Action Plan on Early Warning Systems for All

Dr. Johan Stander
Director of Service Department

World Meteorological Organization Organisation météorologique mondiale
Full Multi-Hazard Early Warning System value cycle
Milestones to COP27 and beyond

**Preparatory process**
- 5-6/9 September Cairo Round Table
- 21-22 September UNGA High-Level Political Event
- October 2022 Maputo Ministerial Meeting on Early Warnings in Southern Africa
- October 2022 WMO Services & Infrastructure Commissions Early Warnings for All Technical Conference

**November 2022**
- COP27 Heads of State Launch of Action Plan

**Implementation**
- March 2023 UN Water Conference
- May 2023 Sendai Midterm Review
- September 2023 UN SDG Summit
- November 2023 UN Future Summit (TBD)

COP27
SHARM EL-SHEIKH
EGYPT 2022

WMO OMM
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

**Current State**

- Observations Forecasts
  - Data policy and WIS2
  - GBON implementation
  - Cloud infrastructure(s)
  - Hydrology

- Exascale computing & data
  - Higher-resolution, seamless weather and climate risk-services

- Regional
  - Enhance regional exchange of value added hydromet advise, support risk analytics and situation rooms

- Roles and responsibilities identified
  - Legislation clarifies alerting mandates

- Nowcasting
  - GEO Satellite products (MSG) in regions where there is no/limited radar coverage

- Risk information consolidated
  - Risk information integrated into MHEWS

- Interoperable MHEWS
  - Compound and Cascading hazards anticipated

- Fragile states
  - Transformational change enables last mile connection

- Last mile connection

- BCP
  - Satellite distribution networks and regional centre agreements

- IBF
  - Risk information consolidated
  - Risk information integrated into MHEWS

- Improved Understanding of risk

- Greater understanding of risk

- Alerts for All

- Observations
  - Forecasts

- Disaster Risk Knowledge
  - Dataset Coordination
    - Catalouging of Hazardous Events
    - Vulnerability & Exposure (DLAS)
    - Sector impact
    - Go Platform

- Revitalize Register of Alerting Authorities
  - Attribution and Creative Commons License distribution and reproduction in any medium, provided the original work is properly cited.

- CAP
  - CAP HelpDesk
  - Global and regional alert aggregators
  - Onboarding alert harmonization and quality measures
  - Big tech support with user profiles and scale dissemination

- Preparedness and Response

- Warning dissemination and communication

- 2022
- 2023
- 2024
- 2025
- 2026

- TBD with partners
Financing Solutions

- CREWS portfolio is USD 84M
- SOFF portfolio is USD 45M
- GCF Climate information and early warning systems portfolio is USD 648M
THANK YOU!
Access of countries to forecast products from World Meteorological Centres/Regional Specialized Meteorological Centre /Regional Climate Centres

- Region V: South-West Pacific
  - Yes: 23%
  - No: 54%
  - No Data: 5%

- Global
  - Yes: 41%
  - No: 5%
  - No Data: 77%

Percentage of NMHS running NWP models

- Region V: South-West Pacific
  - Yes: 77%
  - No: 18%
  - No Data: 5%

- Global
  - Yes: 41%
  - No: 47%
GDPFS related information (2/2)

Percentage of NMHS with an integrated system for analysis, weather forecasting and visualization in place

- Region V: South-West Pacific
  - Yes: 77%
  - No: 18%
  - No Data: 5%

- Global
  - Yes: 43%
  - No: 18%
  - No Data: 4%

Percentage of NMHS with capacity to post-process NWP, incl. Ensemble Prediction System products

- Region V: South-West Pacific
  - Yes: 77%
  - No: 19%
  - No Data: 5%

- Global
  - Yes: 40%
  - No: 41%
  - No Data: 18%
An enhanced data collection campaign conducted since March 2022, shows that only half of WMO Members report having a MHEWS in place.

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

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

High Income Members: 33% yes, 33% no, 33% missing data
SIDS: 50% yes, 50% no, 0% missing data
LDCs & SIDS: 50% yes, 50% no, 0% missing data
Low/Middle Income Members: 33% yes, 67% no, 0% missing data

WMO Monitoring System, July 2022
Existence of a Multi-Hazard Early Warning System (MHEWS)
Global and regional focus | Region V: South-West Pacific
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: 55%
- No: 27%
- Missing data: 18%

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: 83%
- No: 17%
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

Regional breakdown | Provision of impact-based forecasting and warning

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)

<table>
<thead>
<tr>
<th>WMO Member</th>
<th>Drought/Dry spell</th>
<th>Extra-tropical cyclone</th>
<th>Flood</th>
<th>Haze/Smoke</th>
<th>Heat wave</th>
<th>High seas/Rogue waves etc.</th>
<th>Landslide/Mudslide &amp; debris flow</th>
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Warning Services provided by the National Meteorological and Hydrological Services (Region V: South-West Pacific) (2/2)

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<tr>
<th>WMO Member</th>
<th>Lightning</th>
<th>Rain/Wet Spell</th>
<th>Storm surge/Coastal flood</th>
<th>Thunderstorms/Squall lines</th>
<th>Tornado</th>
<th>Tropical cyclone</th>
<th>Tsunami</th>
<th>Volcanic ash</th>
<th>Wild land fire/Forest fire</th>
<th>Wind</th>
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WMO Monitoring System, July 2022
Warning and alert service of your NMS cover 24/7 | Access to forecasting products

NMS warning and alert services covering 24/7

- **Region V: South-West Pacific**
  - Yes: 68%
  - No: 21%
  - No Data: 5%

- **Global**
  - Yes: 68%
  - No: 27%
  - No Data: 10%

Access of countries to forecast products from WMCs/RSMCs/RCCs |
WMO Monitoring, Jul. 2022

- **Region V: South-West Pacific**
  - Highly reliable access: 77%
  - Intermittent access: 0%
  - Mostly reliable access: 9%
  - No access: 14%
  - No data: 1%

- **Global**
  - Highly reliable access: 36%
  - Intermittent access: 10%
  - Mostly reliable access: 1%
  - No access: 13%
  - No data: 40%
Implementation of a quality management system for the provision of meteorological, hydrological and climate warning services

Does your NMS implement a Quality Management System for the provision of meteorological, hydrological and climate warning services? | WMO Monitoring, Jul. 2022

- Yes in full
- Yes in part
- No
- No data

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

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<tr>
<th>Sep 2022</th>
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<td>6</td>
<td>5</td>
<td>7</td>
<td>3</td>
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<tr>
<td>Development/Test mode</td>
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<td>16</td>
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<td>10</td>
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</table>
CAP implementation in RAV: September 2022

- **Completed (3)**
- **Development/Test mode (12)**
- **Preparation started (0)**
- **Not started (5)**
- **Unknown (2)**