FOCUS-AFRICA
Full-value chain Optimised Climate User-centric Services for Southern Africa

FOCUS AFRICA PROJECT CONTRIBUTION TO EW4All

COP 28 Side event on Implementation of MultiHazards early warning and early Action System in Africa

06/12/2023 – IPCC-WMO-MERI-NCM Pavilion

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Outline

- *Objective of Focus Africa and Stakeholder engagement*
- *Knowledge and tools developed to address risk of extremes*
- *Capacity development on extremes forecasting and warnings*
- *Summary and key message*

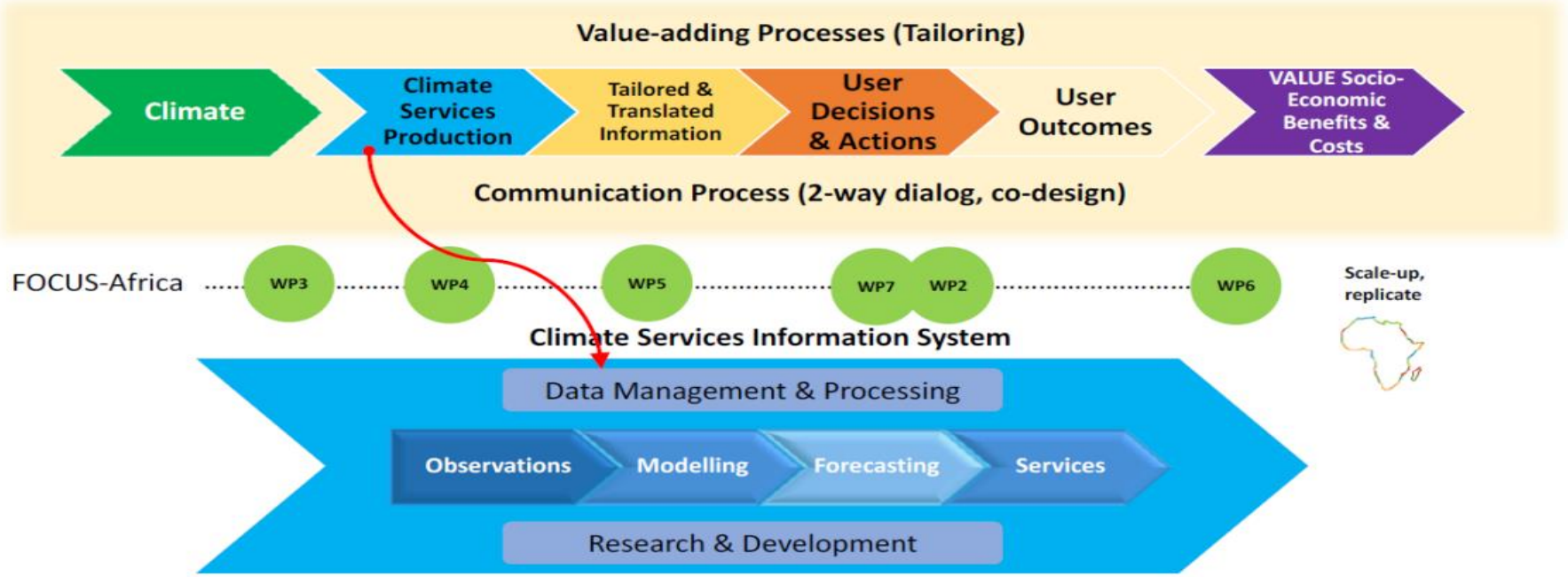
Objective and stakeholders

Objective: Develop tailored and sustainable climate services

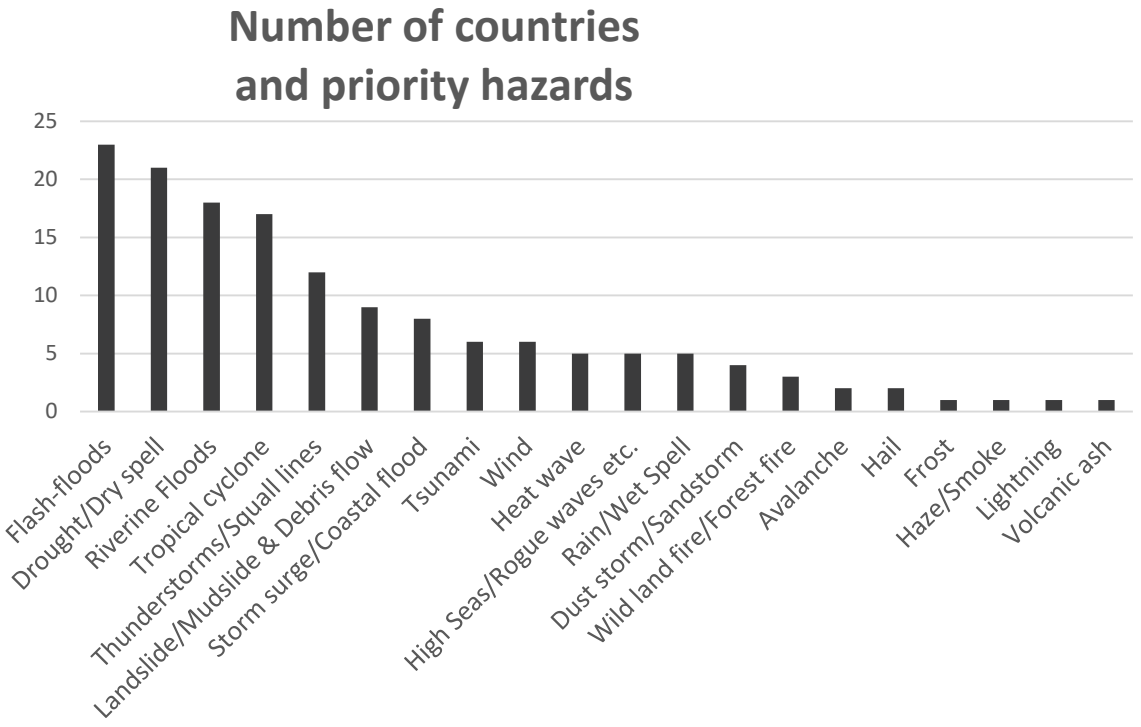
Target region: Southern Africa, started in **Sep 2020 for 48 months**

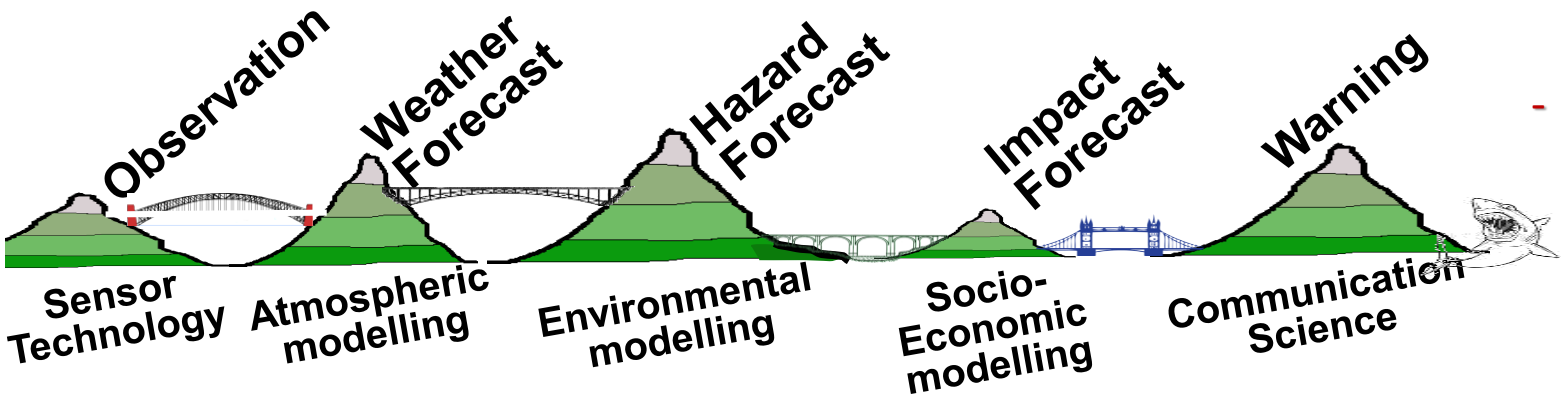
Sectors: Agriculture, water, infrastructure and energy

- Stakeholders: 16 partners in Africa and Europe led by WMO, NMHSs and users



Focus achievements on Knowledge and tools

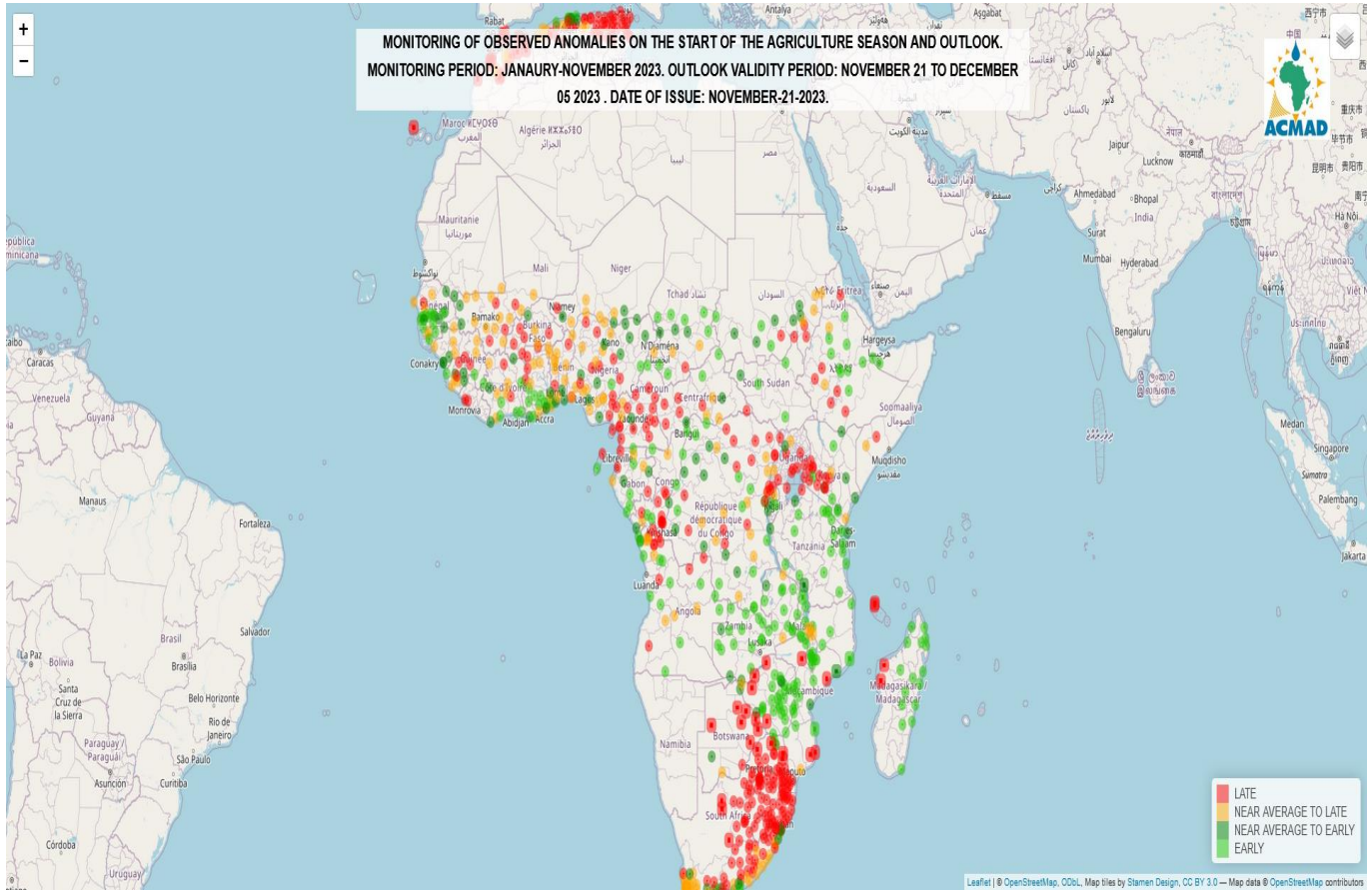




- **Floods, heat waves, droughts, cyclones, storms and land/mud slides are priority hazards.**
- **Projections confirmed warming and drying trends , increasing heat waves and fire danger, more variable start of the rains.**
- **Increasing trend for temperatures and no clear trend in precipitation are found.**
- **Machine Learning (ML) can be an efficient method for improving extreme events forecasts in SADC helping to regionalize climate information**
- **Seasonal forecasting methodologies documented and training module for hazards forecasting provided**
- **Socio-economic benefits and cost assessments methods, tools and products developed and available**

Knowledge and tools developed

For the upcoming 2023 season when will the rain come in South eastern Africa?



- Actionable Indicators (**livestock stress, drought and extreme wind indices**, **number of rainy days**, number of light-to-medium and very **heavy rainy days**, **longest dry spell**, number of **extreme hot days and nights** and the rainy season calendar parameters (**onset, cessation, and duration**)) and **thresholds for extremes** from bias corrected model projection products are available for **yield assessment**.

Multi model and downscaling methodology quality in the region depends on the **variable**, **lead time** and l**ocation**.

Knowledge and tools developed

For forecasting southern African extremes

- **Documented** climate smart decision making providing positive outcomes (i.e **yield losses for farmers**, **unproductive spills of water due to overfilling reservoirs)**
- **Documented benefits (improved agricultural productivity, better hydropower generation and energy security**
- **5 training materials developed and available for forecasting hazards and impacts over southern Africa**

- **1-Vignette** for calibration and verification of seasonal forecasts including extremes

- **2-AquaBEHER:** an R package for estimation of wet-season calendar and soil-water balance for Agriculture risk management

- **3- Teal tool:** Web-based interface for rainy season historical and forecast indicators of extremes

- **4- Climate of Southern Africa**, its variability and related drivers of extremes

- **5- Statistical and dynamical seasonal forecasting for Southern Africa** with emphasis on climate hazards with high impact

CAPACITY BUILDING ON EXTREMES FORECASTING OVER SOUTHERN AFRICA

Subtropical Indian Ocean Dipole
Most active in DJF)

- Opposing ENSO and SIOD phase combinations result **in strong Southern Africa climate impacts during DJFM**
- when ENSO and SIOD are in the same phase the **southern Africa climate impacts during DJFM are minimal**

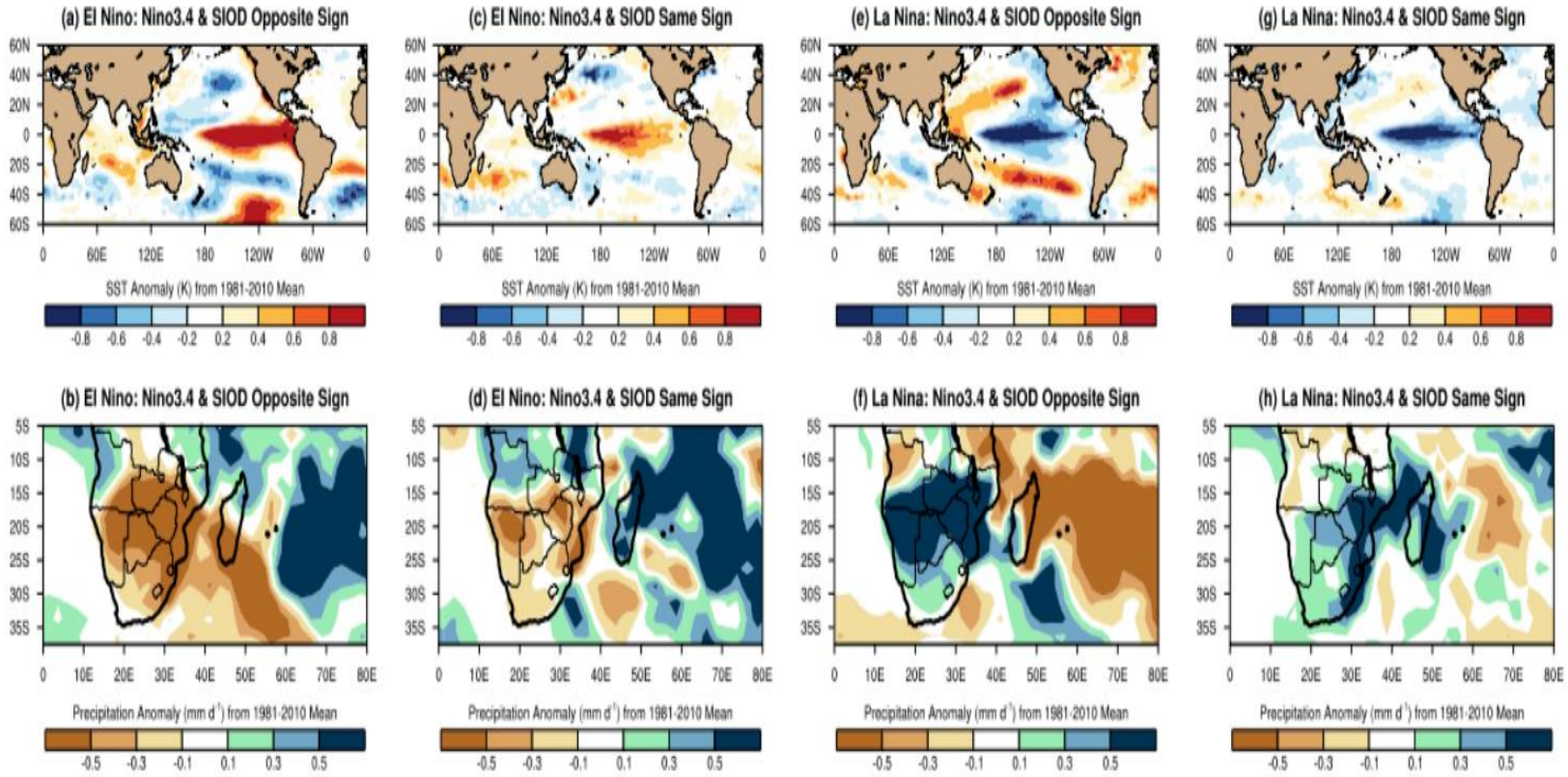


Figure 3: December-March (top) SST anomaly in units of K and (bottom) precipitation anomaly in units of mm d^{-1} during El Niño and La Niña events in which the Niño3.4 index anomaly and SIOD index anomaly have the same and opposing signs. El Niño (La Niña) events are defined when the December-March Niño3.4 index anomaly exceeds (falls below) 0.5K (-0.5K).

SUMMARY – CONCLUSION- Key message

- Engaging **stakeholders**, understanding **user needs**, **services requirements and climate processes**, developing **methods and tools for services generation and tailoring**, assessing **cost and benefits of climate services**, training to **sustain the climate services** are **essential priorities proposed for the Loss and damage fund** for warning and combatting climate change
- Focus-Africa **knowledge, data, methods, tools contribute to innovations** supporting the early warning value chain in Africa.
- **Key message:** COP 28 negotiations on Technology Transfer, capacity development and loss and damage fund to prioritize the above mentioned **components** for furfure research and innovation to support Early Warning for All in