WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

WMO's work on drought preparedness

GDCS, IDMP and projects

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JRC EDORA workshop, 16-17 June 2022

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

WMO is the United Nations system's authoritative voice on weather, climate and water

WMO is working on drought preparedness in its technical bodies (technical commissions), especially the **expert team on drought** under SERCOM,...

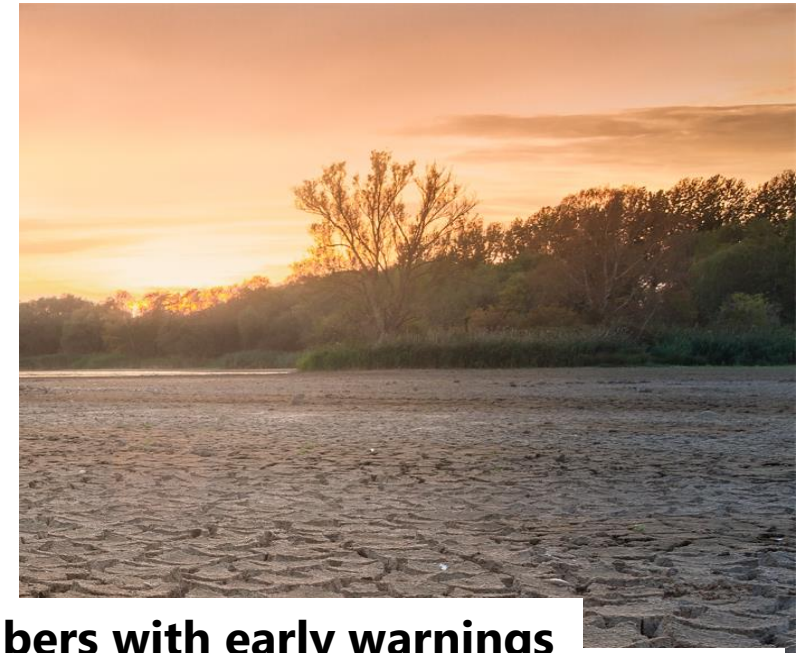
... co-sponsors implementation of proactive drought management through the **Integrated Drought Management Programme**, ...

... and furthers the development of tailored climate services for drought resilience in a variety of **projects.**

WMO OMM

Drought monitoring and early warning

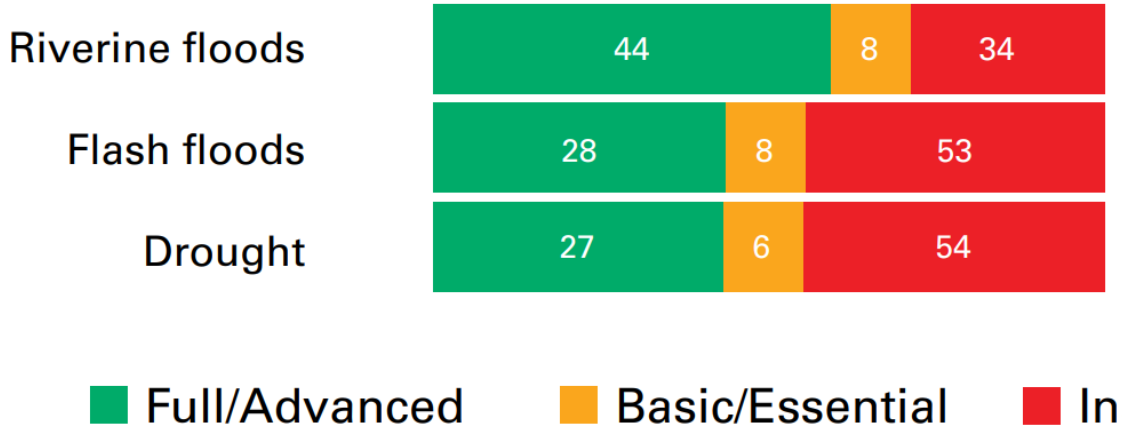
- Drought is the one **most impactful natural hazard** for food security, and among the most complex and costliest
- **Climate projections** indicate the increase of drought severity and frequency in many regions
- **Weather, water and climate services** support decisions and policies for climate adaptation



→ **Early Warning Systems have proven to reduce impacts and save lives**

Challenge: **Distinct temporal and spatial footprint** of droughts to other natural hazards (floods, storms, etc.)

Number of Members with early warnings



Number of Members with early warnings available to the population at risk, based on the estimated percentage of the population at risk that receive EW (Source: WMO State of Climate Services 2021 – Water)

Global Drought Classification System

What? Standardization of national drought monitoring and warnings on the global level

How? Each country determines which drought index to use.

Then the index is standardized into 5 classes:

D0 (Abnormally Dry)
D1 (Moderate Drought)
D2 (Severe Drought)
D3 (Extreme Drought)
D4 (Exceptional Drought)

- Standardized Precipitation Index (SPI) or SPEI easiest to use

Table 2. Probability of recurrence

SPI	Category	Number of times in 100 years	Severity of event
0 to -0.99	Mild dryness	33	1 in 3 yrs.
-1.00 to -1.49	Moderate dryness	10	1 in 10 yrs.
-1.5 to -1.99	Severe dryness	5	1 in 20 yrs.
< -2.0	Extreme dryness	2.5	1 in 50 yrs.

- **GDCS will be a contribution to Global Multi-Hazard Alert System (GMAS), Hydrological Status and Outlook System (HydroSOS), and UNCCD indicator (Strategic Objective 3)**

North American Drought Monitor

June 30, 2017

Released: Tuesday, July 11, 2017

http://www.ncdc.noaa.gov/nadm.html

Analysts:
Canada - Trevor Hadwen
Maginda Magendrathajan
Mexico - Adelina Albanil
Minerva Lopez*
U.S.A. - Jessica Blunden

(* Responsible for collecting analysts' input & assembling the NA-DM map)

Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

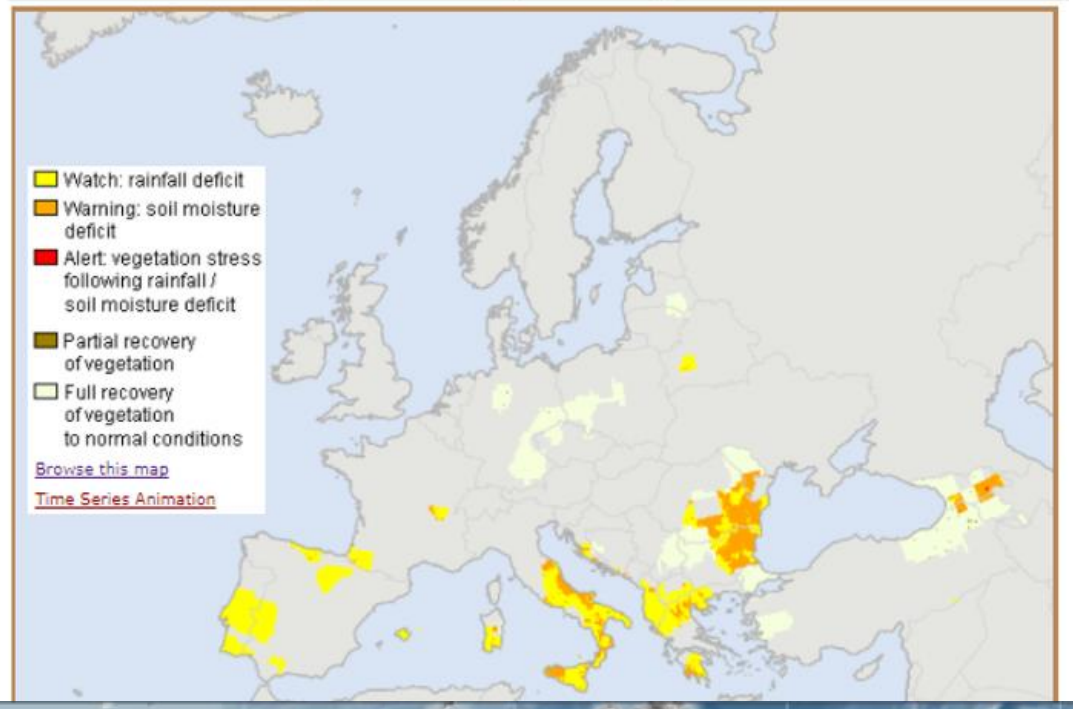
Drought Impact Types:
Delineates dominant impacts
S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text for a general summary.

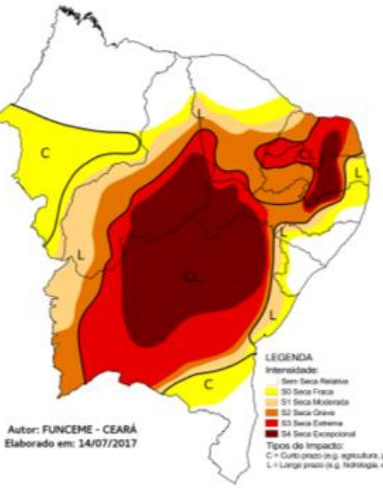
Regions in northern Canada may

USDA · CONAGUA · Comisión Nacional del Agua · Agriculture and Agri-Food Canada · Agriculture et Agroalimentaire Canada

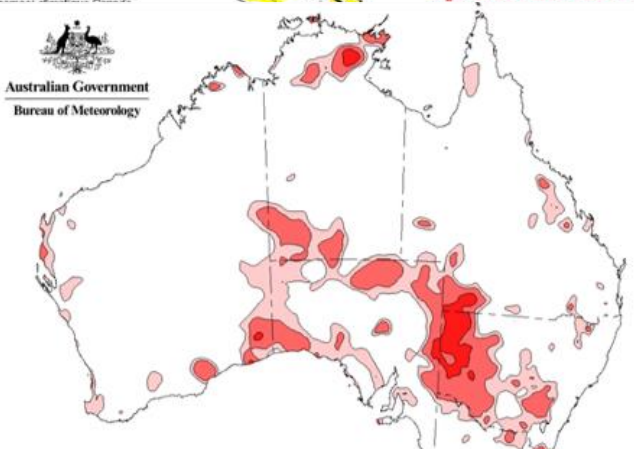
SERCOM Expert Team on Drought



Monitor de Secas
Junho/2017



Australian Government
Bureau of Meteorology



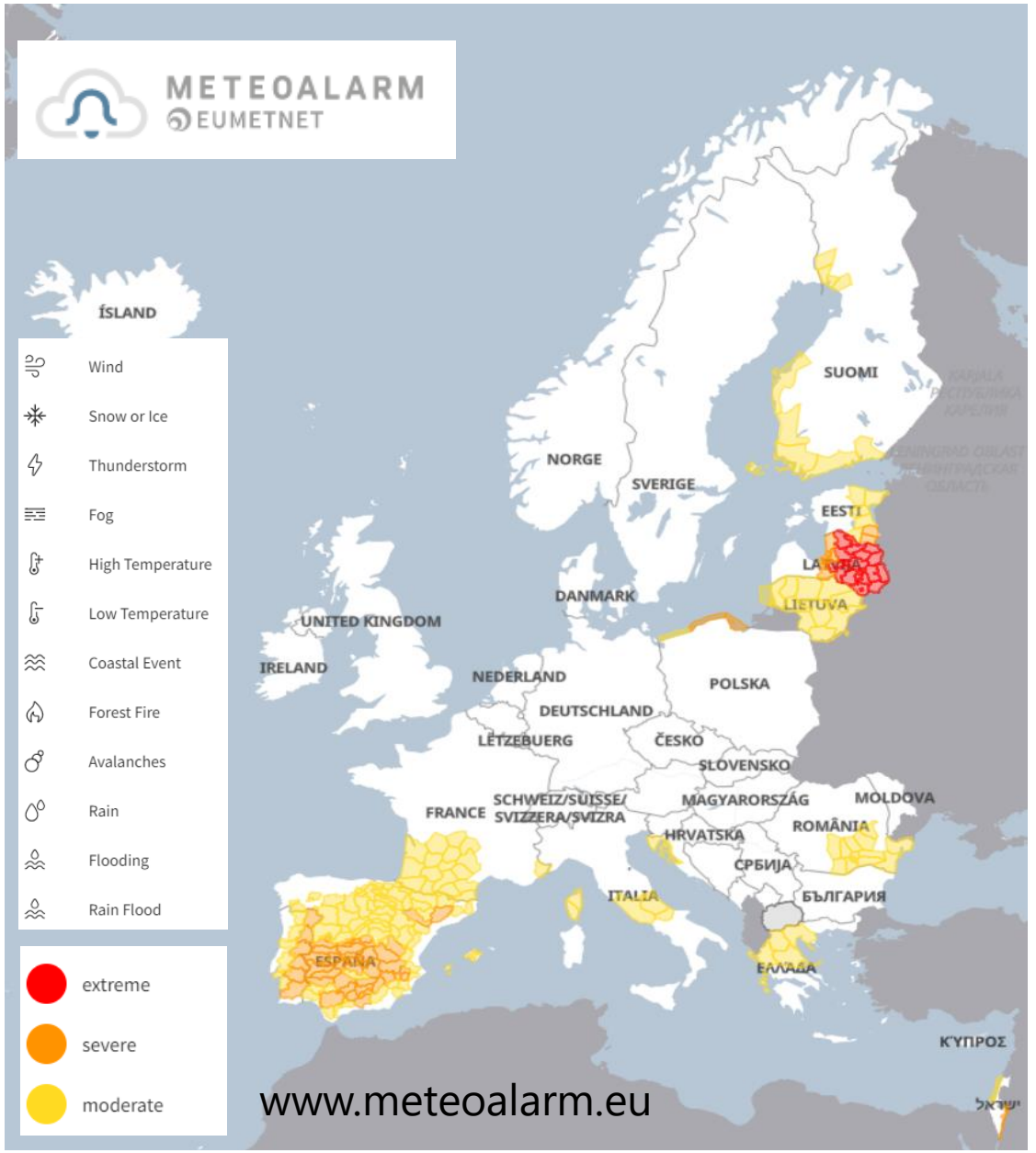
Distribution Based on Gridded Data
Australian Bureau of Meteorology

http://www.bom.gov.au

https://www.droughtmanagement.info/pillars/monitoring-early-warning/

Next steps/milestones

- Collect input from the national level (Q3 2022)
- Develop a draft implementation plan for GDCS based on the concept note (Q3 2022)
- Development of a pilot system for GDCS (from 2023)



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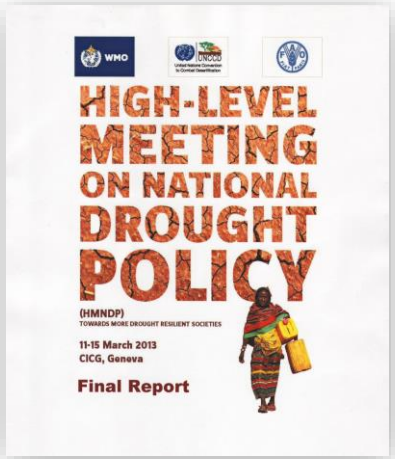
The Integrated Drought Management Programme



IDMP's objective is to **support stakeholders at all levels** by providing **policy and management guidance** and by **sharing scientific information, knowledge and best practices** for Integrated Drought Management.

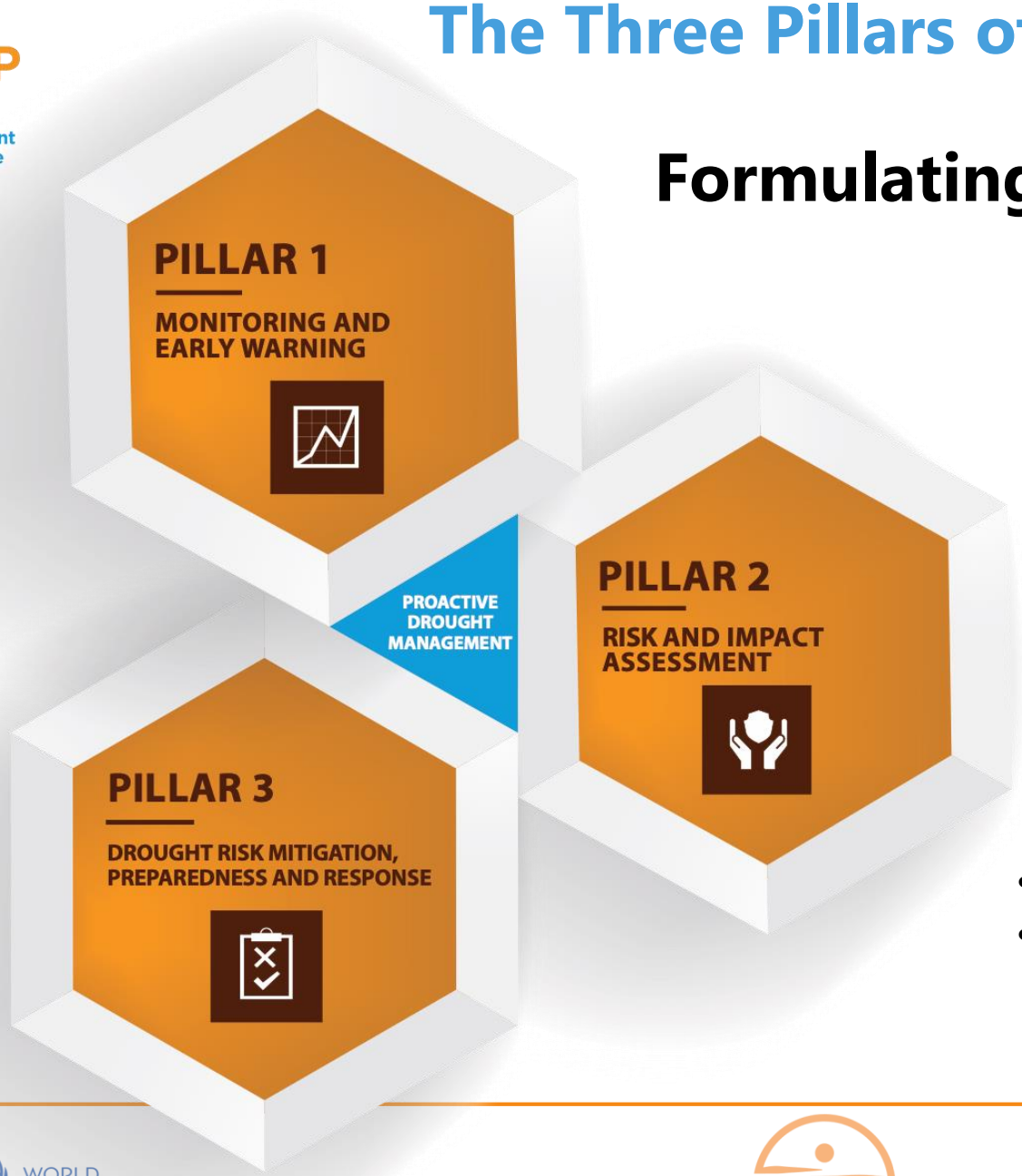
WORLD METEOROLOGICAL ORGANIZATION

INTEGRATED DROUGHT MANAGEMENT PROGRAMME

Global Water Partnership

The Three Pillars of Integrated Drought Management

IDMP
Integrated Drought Management Programme



Formulating proactive drought policy:

Pillar 1: Monitoring and Early Warning

- **Integrated** monitoring of key indicators (hydrological, climatological, impacts)
- **Used to trigger actions in drought plans**

Pillar 2: Risk and Impact Assessment

- Knowledge of **who and what is at risk and why** – root causes of impacts

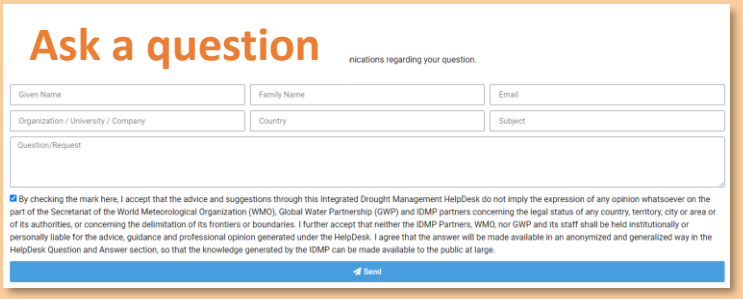
Pillar 3: Risk Mitigation, Preparedness and Response

- **Proactive** measures to increase coping capacity
- Response measures that support the principles of drought risk reduction

IDMP HelpDesk Functions

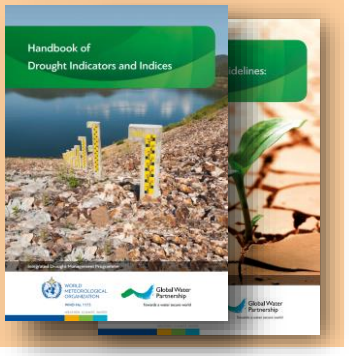
ASK

- **Directly request support**: Contact form, tailored advice through the IDMP TSU and partners



FIND

- Tools and examples of Applications on the **3 Pillars** of IDM
- Overview of Drought Management **Plans and Policies**
- Drought Management **Library** (323 vetted entries) and **IDM Glossary**
- IDMP knowledge products like the Handbook on Drought Indices and Indicators



CONNECT

- Regional activities: **4 Regional IDM Programmes** in Central and Eastern Europe, Central Asia, East Africa and West Africa
- **IDM Projects** (Central America, South America, Southeast Asia, West Africa, …)
- Engagement with **international processes** (FAO, UNCCD, UNDRR, and others)
- Training and capacity building events

FOCUS Africa project

Full value-chain Optimize Climate User-centric Services for Southern Africa (FOCUS-Africa)

Main objective

Develop **full value chain climate services** in the SADC region, by targeting specific sectors industry relevant case studies, while strengthening the underpinning climate prediction and projection science and assessment of associated socio-economic benefits.

Grant Amount : 7 million Euros funded by EU
Starting Date/ Duration : 1st September 2020/ 48 months
Main Sectors: Food security, Water, Energy, Infrastructure
Target Countries: South Africa, Tanzania, Mozambique, Malawi, Mauritius

https://focus-africaproject.eu/

CASE STUDY - FOOD SECURITY

MALAWI

CONTEXT

The economy in Malawi is heavily based on rainfed agriculture. 80% of the population is engaged in subsistence farming.

Climate projections indicate a warming trend, a decrease in the number of rainy days, and an increase in heavy rainfall.

Climatic shocks such as floods and droughts resulting from these changes significantly impact local livelihoods.

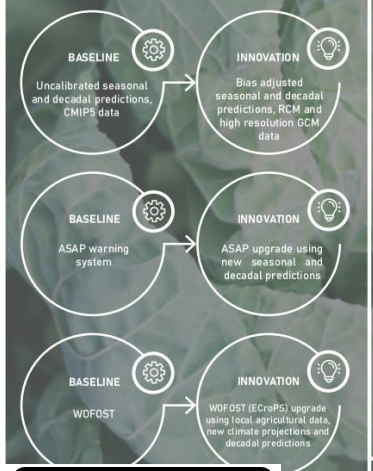
Malawi is one of the countries with the largest percentage of area experiencing a decreasing rainy season.

As a result there is uncertainty around seeding time, crop diversification planning and postharvest management.

All this calls for improved seasonal climate prediction, delivery of seasonal and decadal products and characterisation of future weather extremes.

> Food scarcity and quality may deteriorate with climate change and further affect malnutrition rates. Reliable forecasts are crucial for informing food security and humanitarian intervention planning.

CLIMATE INFORMATION & SERVICES COPRODUCTION



THE TEAM

RESEARCH	SERVICE PROVIDER	USERS
BSC, JRC EUROPEAN COMMISSION	DEPARTMENT OF CLIMATE CHANGE AND METEOROLOGICAL SERVICES, Amigo	Local farmers' associations, Agricultural research organisations, Ministry of Agriculture and Food Security

SCAN ME

FOCUS-AFRICA

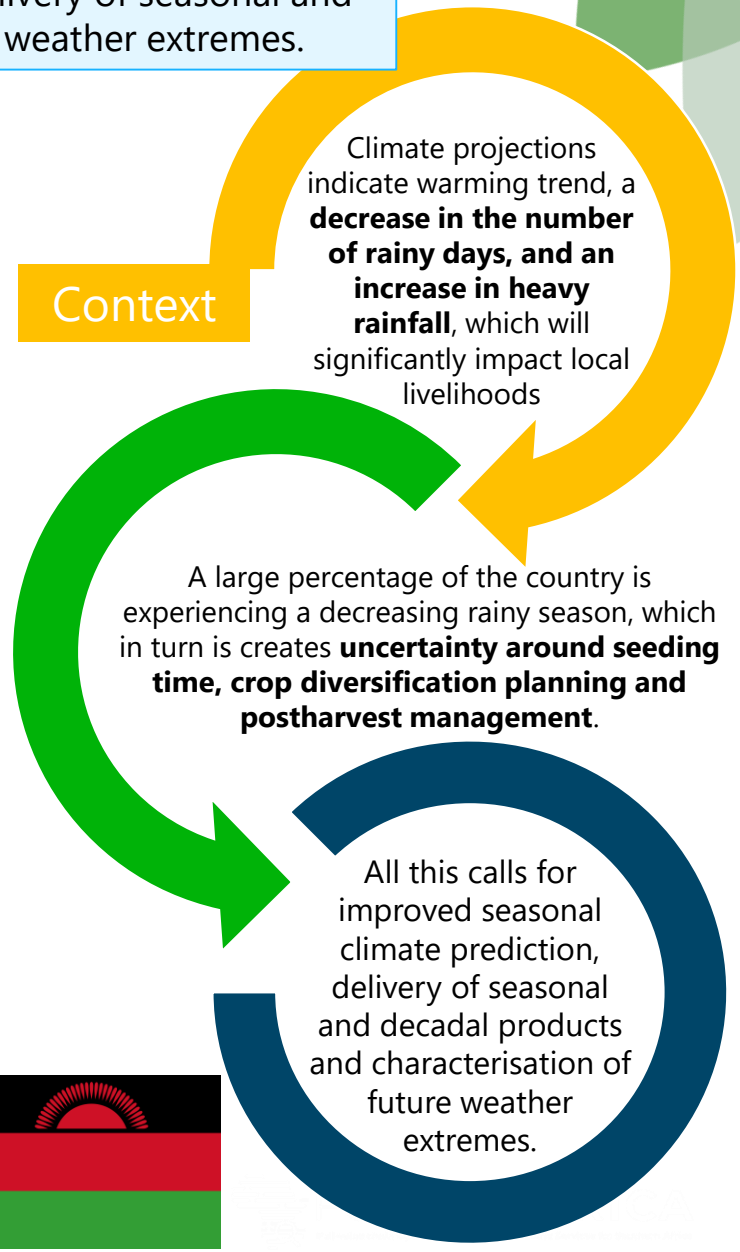
The FOCUS-AFRICA project received funding from the Horizon 2020 Programme under grant agreement No 869575.

Aim

Improvement of seasonal climate prediction, delivery of seasonal and decadal products and characterisation of future weather extremes.

Tools and Approaches

- **Upgrade ASAP** warning system with optimized seasonal forecasts and decadal forecasts → *Detection and assessment of drought*
- Calculation of the **onset of the rainy season** → *Adaptation of the crop calendar*
- Application of the ***ECroPS* crop modelling** tool with local data and new climate projections and decadal predictions → *Risks, vulnerabilities and adaptation pathways identification*
- **Improve service visibility** → *Advanced visualisation techniques and modern communication and dissemination practices*
- **Maximise the usability** and impact of the services → integration into existing infrastructure, consideration of LK, tailoring to local contexts



Aim

Improvement of seasonal climate predictions, delivery of seasonal and decadal products & characterisation of future weather extremes.

Expected results

- Improved usability and relevance of ASAP, APHLIS and WOFOST (ECroPS),
- Better informed agricultural planning and post-harvest management,
- More sustainable adaptation pathways.

CASE STUDY – FOOD SECURITY

TANZANIA

APPROACH

- Analysis of state-of-the-art climate information.
- Coproduction process.
- Integration of local knowledge and latest climate information in ASAP, APHLIS and WOFOST.
- Participatory trials and testing of new climate service.

Fact Sheet:

SCAN ME

Summary

- The **Global Drought Classification System** is being developed by the WMO Expert Team on Drought
  → **https://community.wmo.int/activity-areas/sercom/sc-agr**
- The **Integrated Drought Management Programme** supports stakeholders at all levels in IDM, with many partners and a HelpDesk → **www.droughtmanagement.info**
- The **FOCUS Africa project** develops new climate services and applications, including improved seasonal forecasting for drought early warning and management → **https://focus-africaproject.eu/**

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Thank you
Merci

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WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

Global Multi-Hazard Alert System

- **What?** WMO framework, driver and vehicle to incorporate hazardous weather and environmental events into planning, policy, and practice on the global, regional, and national scales.
- **How?** Authoritative warnings that are issued by the NMHS are incorporated into a global warning system
- **Long-term ambitions**
  - All Members have the capacity to issue alerts and warnings
  - Targeted groups receive and act as a result of issued authoritarian alerts
  - Common Alerting Protocol (CAP) standard installed and operational
  - Global weather, water, ocean and climate extremes are available
  - Decision making processes are supported by GMAS
  - Science supports alerts and warnings to enhance action

WMO OMM

https://community.wmo.int/activity-areas/drr/gmas

Structure of the project (Workpages, Case studies)

CSs	Country	Sector	Research / Timescale
CS1	South Africa	Food Security/Insurance	High-res Projections
CS2	Malawi	Food Security	Calibrated/Bias-corrected Seasonal Forecast
CS3	Mozambique	Food security / genetics	Seasonal Forecast/ projections
CS4	Tanzania	Food security	Seasonal Forecast / Projections
CS5	Tanzania	Infrastructure	Calibrated climate Projections
CS6	Tanzania	Renewable Energy	Seasonal Forecast / projections
CS7	Malawi	Energy/ Water	Projections
CS8	Mauritius	Water and agriculture	Seasonal forecast / drought indices

WPs	Topic
WP1	Stakeholder engagement, communication and dissemination
WP2	End-users' requirements and climate risks assessment
WP3	Understand Climate Processes
WP4	Methods and tools development
WP5	Prototypes of end-user tailored climate services development
WP6	Socio-economic value assessment and Exploitation of climate services
WP7	Capacities Development
WP8	Project management