

Africa Regional Centers of Excellence (ArcX) on Climate Change Resilience

Motivation, Activities, and Stakeholders

On behalf of ECMWF's ArcX team

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ECMWF – Who we are



Intergovernmental Organisation Established in 1975

- 23 Member States
- 12 Cooperating States
- 550+ staff



24/7 operational service

- Operational NWP – 4 x ENS forecasts / day
- Supporting National Weather Services, Research Institutes & Businesses globally



Research & Innovation

- Experiments to continuously improve our models
- Reforecasts and Climate Reanalysis
- ML/AI development: AIFS, Anemoi, FIAB

Copernicus Services

- Climate Change Service (C3S)
- Atmosphere Monitoring Service (CAMS)
- Support JRC on Copernicus Emergency Management Service (CEMS)



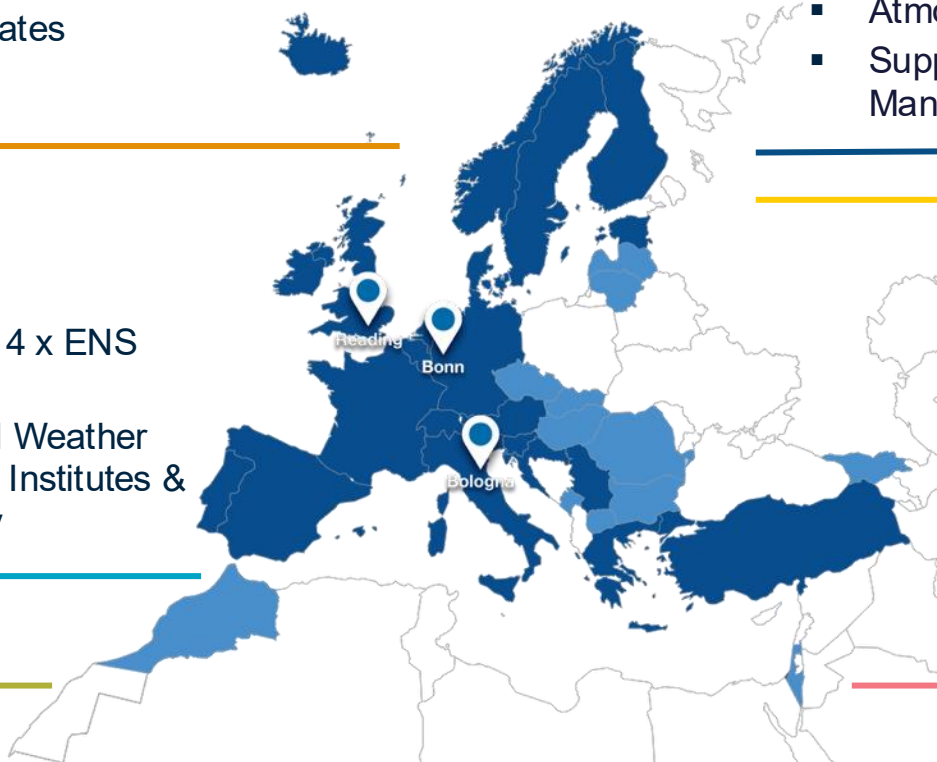
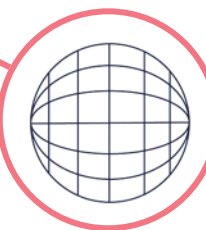
Global Gateway Partnerships

- Africa-EU Space Partnership Programme: Strengthening Early Warning in Africa (SEWA)
- African Regional Centres of Excellence (ArcX) on Climate Change Resilience



Destination Earth

- Operates the DestinE Digital Twin Engine (DTE)
- Operates two Digital Twins



European-African partnership on digital transition in sub-Saharan Africa

Strengthening Early Warning in Africa (SEWA)

Enhance hazardous weather warnings through Impact-based Forecasting pilots, better data access & cloud deployment and governance

Assess gaps and needs, foster use of Copernicus/DestinyE data, link with EW4All

Co-develop and co-design digital tools using **cloud technologies**

Downscale global AI models to regional needs



Forecast-in-a-Box

Creating sustained African ownership:
Trainings
Fellowships
Knowledge Transfer



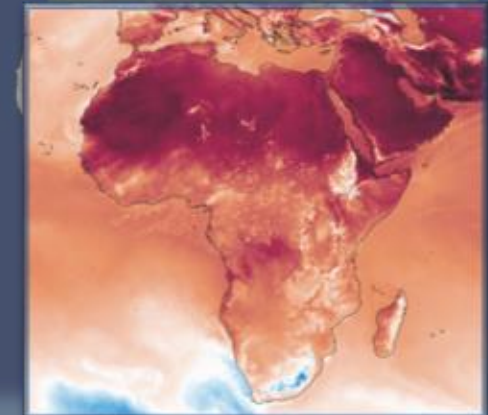
African Regional Centers of Excellence (ArcX) on climate change resilience

Strengthen ArcX via capability development, innovation and AI-driven tools in support of climate change resilience.

Support capacity to **observations AI ready**

Use AI models to improve **sub-seasonal to seasonal prediction**

Foster use of DestinyE/ Copernicus through **society relevant demo cases**



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ECMWF ArcX ROADMAP

2026–2029

01 Programme Setup

Recruit staff
Set-up governance

03 Selection of RCoEs

Criteria definition
& selection

05 Data Ecosystem

AI-ready datasets
& data capacity

07 Training

AI tools &
forecasting
workflows

09 Sectoral Demo Cases

Centers linkage &
impact



02 Scoping

Stakeholder
engagement
&
Outreach

04 Strengthen RCoEs

Build hubs · foster
twinning

06 Technology Deployment

FIAB pilot
deployment

08 Innovation & Research

Challenges,
partnerships &
demos

10 Integration & Sustainability

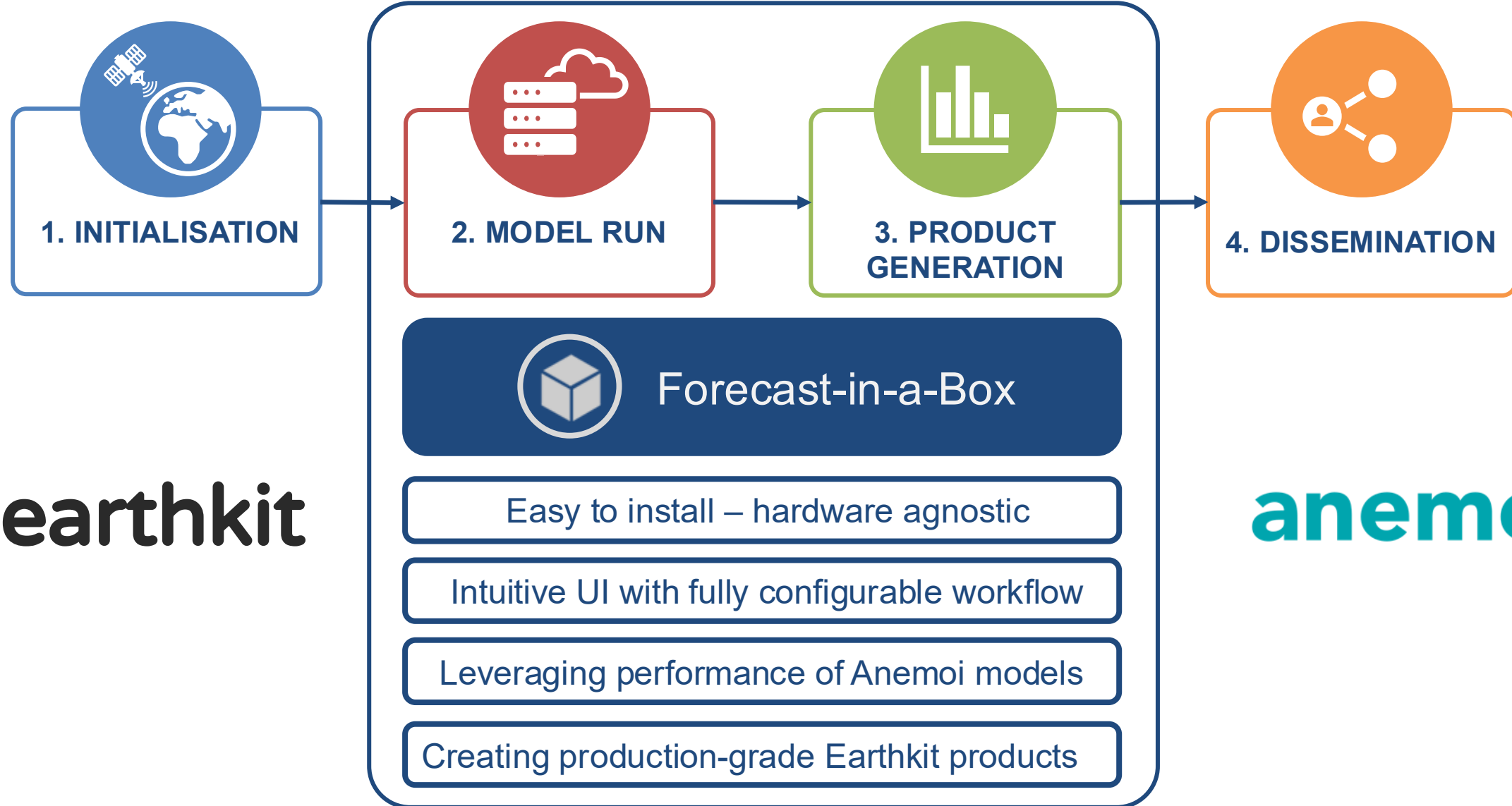
Institutionalise ·
scale · integrate



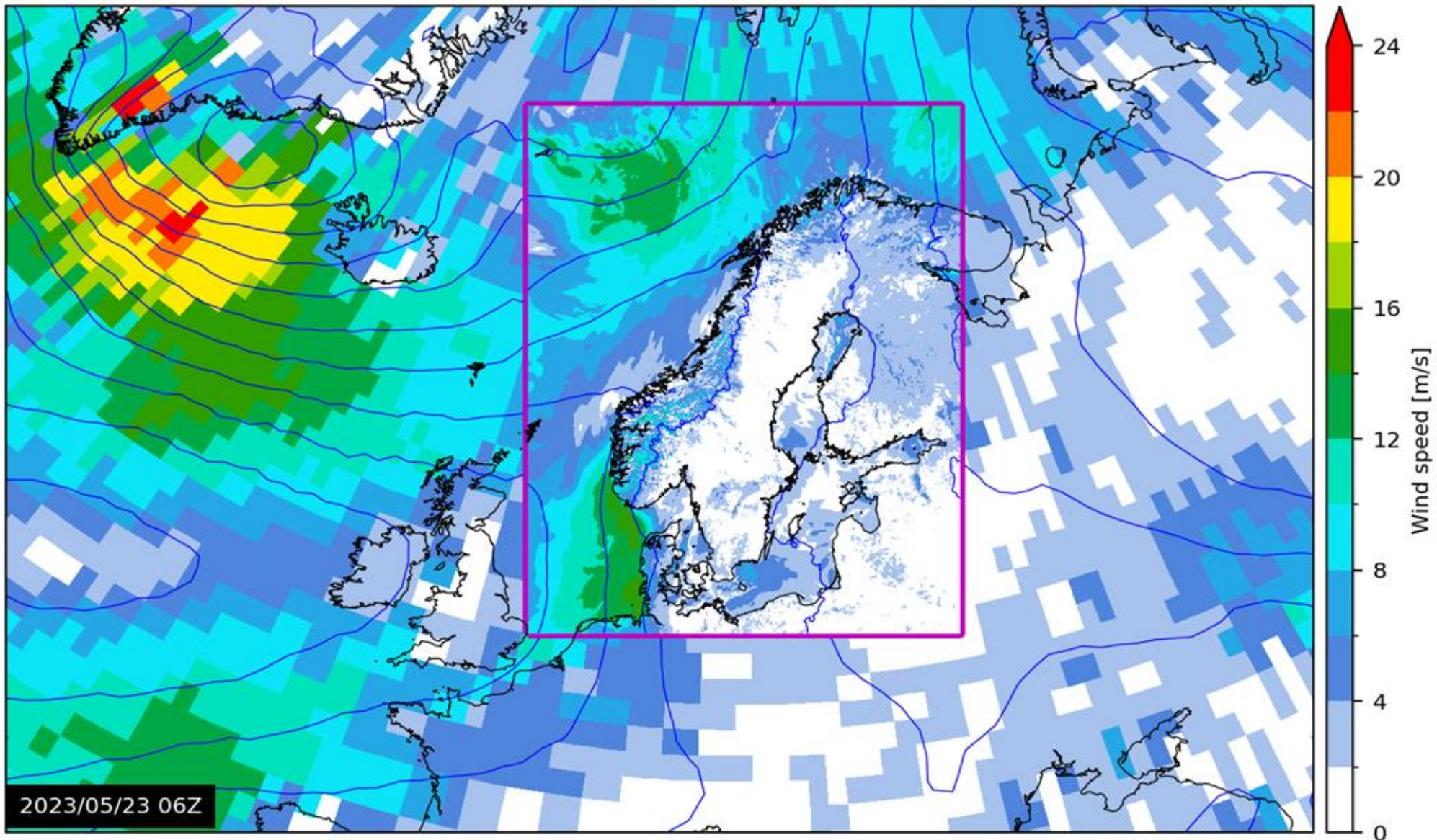
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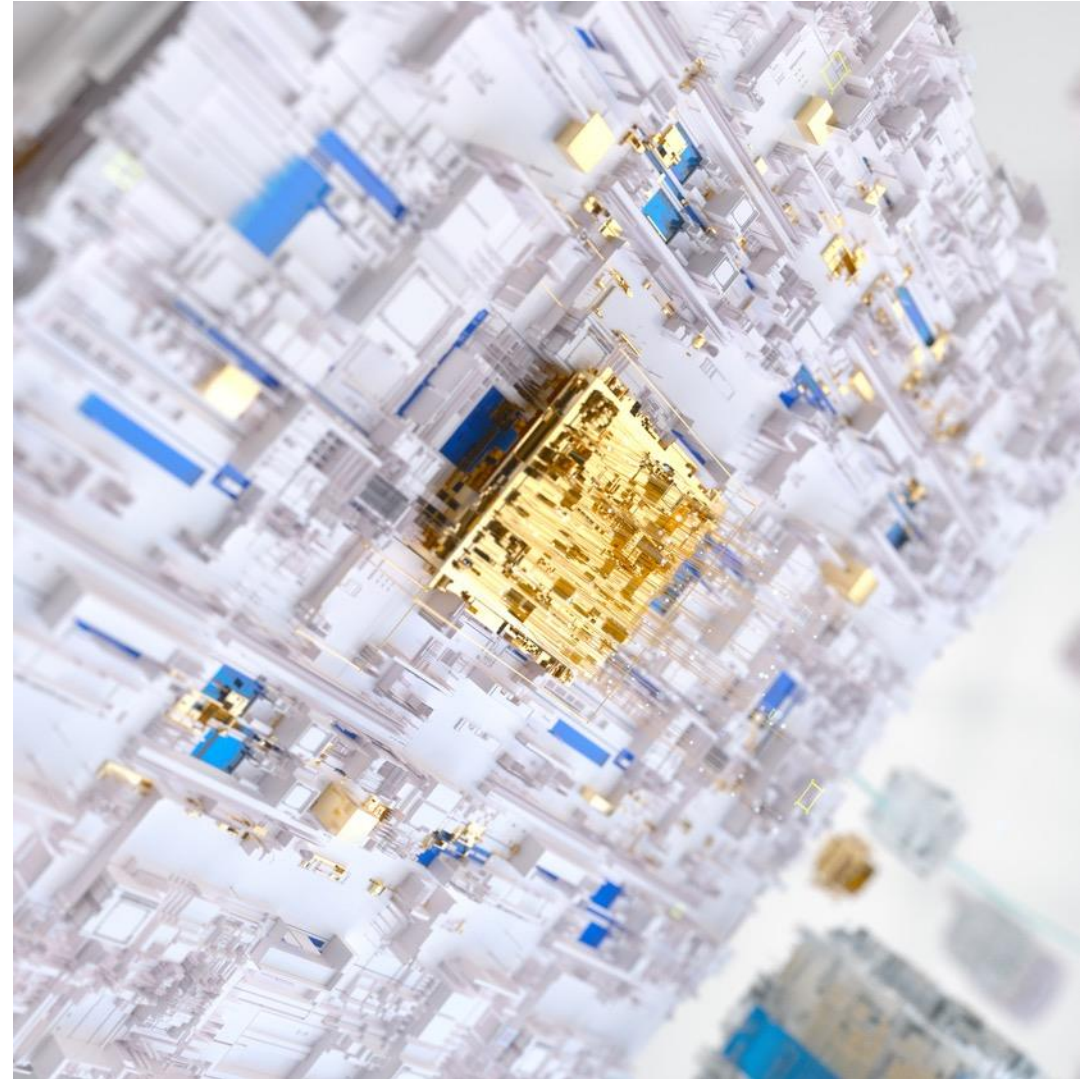
One of the use cases: The Bris Model...



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Main principles of the ECMWF engagement in ArcX

- Focus on advancing STI on sub-seasonal (2–4 weeks) and seasonal (1–6 months) climate forecasts that are vital for safeguarding lives, livelihoods and economies in sub-Saharan Africa
- STI
 - Advance on new developments on the use of Artificial Intelligence (AI) and Machine Learning (ML) Forecast-in-a-Box and bring it to a seasonal scale
- Partnership
 - Engagement with entrusted entities covering the other areas as well as the EU and African private sector
 - Collaborate closely with JRC and connect with WMO's Action Plan on AI and Climate Digital Innovation Hub
 - Build on top of relevant outputs like ClimSA and SEWA as well as European data (Copernicus,...)
- Ensure ownership and build capacity
 - Enhance local capacities through improved data collection, knowledge creation and skill development
 - Training component
 - Co-development and cooperation



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