

Space for Early Warning in Africa (SEWA) at ECMWF

SEWA: overview

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19 March 2025



Africa - EU Space Partnership programme

Component 1 (Specific Objective 1) **EU-Africa Space & Partnership**: support to institutional partnership and decision-making processes: **ESA and AUC**

Component 2 (Specific Objective 2) **Space & Green Transition – Focus on Early Warning**: develop space-based services and applications/tools to strengthen Early Warning Systems of hazardous weather and climate-related events: **EUMETSAT-ECMWF-AUC**

Component 3 (Specific Objective 3) **Space & Private Sector**: increase capacity and skills of the private sector, boost the space industry and data economy: **ESA and AUC**



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Context

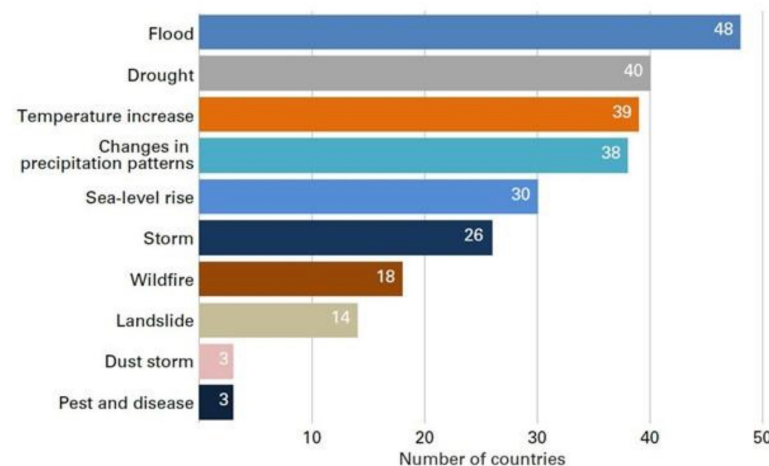
WMO's press release 2.09. 2024:

“Africa faces a disproportionate burden from climate change and adaptation costs”

Africa is particularly vulnerable to the impacts of climate change, with an increasing frequency and intensity of extreme weather events such as droughts, floods, and storms. These events have devastating effects on communities, economies and ecosystems.

➡ The ability to predict and prepare for these events through effective early warning systems is therefore crucial. However, many African countries lack the necessary infrastructure, technical capacity, and resources to effectively utilize space-based data for early warning and disaster management.

SEWA contributes to a set of solutions on these challenges by enhancing the capacity of African institutions to access, process and use space-based meteorological and climate data.



Hazards of greatest concern for the African region. This graph was generated by WMO using the NDCs of 53 countries in Africa based on the active NDCs submitted as of June 2024.

<https://wmo.int/news/media-centre/africa-faces-disproportionate-burden-from-climate-change-and-adaptation-costs>

Wider framework...

SEWA will contribute to the implementation of the UN led **"Early Warnings for All" (EW4All)**, in particular to pillar 2 'Detection, observations, monitoring, analysis and forecasting of hazards' (led by WMO)



SEWA will also contribute to African Union Commission's **Africa Multi-Hazard Early Warning and Action System (AMHEWAS)**



... SEWA will build on strong European capacities

- **EU-funded initiatives**, such as Copernicus and GMES&Africa, PUMA, AMESD, MESA and ClimSA, which laid the groundwork for the use of EU funded Earth Observation (EO) data in Africa
- **European meteorological infrastructure (EMI), incl. European NMHSs** in their expertise on Early Warning
- **EUMETSAT's** new Meteosat Third Generation (MTG) satellites and Nowcasting capabilities and very extensive and close collaborations in Africa
- **ECMWF's** long-standing experience supporting WMO and WMO's Regional Association-I (RA-I) countries and Regional Climate Centres (RCCs) in data provisions and services on Numerical Weather Predictions.
- **ECMWF's** cloud infrastructure and ECMWF weather and Copernicus data and training capacities



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Priority Areas for Support

- **Coordination and Collaboration:** enhancing coordination and collaboration between African and European institutions, as well as among African topic specialists, following a peer-to-peer approach
- **User Uptake through Africa-EU partnerships:** Ensure uptake of ECMWF NWP, Copernicus products and other European data, to accommodate needs on Impact-based Forecasts (IbF) and Early Warning at regional level, following a co-designed approach between African and European entities.
- **Infrastructure Development and Use:** Upgrading and maintaining key meteorological infrastructure, including cloud computing resources, to ensure that African institutions can access and process the full range of MTG data and other relevant products.
- **Training:** European and African specialists to develop co-designed training activities to strengthening the African Regional Climate Centres (RCCs) and other African entities to use space-based data for EW advice.
- **Research and Innovation:** Supporting research and innovation activities aimed at developing new space-based products and services tailored to African needs, particularly in the areas of nowcasting and impact-based forecasting.



Acknowledgement of role of NMHSs in Early Warning

“It falls within the exclusive competence and responsibility of individual nations to provide warnings in their territory in their essential role of contributing to the protection of life and property. In this regard, it is worth recalling that national members of the WMO have exclusive responsibility to maintain national meteorological and hydrological services, under the 1947 UN Convention of the WMO, which have the important mission of supporting national needs, including the protection of life and property of citizens.”

Distribution of roles AUC, EUMETSAT and ECMWF

Outputs	Role EUMETSAT	Role ECMWF	Role AUC
2.1 Improved access, processing, applicability and use of data and services for Early Warning	Shared	Shared	Support
2.2 Established and operated African Meteorological Satellite Application Facility (AMSAF)	<u>EUMETSAT lead</u>	/	Support
2.3 Enable co-design and delivery of Impact Based Forecast services & tools	/	<u>ECMWF lead</u>	Support
2.4 Enhanced coordination with institutional framework and shared knowledge across regions	Support	Support	<u>AUC lead</u>
2.5 Strengthened human capacities, knowledge and community shaping	Shared	Shared	Support

Alignments between AUC, ECMWF, EUMETSAT and external stakeholders

Governance

EC DG INTPA: overarching management of Action

Tight collaboration and alignment of activities between ECMWF and EUMETSAT on impact-based forecasts and training.

Governance instruments within SEWA implemented via Output 2.4. as managed by **AUC** including ad-hoc **Working Groups (WG)** which aim to Coordinate and Advise on implementation specific activities

Main WGs driven by ECMWF	Indicative entities involved
WG SCOPING STUDY	Reps. from EUMETSAT, WMO (EW4All team and linked entities), AUC
WG PILOTS	Reps. from at least WMO AMCOMET, EUMETSAT and EC DG JRC
WG TRAINING	Reps. from at least EUMETSAT and AUC

