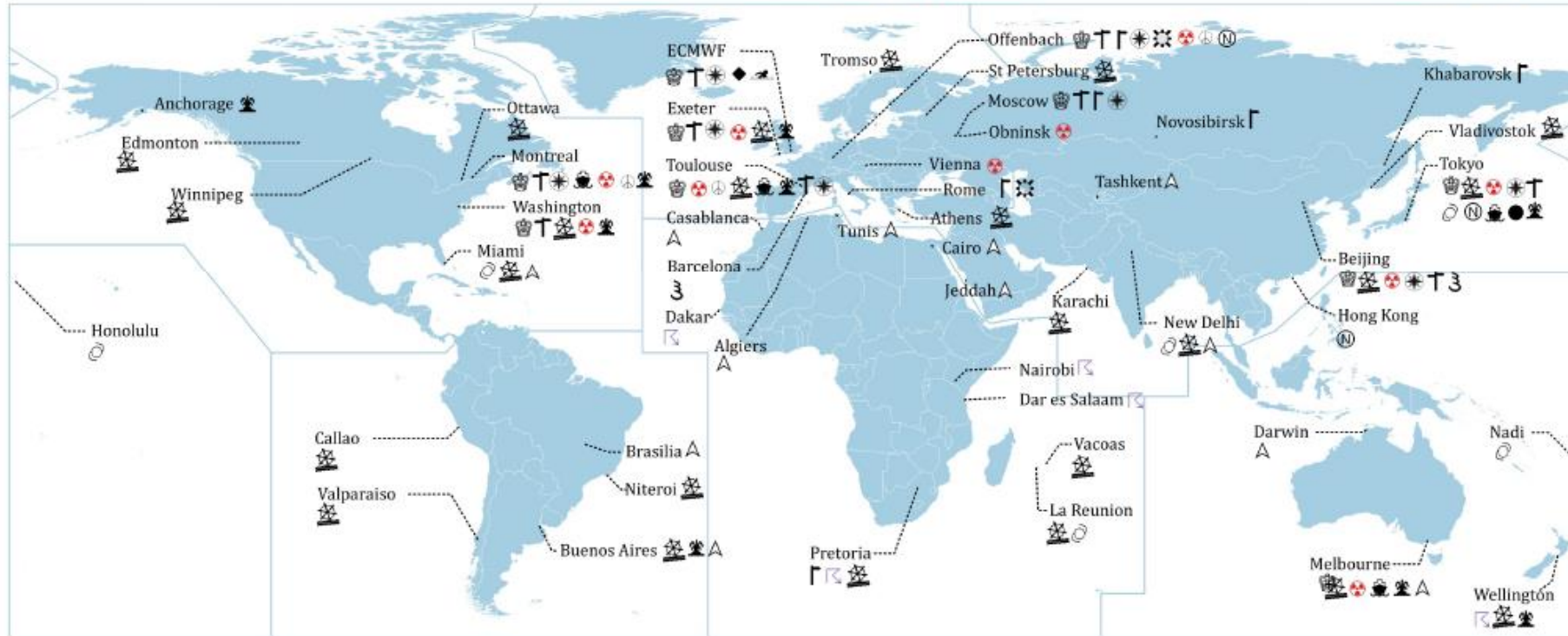


# Global Data Processing and Forecasting System (GDPFS)

## WMO Designated Global Data-processing and Forecasting System Centres

- Nowcasting to medium-range prediction

Updated on 22 July 2021



Legend (The number in parenthesis indicates the number of designated Centres)

- |   |   |  |
|---|---|--|
| ☉ World Meteorological Centre (WMC) (10)  | 🌊 RSMC Numerical Ocean Wave Prediction (4)      | 🌪️ RSMC Sand and Duststorm Forecasts (2)             |
| ⚓ RSMC* Geographic Specialization (12)    | 🕒 RSMC Nowcasting (3)                           | 🏠 ICAO designated Volcanic Ash Advisory Centres (9)  |
| ⬆️ RSMC Global Deterministic NWP** (9)    | 🌪️ RSMC Regional Severe Weather Forecasting (5) | 🌊 RSMC Marine Meteorological Services (24)           |
| ⚙️ RSMC Global Ensemble NWP (8)           | 🌀 RSMC Tropical Cyclone Forecasting (6)         | 🔍 Lead Centre for Deterministic NWP Verification (1) |
| ⌛ RSMC Limited-Area Deterministic NWP (6) | ☢️ RSMC Nuclear Emergency Response (10)         | 🌐 Lead Centre for EPS Verification (1)               |
| ⚙️ RSMC Limited-Area Ensemble NWP (2)     | ☪️ RSMC Non-Nuclear Emergency Response (3)      | 🌊 Lead Centre for Wave Forecast Verification (1)     |

\* RSMC stands for Regional Specialized Meteorological Centre

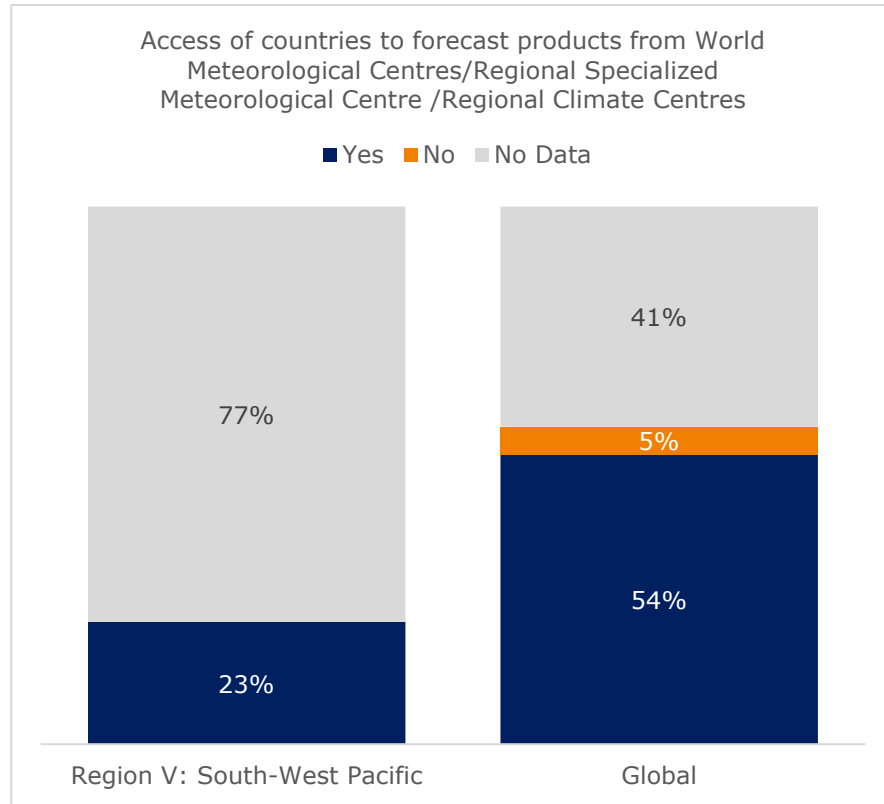
\*\* NWP stands for Numerical Weather Prediction

Disclaimer

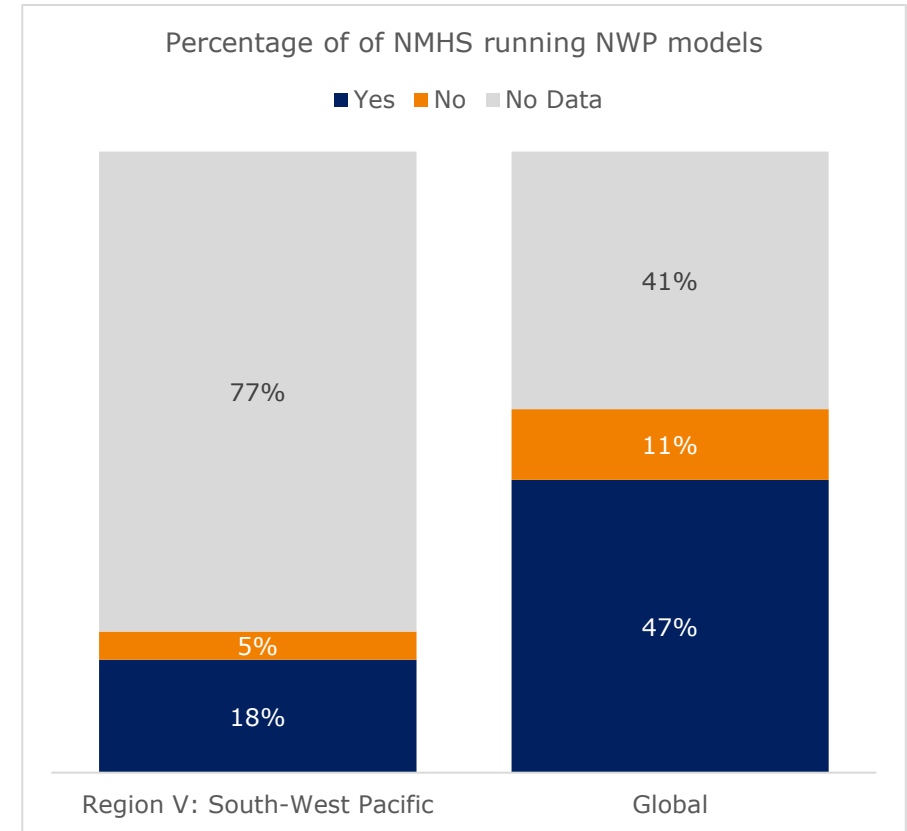
The depiction and use of boundaries, geographic names and related data shown on maps are not warranted to be error free nor do they necessarily imply official endorsement or acceptance by the WMO.



## GDPFS related information (1/2)

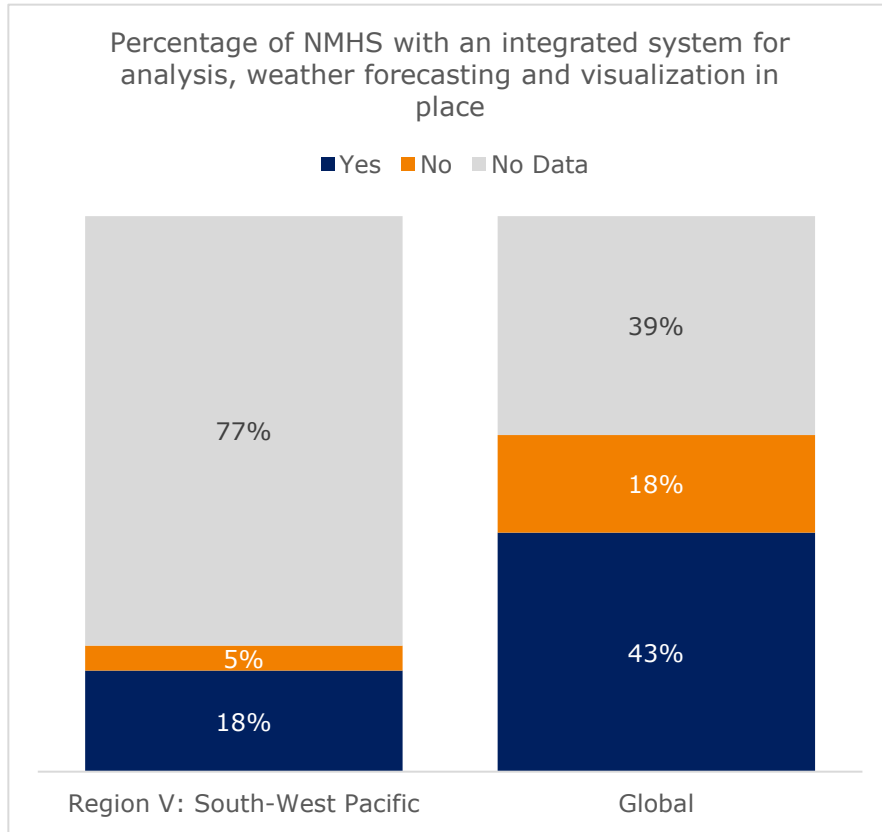


WMO Monitoring System, July 2022

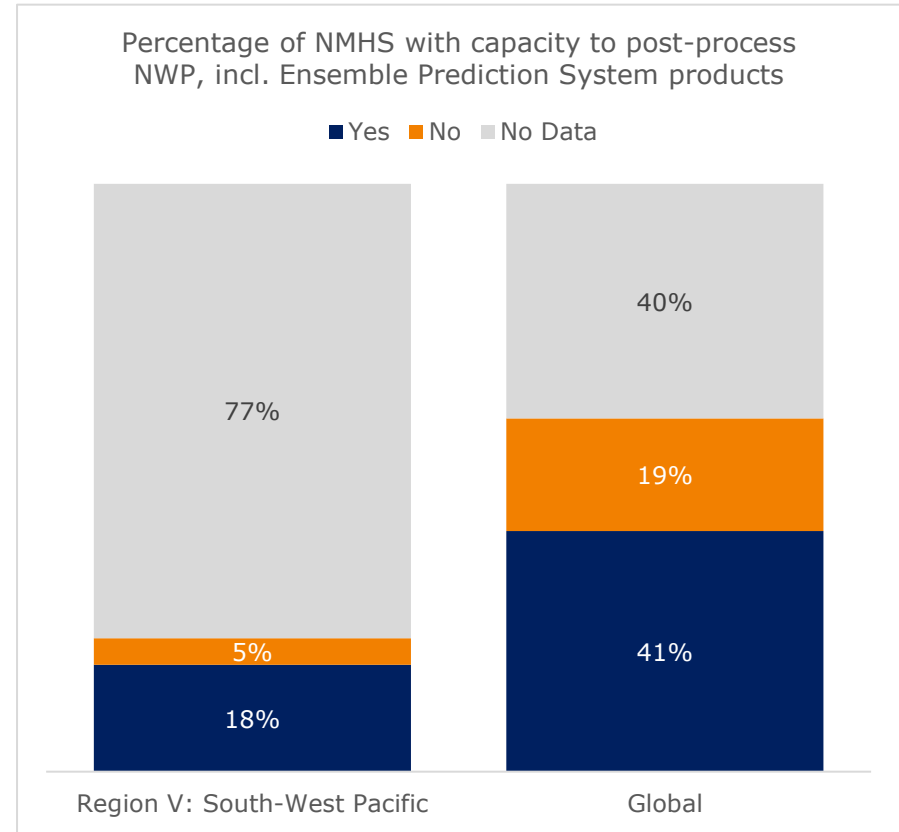


WMO Monitoring System, July 2022

## GDPFS related information (2/2)



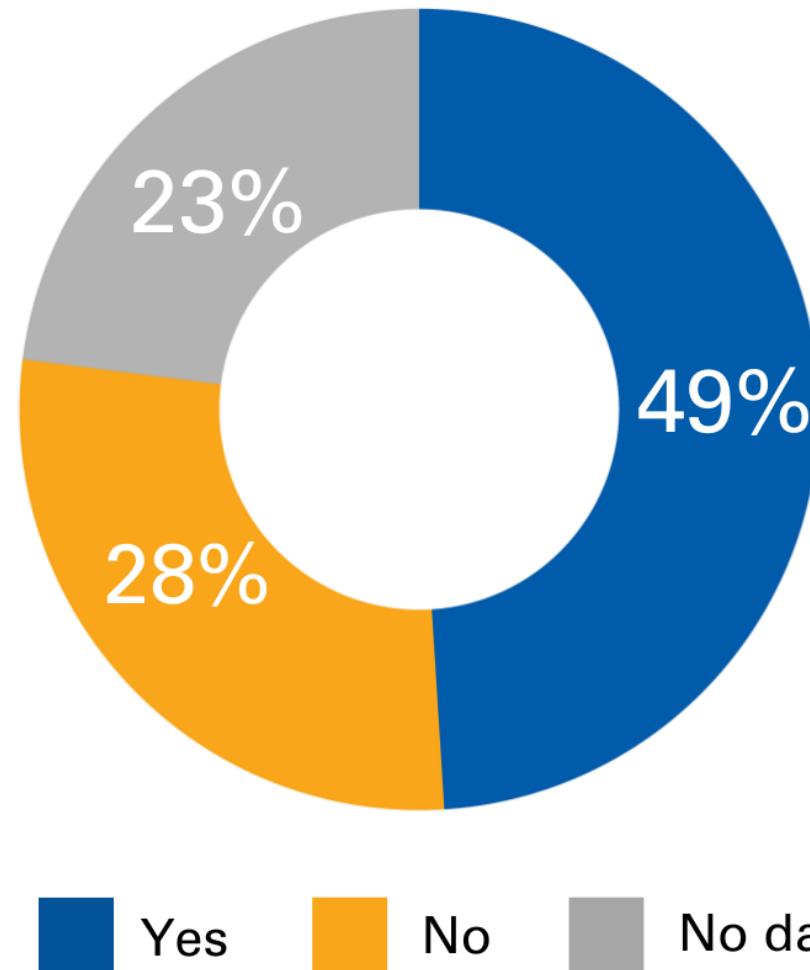
WMO Monitoring System, July 2022



WMO Monitoring System, July 2022

## Early Warnings Gap Remain Globally

An enhanced data collection campaign conducted since March 2022, shows that only half of WMO Members report having a MHEWS in place.



Percentage of WMO Members reporting to have MHEWS

Source: **WMO Performance Monitoring System, July 2022**

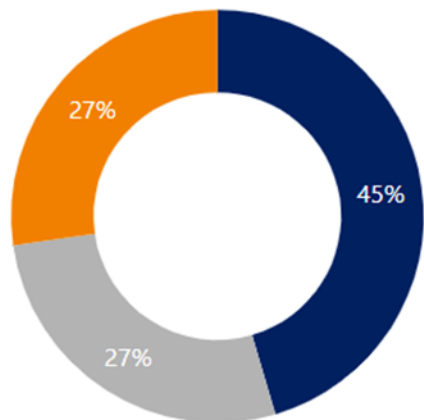


# Existence of a Multi-Hazard Early Warning System (MHEWS)

Global and regional focus | Region V: South-West Pacific

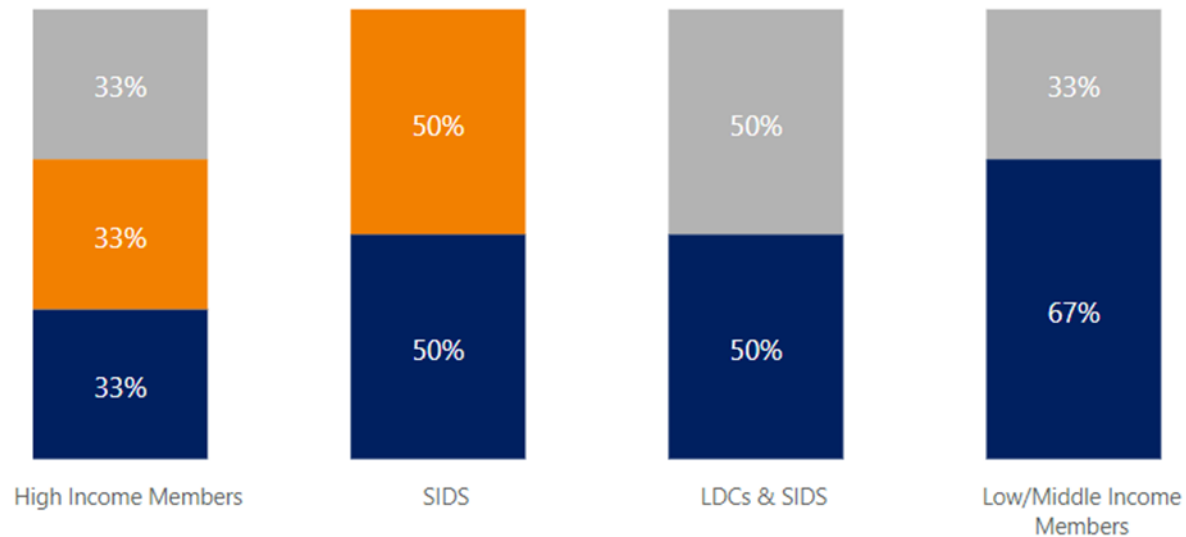
Region V: South-West Pacific | Members reporting on having a MHEWS in place

● yes ● missing data ● no



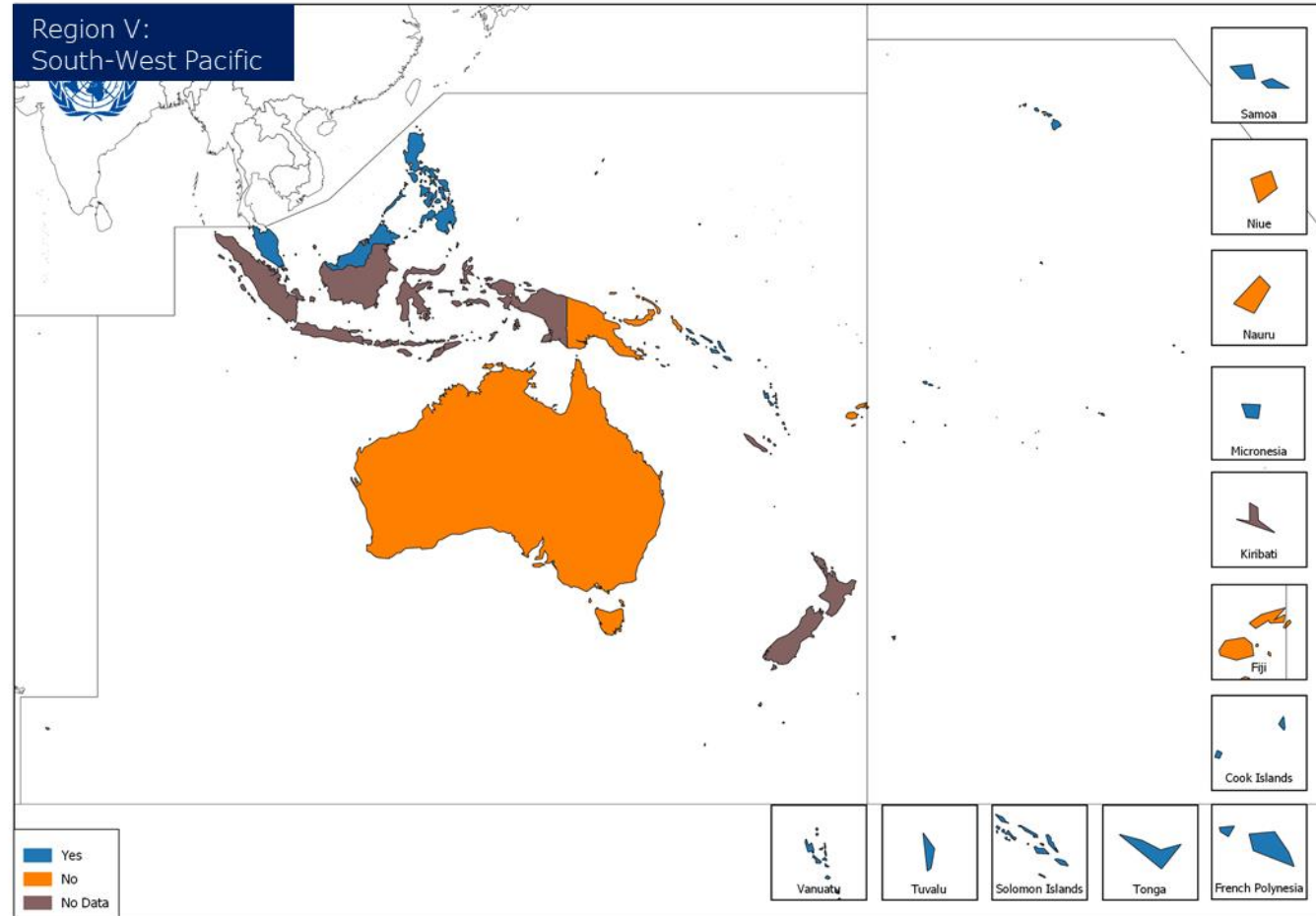
Region V: South-West Pacific | Members, by country group, reporting on having a MHEWS in place

● yes ● no ● missing data



# Existence of a Multi-Hazard Early Warning System (MHEWS)

Global and regional focus | Region V: South-West Pacific



WMO Monitoring System, July 2022

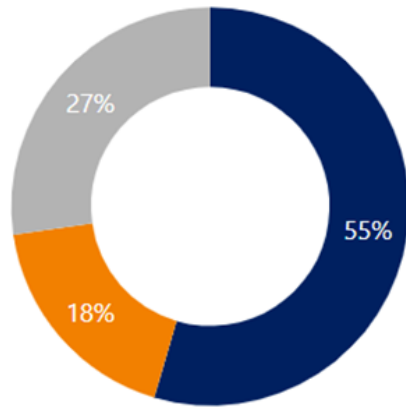


# Monitoring/forecasting for multiple hazards occurring simultaneously cumulatively over time

Global and regional focus | Region V: South-West Pacific

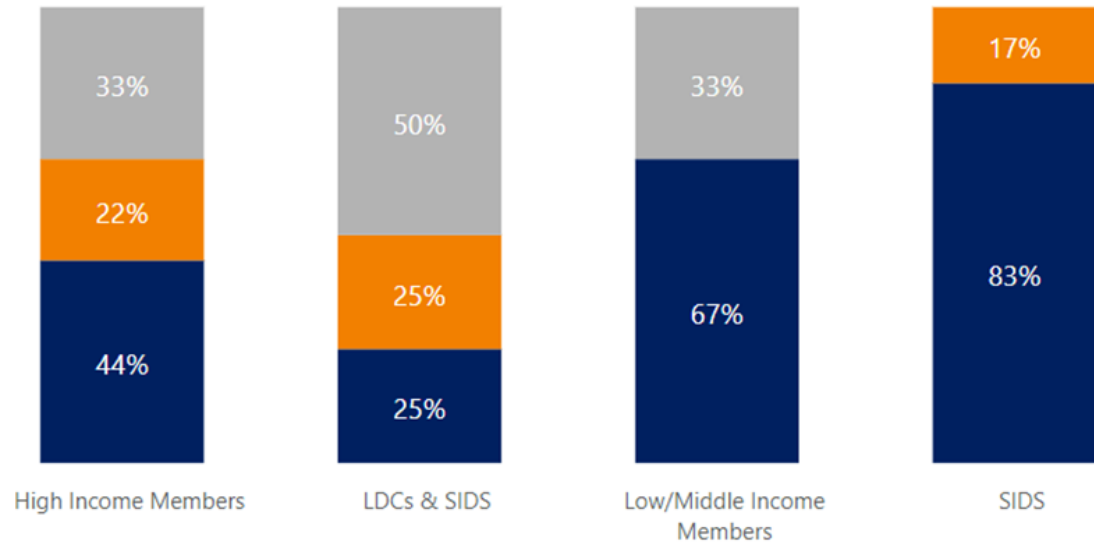
Region V: South-West Pacific | More than half of Members report to monitor and forecast multiple hazard occurring simultaneously cumulatively over time

● yes ● no ● missing data



Region V: South-West Pacific | More than half of SIDS report not to have monitoring and forecasting for multiple hazards occurring simultaneously or cumulatively over time

● yes ● no ● missing data

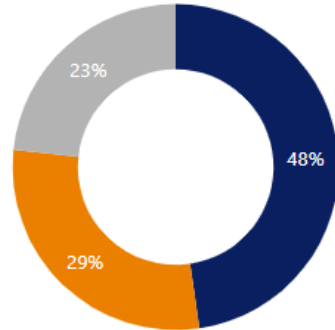


# Provision/production of impact-based forecast and warning services

Global and regional focus | Region V: South-West Pacific

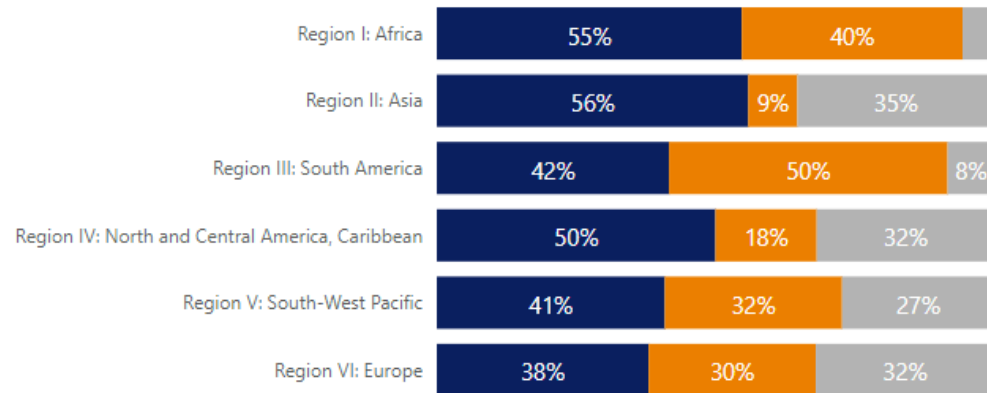
Provision of impact-based forecasting and warning | Global analysis

● yes ● no ● missing data



Regional breakdown | Provision of impact-based forecasting and warning

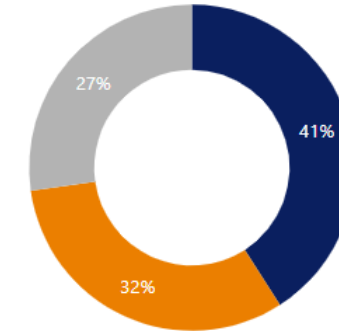
● yes ● no ● missing data



WMO Performance Monitoring System, July 2022

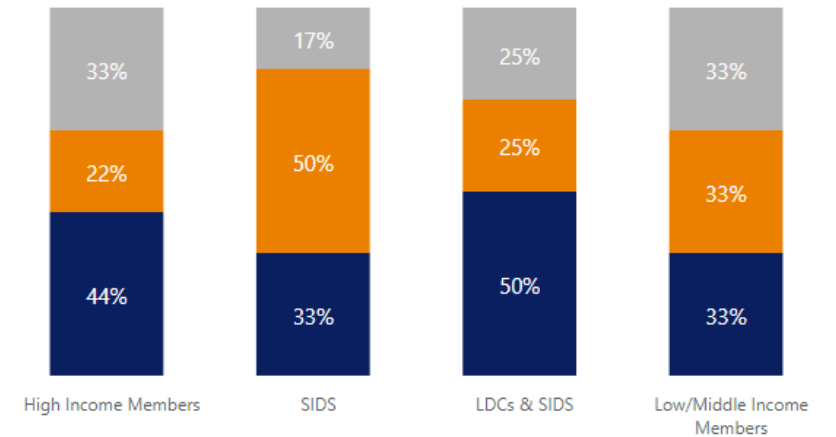
Region V | Percentage of Members reporting to provide impact-based forecasting and warning

● yes ● no ● missing data



Region V | Provision of impact-based forecasting and warning by country group

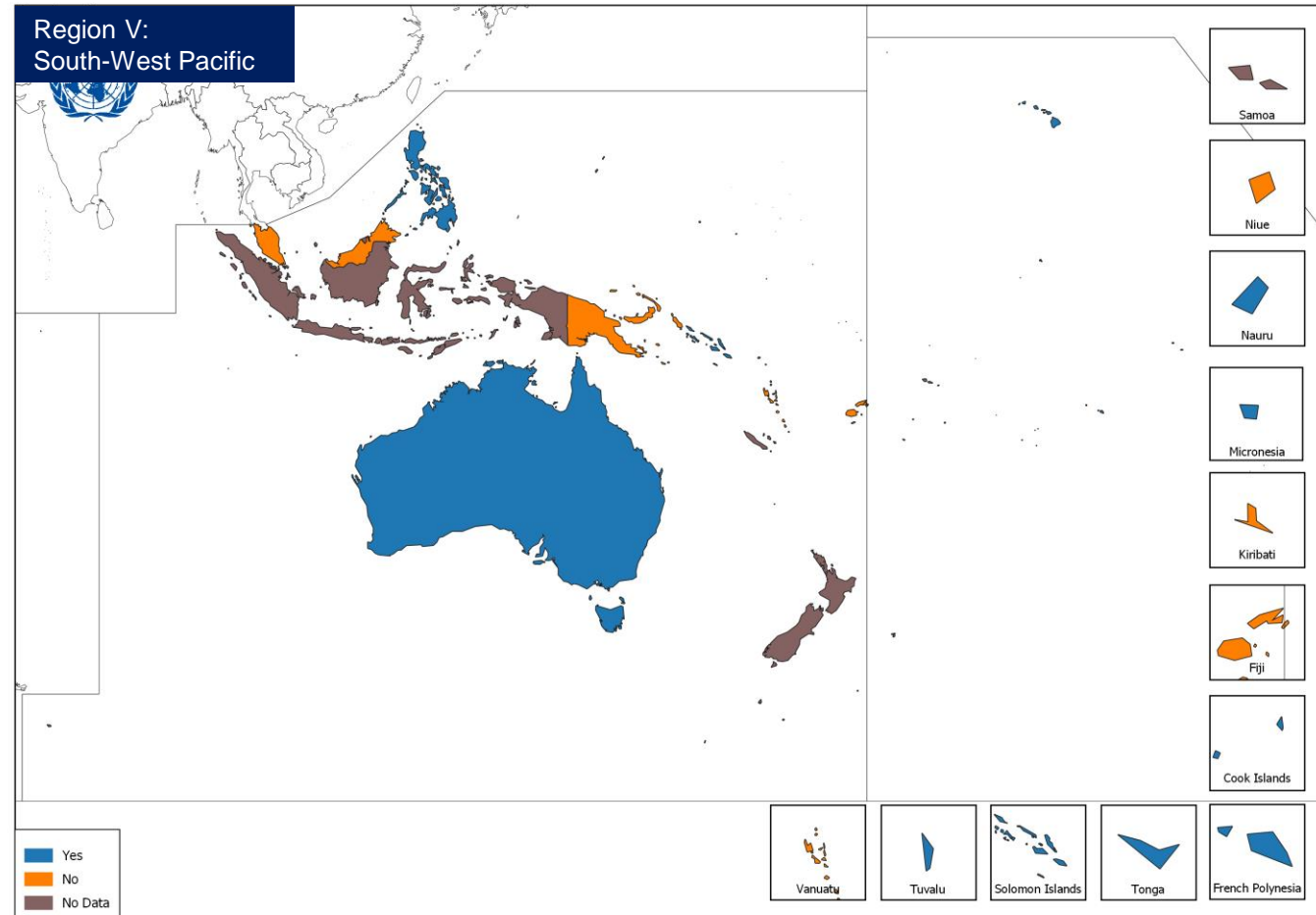
● yes ● no ● missing data



WMO Performance Monitoring System, July 2022

# Provision/production of impact-based forecast and warning services

## Region V: South-West Pacific



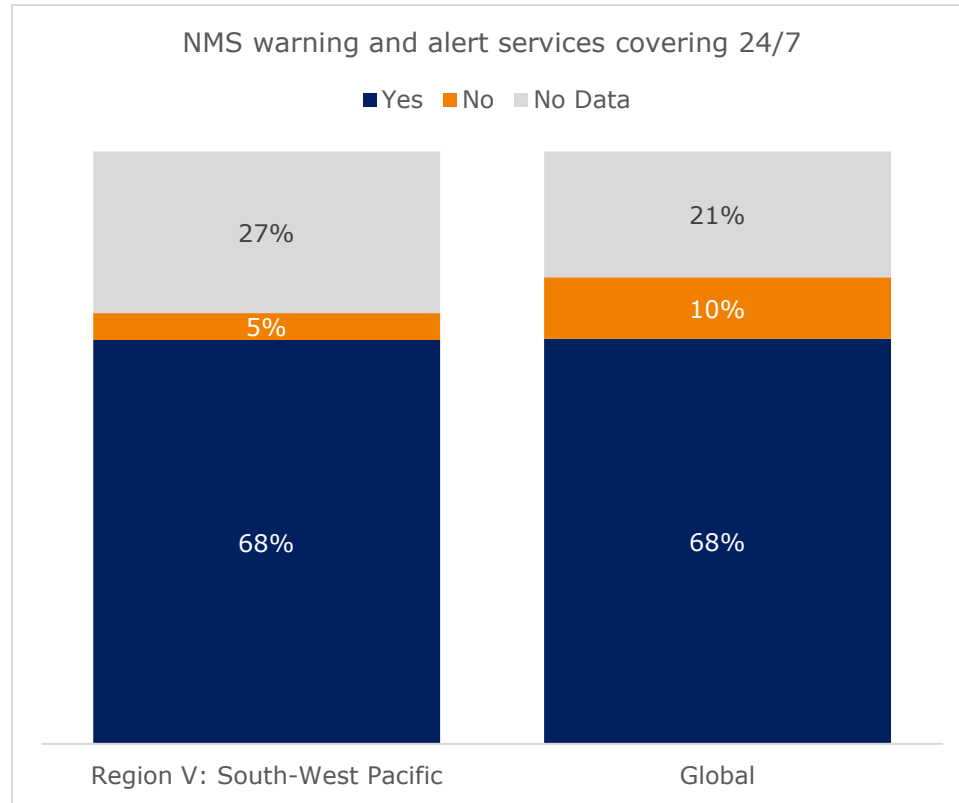
## Warning Services provided by the National Meteorological and Hydrological Services (Region V: South-West Pacific) (1/2)

WMO Member	Drought/ Dry spell	Extra-tropical cyclone	Flood	Haze/ Smoke	Heat wave	High seas/Rogue waves etc.	Landslide/ Mudslide & debris flow
Australia		✓	✓			✓	✓
Cook Islands	✓	✓	✓			✓	✓
Fiji	✓		✓			✓	
French Polynesia		✓				✓	
Malaysia	✓			✓	✓	✓	
Micronesia Federated States Of	✓					✓	✓
Nauru	✓					✓	
Niue	✓						
Papua New Guinea	✓		✓	✓		✓	✓
Philippines	✓		✓	✓			✓
Samoa	✓		✓				
Singapore	✓			✓	✓	✓	
Solomon Islands	✓						
Tonga	✓	✓	✓	✓			
Tuvalu	✓						
Vanuatu			✓			✓	

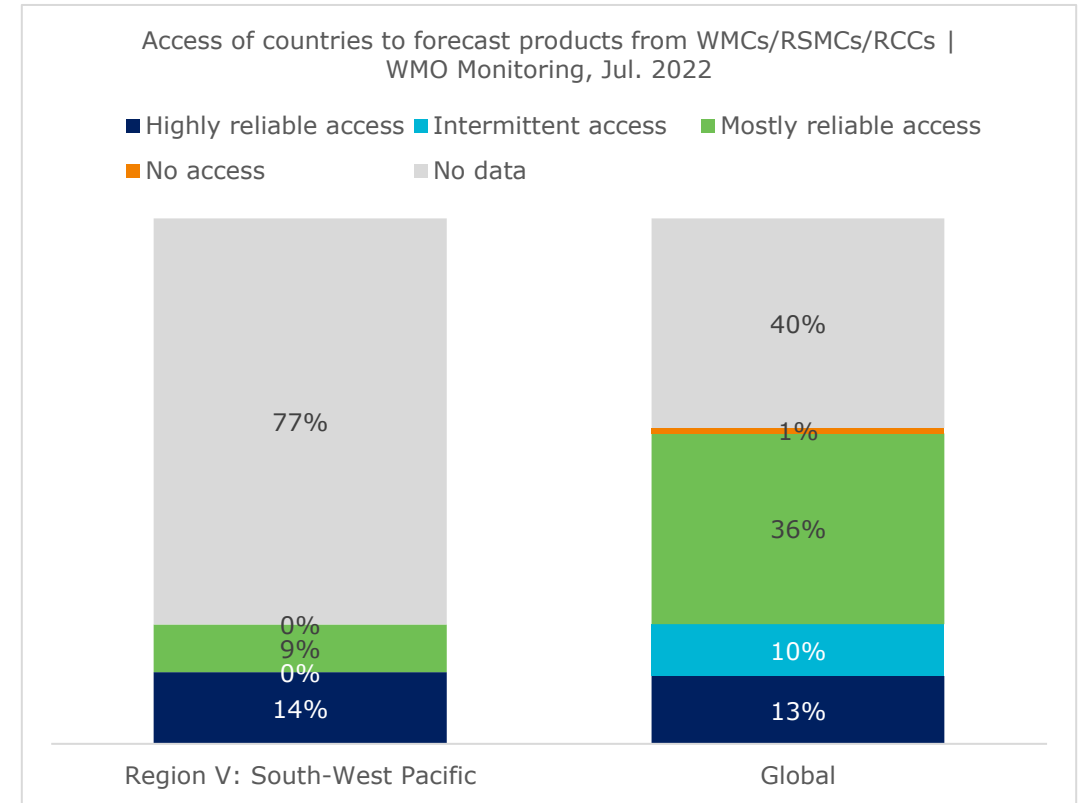
## Warning Services provided by the National Meteorological and Hydrological Services (Region V: South-West Pacific) (2/2)

WMO Member	Lightning	Rain/Wet Spell	Storm surge/Coastal flood	Thunderstorms/Squall lines	Tornado	Tropical cyclone	Tsunami	Volcanic ash	Wild land fire/Forest fire	Wind
Australia			✓	✓	✓	✓	✓	✓		✓
Cook Islands	✓	✓	✓	✓	✓	✓	✓		✓	✓
Fiji	✓	✓	✓	✓		✓		✓		✓
French Polynesia	✓	✓	✓	✓		✓		✓		✓
Malaysia		✓	✓	✓		✓	✓			✓
Micronesia Federated States Of	✓		✓			✓	✓		✓	✓
Nauru		✓	✓	✓		✓	✓			✓
Niue						✓	✓			✓
Papua New Guinea	✓	✓	✓	✓		✓	✓	✓		✓
Philippines	✓	✓	✓	✓		✓				✓
Samoa						✓				
Singapore	✓	✓		✓		✓		✓		
Solomon Islands		✓	✓	✓		✓	✓	✓		✓
Tonga	✓	✓	✓	✓		✓	✓	✓		✓
Tuvalu			✓	✓		✓	✓			✓
Vanuatu		✓				✓	✓	✓		✓

## Warning and alert service of your NMS cover 24/7 | Access to forecasting products



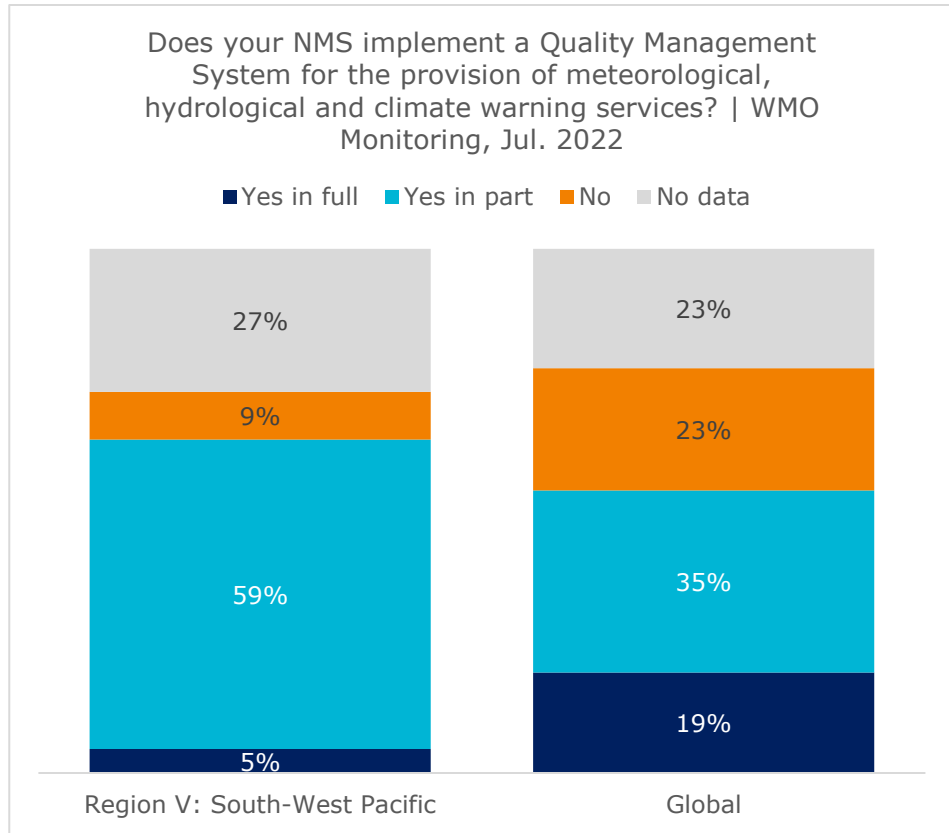
WMO Monitoring System, July 2022



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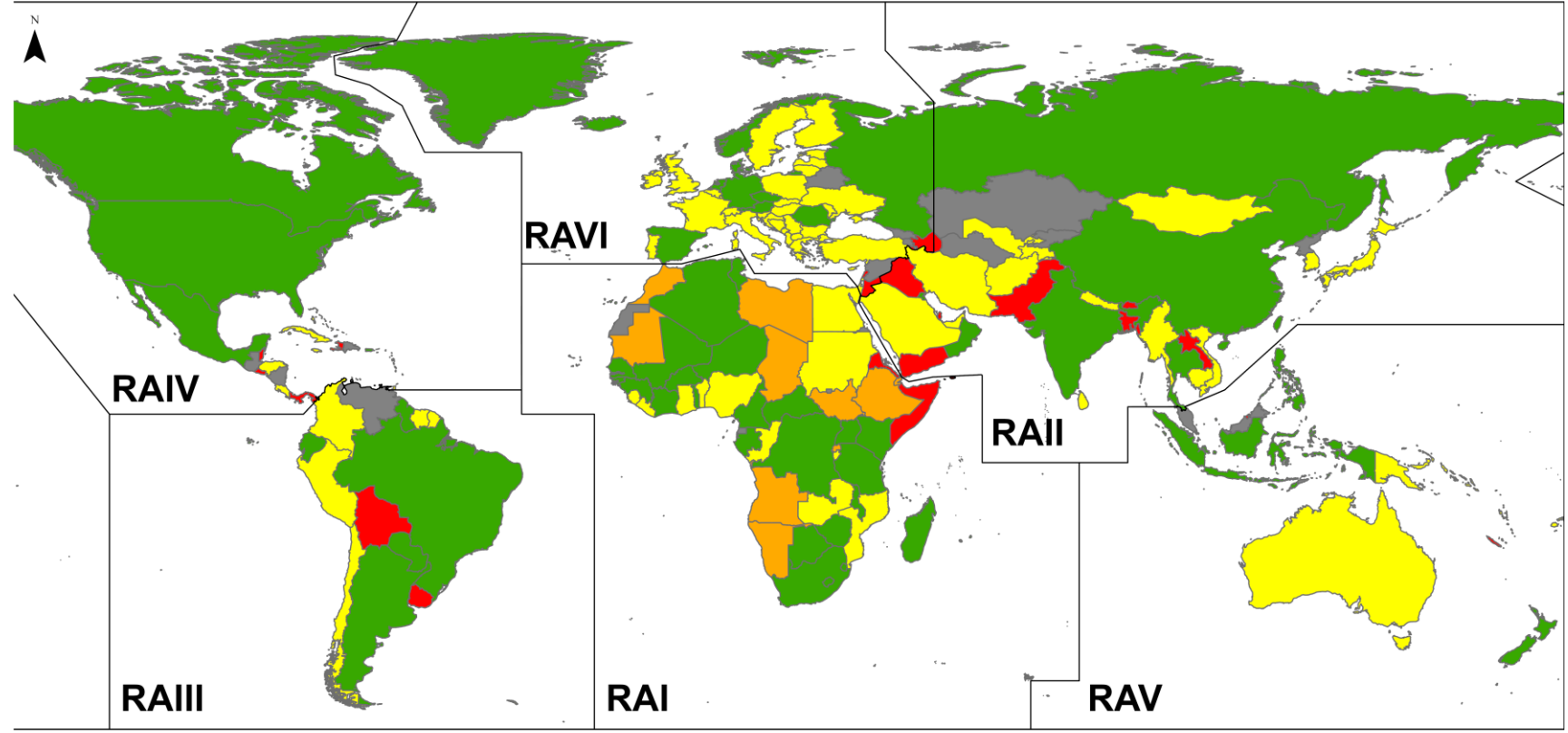


# Implementation of a quality management system for the provision of meteorological, hydrological and climate warning services

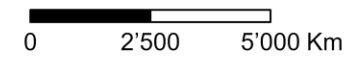


**In Region V, only 5% indicate that a quality management system is implemented in full; 59% in part, and 9% indicate there is no**

## CAP implementation in RAI-VI: September 2022



Sep 2022	RAI	RAII	RAIII	RAIV	RAV	RAVI
Completed	28	6	5	7	3	10
Development/Test mode	11	16	4	10	12	32
Preparation started	11	0	0	0	0	0
Not started	3	8	2	4	5	3
Unknown	0	4	1	5	2	5



# CAP implementation in RAV: September 2022

