

# WMO Early Warning for All initiative (EW4ALL) - implications and expectations for CGMS space agency members

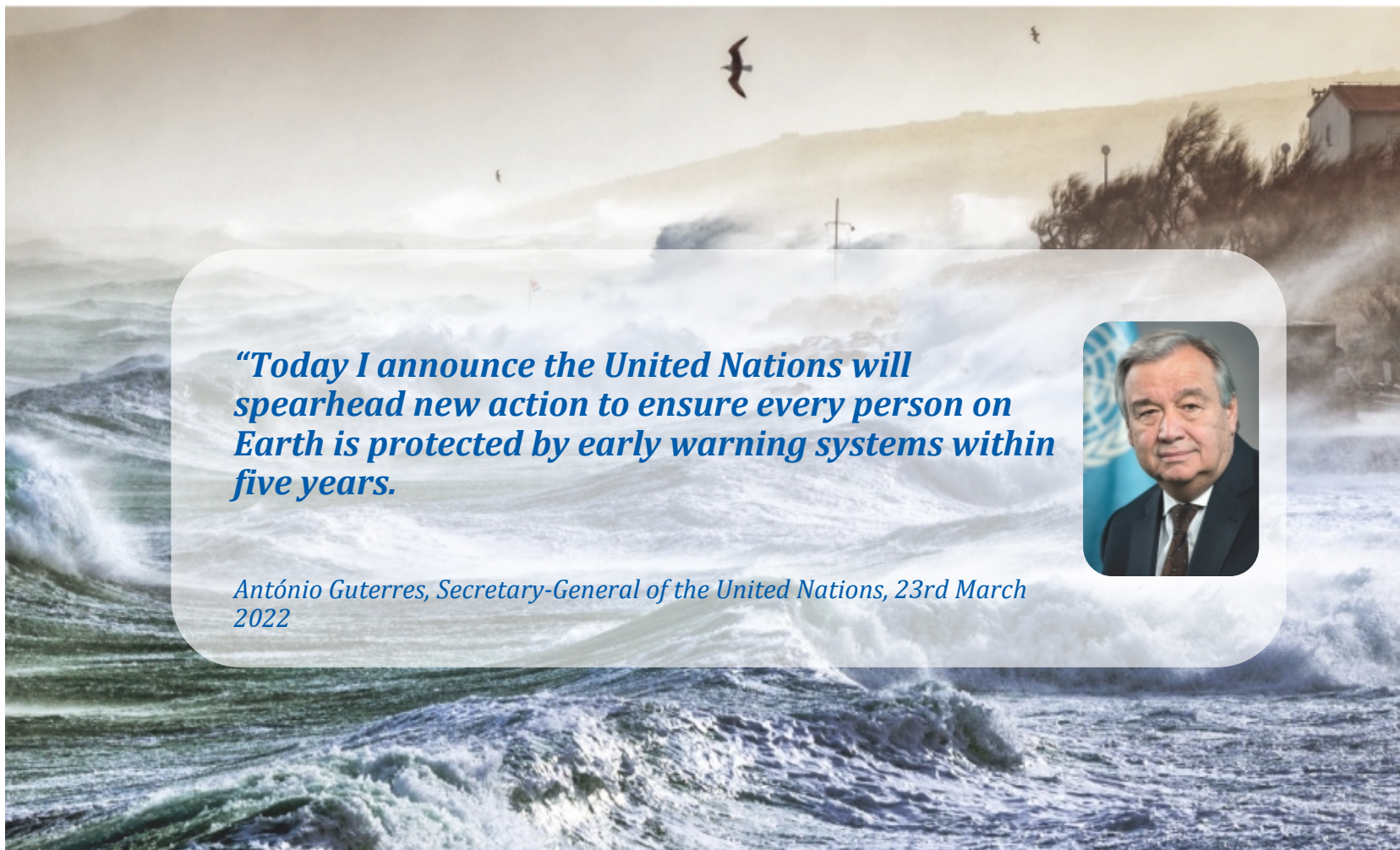
Presented to CGMS-52 plenary session

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## Executive summary

- EW4All is a UN-wide initiative to ensure that every person on earth will be protected by early warning systems, to reduce the impacts to life and property from natural hazards. The changing climate and intensification of severe events add special urgency to tackle this challenge and build climate resilience.
- 30 countries were identified as the first priority – mostly in tropical regions. 4 UN agencies were chosen to lead the effort: UNDRR – disaster risk knowledge and management, WMO - detection, observation, monitoring, analysis, forecasting, ITU – warning dissemination and communications, IFRC – preparedness and response.
- WMO`s EW4All efforts are on two parallel complementing tracks: Enhancing the global infrastructure: Improvement of international data exchange; more and better products available worldwide; better guidance and training to the members – the main theme of the WMO`s technical commissions. Technical Support to Regional and/or National interventions: Establishing regional support systems; targeted investments for closing national gaps – the main themes of WMO`s extrabudgetary projects, such as SOFF, CREWS etc.
- WMO rapidly analysed the existing gaps in most of the priority countries, including status of use of satellite products. Priority hazards were identified. The WMO`s technical commissions adopted action plan focused around these gaps and hazards.
- The satellite agencies provide substantial support to address the challenges of pillar 2: Continuous monitoring of storms and severe weather (incl. lightnings) – improved accessibility and visualization; Improved NWP and AI forecasts – increased data exchange with the forecasting centers, adoption of core data policy; Satellite-derived products (precipitation, nowcasting) - improved accessibility/ data exchange; Spaceborne Precipitation Radars. Satellites could also support pillar 1 & 3 efforts.

# Early Warnings for All



*“Today I announce the United Nations will spearhead new action to ensure every person on Earth is protected by early warning systems within five years.”*



*António Guterres, Secretary-General of the United Nations, 23rd March 2022*



# Initial Roll-Out Countries



# The initiative is built on four pillars



UNDRR

## **Disaster risk knowledge and management** (led by UNDRR)

Ensuring all countries have access to reliable, understandable and relevant risk information, science and expertise



WMO

## **Detection, observation, monitoring, analysis, forecasting** (led by [WMO](#))

Ensuring all countries have robust forecast and monitoring systems, enabling policies to support optimization and sustainability of hazard monitoring and early warning systems



ITU

## **Warning dissemination and communication** (led by ITU)

Using a people-centered approach to ensure that early warnings are effectively and timely disseminated to reach everyone, especially those most at risk



IFRC

## **Preparedness and response capabilities** (led by IFRC)

Ensuring local governments, communities and individuals at risk have the knowledge and means to take pre-emptive early actions to prepare for and respond to incoming disasters upon receiving warnings



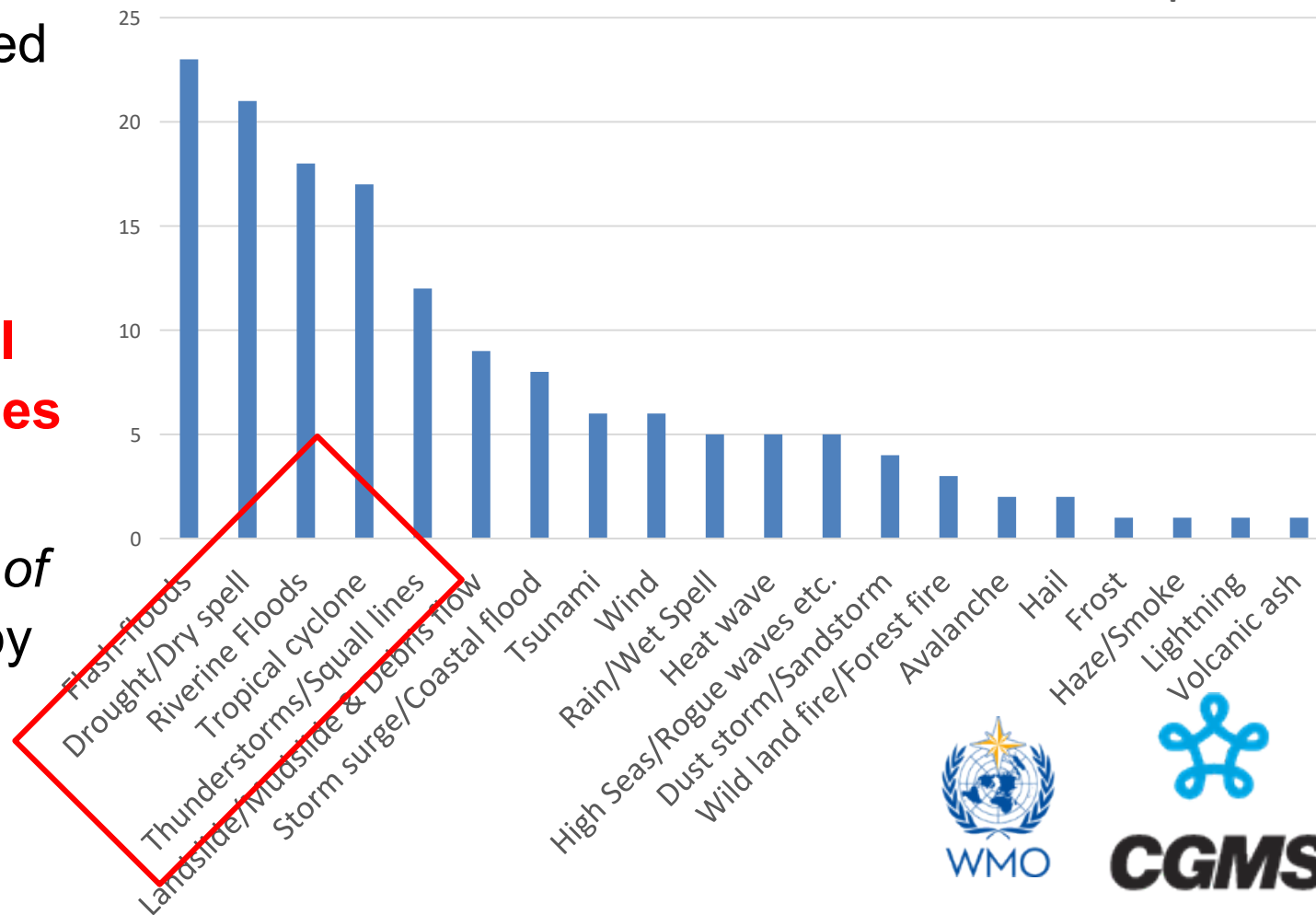
## WMO`s EW4All efforts are on two parallel complementing tracks:

- **Enhancing the global infrastructure:** Improvement of international data exchange; more and better products available world wide; better guidance and training to the members – the main theme of the WMO`s technical commissions
- **Technical Support to Regional and/or National interventions:** Establishing regional support systems; targeted investments for closing national gaps – the main themes of WMO`s extrabudgetary projects, such as SOFF, CREWS etc.

# Priority hazards

- Eventually, **priority hazards** covered by the EW service **need to be decided by each country**.
- For the short-term actions, TCC identified **Flood, Drought, Tropical cyclone, Thunderstorm/squall lines** as priority hazards.
- This is largely *based on the results of the Rapid Assessment* conducted by the WMO Secretariat.

Number of countries that identified the hazard as one of 5 priorities



# Early Warnings for All Dashboard

Early Warnings for All Dashboard: [Early Warnings for All Dashboard \(wmo.int\)](https://www.wmo.int/earlywarningsforall)

**PAGES**

Progress

- Global indicators
- Implementation

**MHEWS Capacity**

- Global overview
- Country/territory**

**PAGE FILTERS**

COUNTRY/TERRITORY

- Fiji**
- Ethiopia
- Guatemala
- Guyana
- Haiti
- Kiribati
- Lao People's D...
- Liberia

**2 Fiji**  
Maturity level

This page presents detailed information on the capacity for monitoring and forecasting of the 30 countries initially selected for support under the EW4All Initiative, structured along eight elements of the hydrometeorological value chain, based on data submitted to WMO by their National Meteorological and Hydrological Services.

**Element Maturity Scores**

Country (■) / Global average\* (◆)

\*Based the number of currently assessed National Meteorological and Hydrological Services

Element	Country Score (Fiji)	Global Average
Legal framework and institutional mechanisms	4	~3.5
Observational infrastructure	3	~2.5
Hazard monitoring	2	~1.5
Remote-sensing data	3	~2.5
NWP model and forecasting tool application	4	~3.5
Impact-based forecasting capacity	1	~1.5
Warning services & MHEWS operations	3	~2.5
Financial and technological enablers	4	~3.5

**Data View**

Use the buttons below to switch between viewing the data on the priority hazards and the detailed data making up the overall element scores.

Priority Hazards | **All data - by element**

**Remote-sensing data**

Basic

Data point	Value
Use of radar data	Yes
Means of access to satellite data	Satellite_reception_stations
Means of access to satellite data (details)	0

The colours of the bars express the degree of attainment of each element as quantified by the EW4All Pillar 2 Rapid Assessment, following these percentages

Percentage Range	Color
0-20%	Red
21-40%	Orange
41-60%	Yellow
61-80%	Light Blue
81-100%	Dark Blue

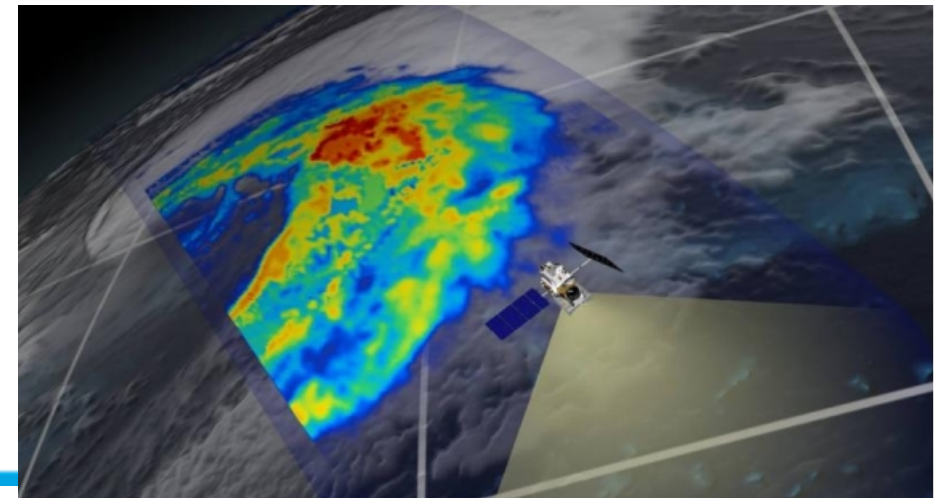
Staff are trained on remote sensing data access/use for hazard forecasting for hazard monitoring/forecasting: Hazard 3	No
Staff are trained on remote sensing data access/use for hazard forecasting for hazard monitoring/forecasting: Hazard	No

Source: WMO Monitoring System, 2023



## How can satellites help pillar 2 ?

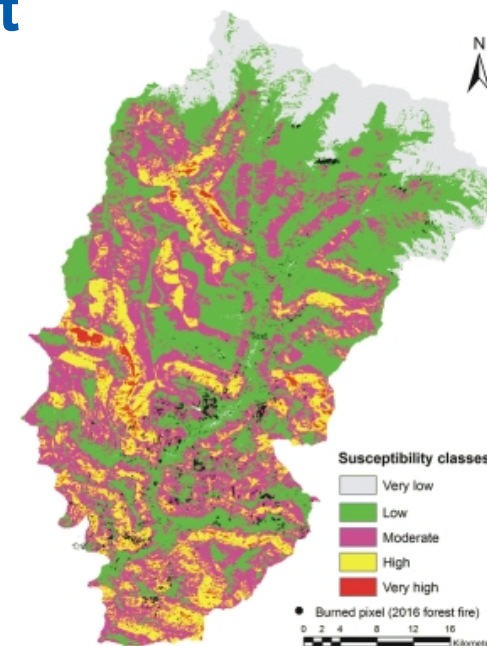
- Continuous monitoring of storms and severe weather (incl. lightnings) – improved accessibility and visualization
- Improved NWP and AI forecasts – increased data exchange with the forecasting centres, adoption of core data policy
- Satellite-derived products (precipitation, nowcasting) - improved accessibility/ data exchange
- Spaceborne Precipitation Radar





# Actually, satellites can be of help to the other pillars as well...

- **Pillar 1: Mapping of vulnerabilities (forest fires, heat waves, floods, dust storms, avalanches... : topography, land use, soil/snow state, vegetation type/state...)**
- **Pillar 3: Dissemination of critical data to regions where terrestrial networks channels are not functioning / of low band-width / low stability**



# Document 7.1

## Decision 7.1/1 to decide priority activities of INFCOM

- Implement the **WMO Information System (WIS) 2.0**, including the development of a **Common Alerting Protocol (CAP) editor** to be part of the “WIS 2.0 in a box” and the **development of the WMO Hydrological Observing System (WHOS)** in the pre-operational phase of WIS 2.0;
- Implement the **Global Basic Observing Network (GBON)**, including through the (support provided by/via the) Systematic Observations Financing Facility (SOFF);
- Guide and support the development of the **Regional Basic Observing Network (RBON)**;
- Analyse gaps and enhance **WMO Integrated Processing and Prediction System (WIPPS) products** for priority hazards, including:
  - Enhance the information and service cascading process of the Severe Weather Forecasting Programme (SWFP), the Climate Services Information System (CSIS), and the Tropical Cyclone Programme (TCP); and
  - Improve accessibility and usability of WIPPS products including graphical products;
- Enhance **engagement of academic and private-sector players** in WIPPS development;
- Enhance the introduction of new **emerging technologies** (e.g., Artificial Intelligence (AI)) and science into WIPPS;
- **Catalogue and analyse gaps of satellite products and applications** for priority hazards;
- **Support Members to ensure access to satellite data and products** and with **train-the-trainers** focused on access, processing, visualization, and interpretation of satellite data; and
- Address the needs for cryosphere-related **emerging hazards**.

For more information, please refer to:

[INFCOM-3-d07-1-PRIORITY-ACTIVITIES-AND-ACTION-PLAN-approved\\_en.docx \(wmo.int\)](#)

&

[INFCOM-3-INF07-1-PROPOSED-PRIORITY-ACTIVITIES-ON-EW4ALL\\_en.docx \(wmo.int\)](#)

# Document 7.1

## Draft Recommendation 7.1/1 to propose the Action Plan

- Action Plan for infrastructure components contributing to EW4All, consisting of work plans to:
  1. consider EW4All observational user requirements and gaps through the **Regional Basic Observing Network**,
  2. **address the gaps in satellite data/products**,
  3. analyse gaps and **enhance WMO Integrated Processing and Prediction System products for priority hazards**, and
  4. address **cryosphere-related emerging hazards**
- **Urges** Members represented on INFCOM to support the implementation of the listed priority activities through the development of their own initiatives **at regional and/or national levels**, in cooperation with various stakeholders, including multilateral/bilateral development partners.

# Draft Work Plan to address gaps in satellite data & products in support of EW4ALL

No.	Deliverable	Delivered to (body, e.g. INFCOM-3)	Body responsible (Team, Secretariat, etc.)	Consultation with, support from (Secretariat, etc.)	Effort type (meetings, workshops, consultancy, secretariat)	Estimated timeline
1	<b>Preparation of the mapping exercise</b> on the utilization of satellite data for priority hazards <b>(DRAFT)</b>		Regional Associations (e.g. Regional Coordination Groups on Satellite Data Requirements)	Secretariat (Regional offices, Space Systems and Utilization Division), with the guidance from ET-SSU	Virtual meetings, email exchange, Secretariat work	July 2024
2	<b>Conduct the mapping exercise</b> among Members		Regional Associations	Secretariat (Regional offices)	Dynamic mapping exercise	September 2024
3	<b>Identity the initial (regional) list of satellite products for each priority hazards</b> based on: (1) results of mapping exercise above and (2) results of <b>data call on EW4ALL</b> provided by satellite providers		More experienced users in each region (particularly the leads of satellite data requirements groups and VLab members)	Secretariat (Regional offices, Space Systems and Utilization Division), with the guidance from ET-SSU	Virtual meetings, email exchange, Secretariat work	November 2024
4	<b>Validate the list of products with satellite providers</b> to include any additional products that users may not be aware of, as well as with Members in each region	INFCOM MG & Regional Associations MG via Regional Coordination Groups on Satellite Data Requirements	Satellite providers and WMO Members	Secretariat (Regional offices, Space Systems and Utilization Division), with the guidance from ET-SSU		December 2024 – February 2025
5	<b>Gap analyses</b> in terms of <b>access to satellite data, training</b> on processing, visualization, and use of satellite data and products	INFCOM MG & Regional Associations MG via Regional Coordination Groups on Satellite Data Requirements	Regional Coordination Groups on Satellite Data Requirements, with support from ET-SSU	Secretariat (Regional offices, Space Systems and Utilization Division), with the guidance from ET-SSU	Virtual meetings, email exchange, Secretariat work	April 2025
6	<b>Develop regional implementation plan(s)</b> to address the gaps identified in the gap analyses <b>for inclusion in the regional operating plans</b>	Regional Associations	Regional Associations	Secretariat (Regional offices, Space Systems and Utilization Division), with the guidance from ET-SSU	Virtual meetings, email exchange, Secretariat work	TBD by Regional associations

## Key issues of relevance to CGMS:

- The status of the UN Early Warning for All (EW4All) Initiative.

## To be considered by CGMS:

- **For action:** Space agencies are invited to support the implementation work of the INFCOM action plan to address gaps in satellite data/products in support of EW4ALL.