TU WIEN
DEPARTMENT OF GEODESY AND GEOINFORMATION
RESEARCH GROUP MICROWAVE REMOTE SENSING

UNIVERSIDADE EDUARDO MONDLANE

Enhancing Drought Early Warning through Satellite Soil Moisture Data

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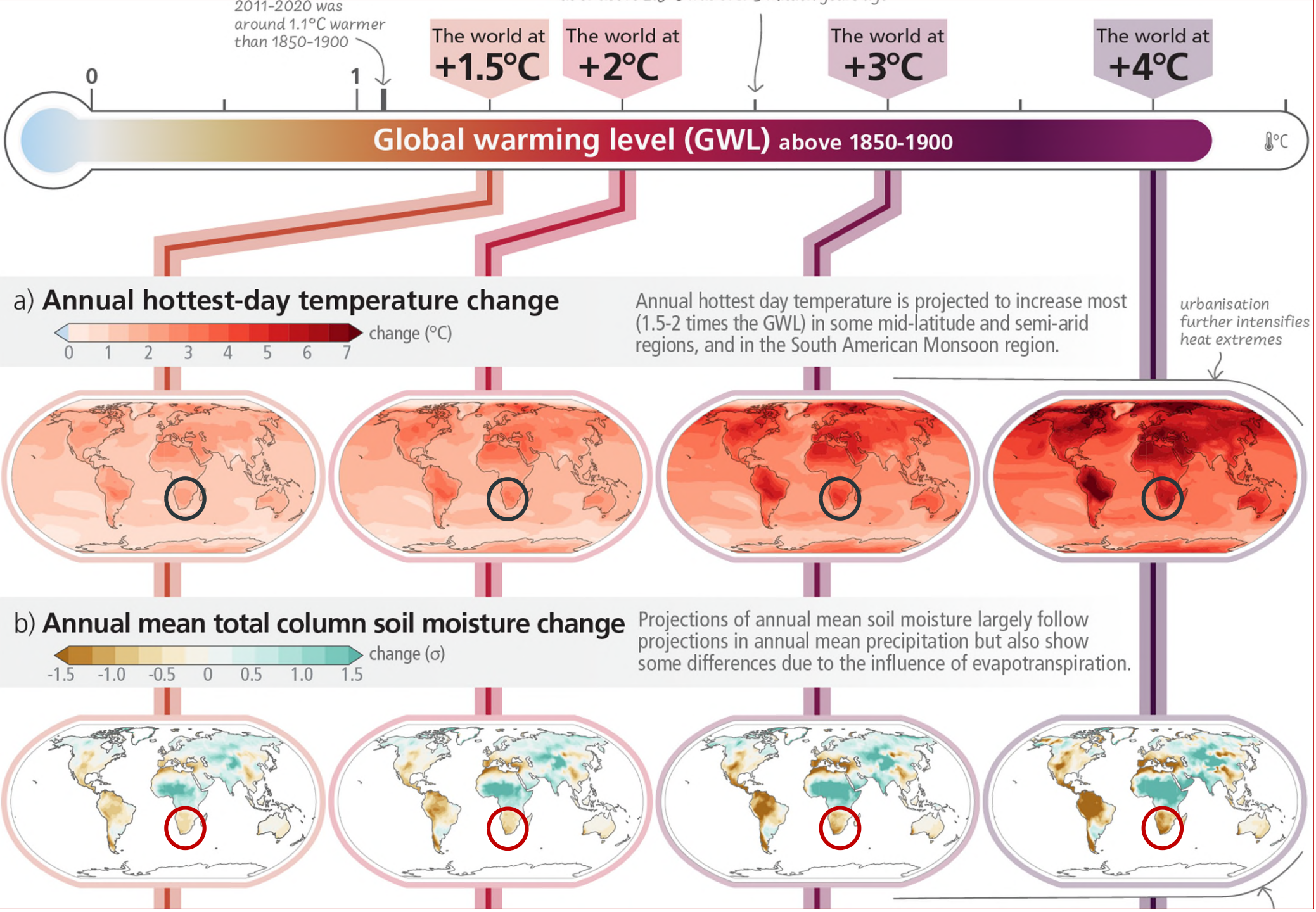
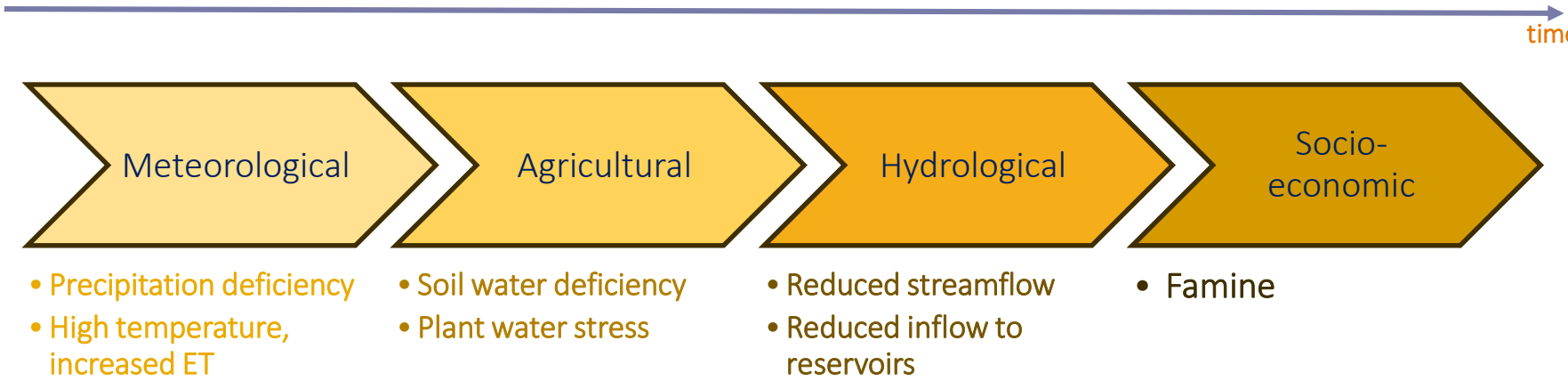
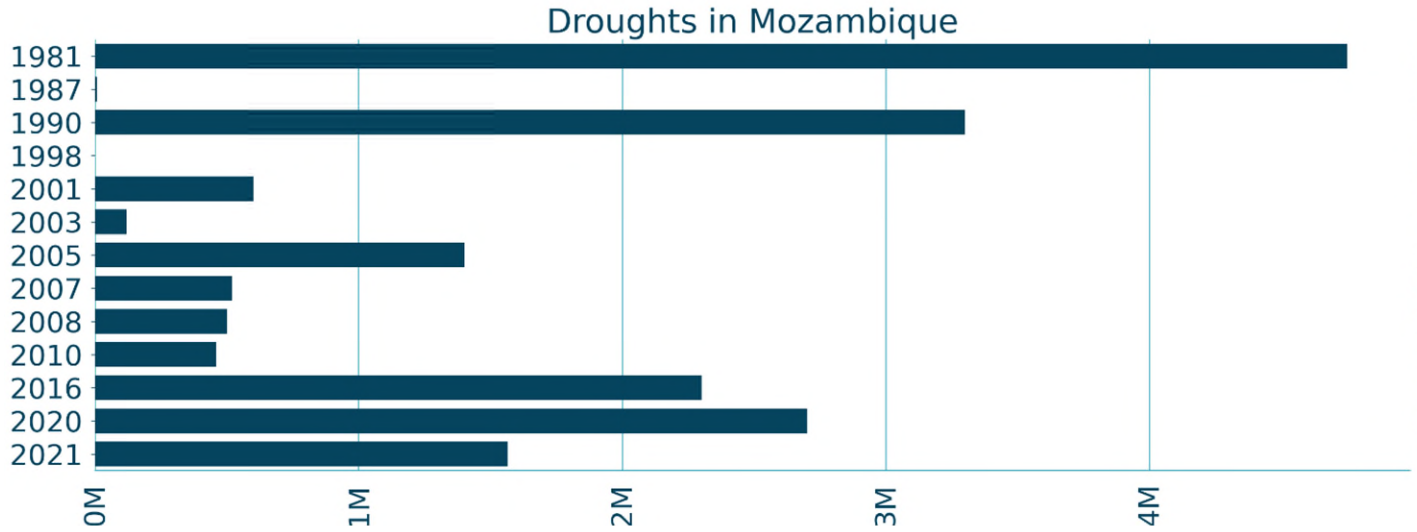


IPCC, 2023: Sections. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 35-115, doi: 10.59327/IPCC/AR6-9789291691647

Drought development and occurence





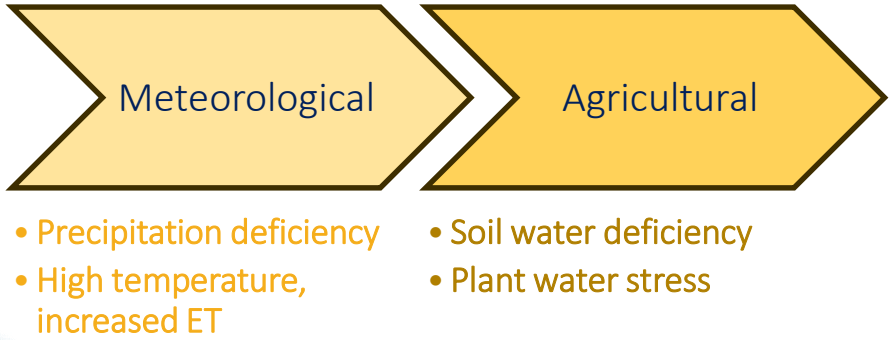
Maputo, Gaza, Inhambane, Manica, Sofala, Zambezi
Inhambane province
Center
Maputo, Gaza, Inhambane
Maputo, Gaza, Inhambane, Sofala, Tete, Zambezia
Tete
Maputo, Gaza, Inhambane, Manica, Sofala, Zambezia, Tete
Gaza, Inhambane, Manica, Sofala, Maputo
Maputo, Gaza, Inhambane, Manica, Sofala, Tete
Maputo, Inhambane, Gaza
Maputo, Gaza, Inhambane, Sofala, Tete
No data
Cabo Delgado, Niassa and Nampula

Enhancing Drought Early Warning in Mozambique through Satellite Soil Moisture Data to support food security in the context of climate change

High resolution soil moisture for improved drought monitoring and early warning

1. Improve agricultural practices and tools
2. Increased capacity for drought interventions and mitigation
3. Investment in people, education, science, technology on use of freely available remote sensing data

How to monitor and forecast drought?



Rainfall and temperature

Drivers of crop development

Excludes direct information on evaporation and runoff

Soil moisture

Indicator of plant available water

NDVI

Indicator of vegetation status

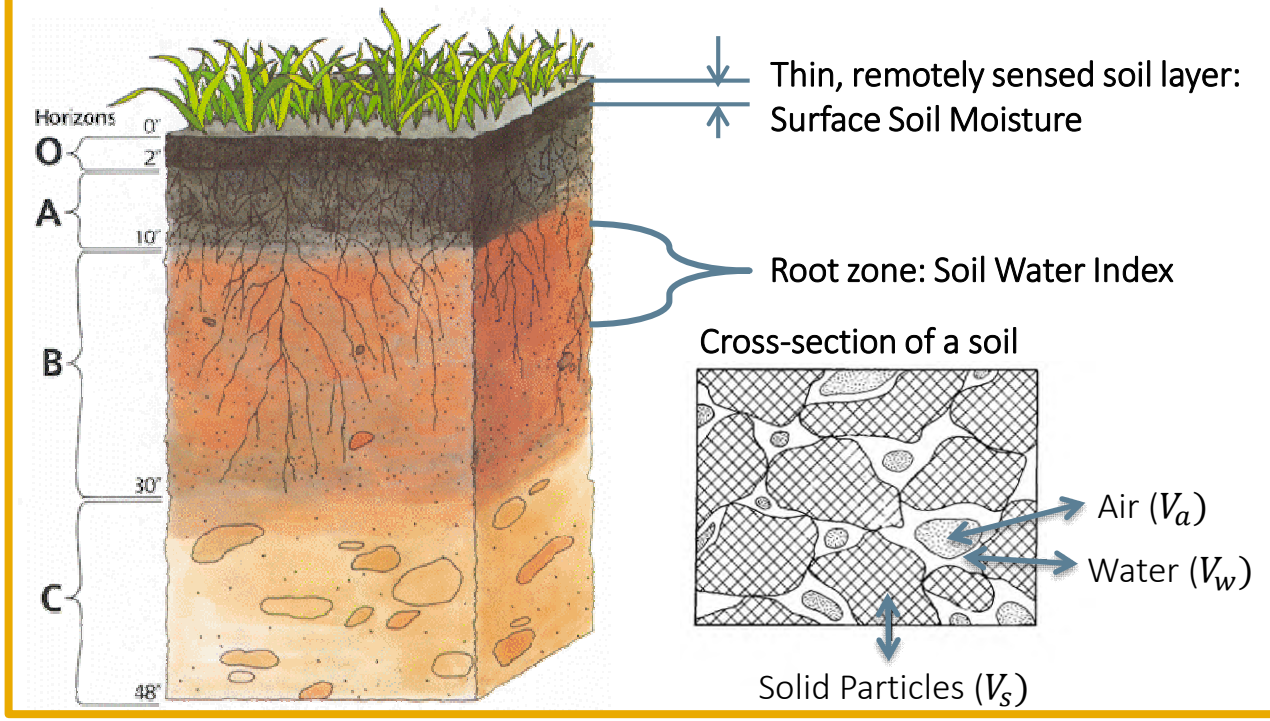
Cloud cover

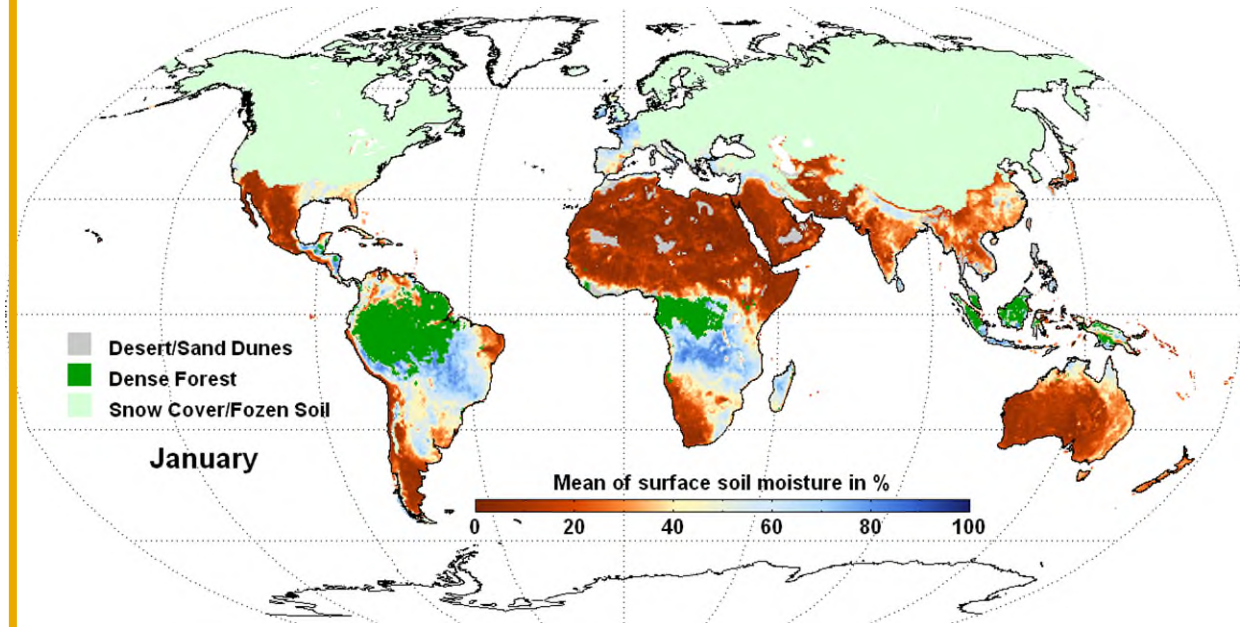
Microwave Remote Sensing of Soil Moisture

Near Real Time Soil Moisture - **Latency 2 hours**
Long record: 2007 – now
Spatial sampling 12.5km → 6.25 km from this year
(Sub-)daily observations

EUMETSAT H SAF

Surface soil moisture





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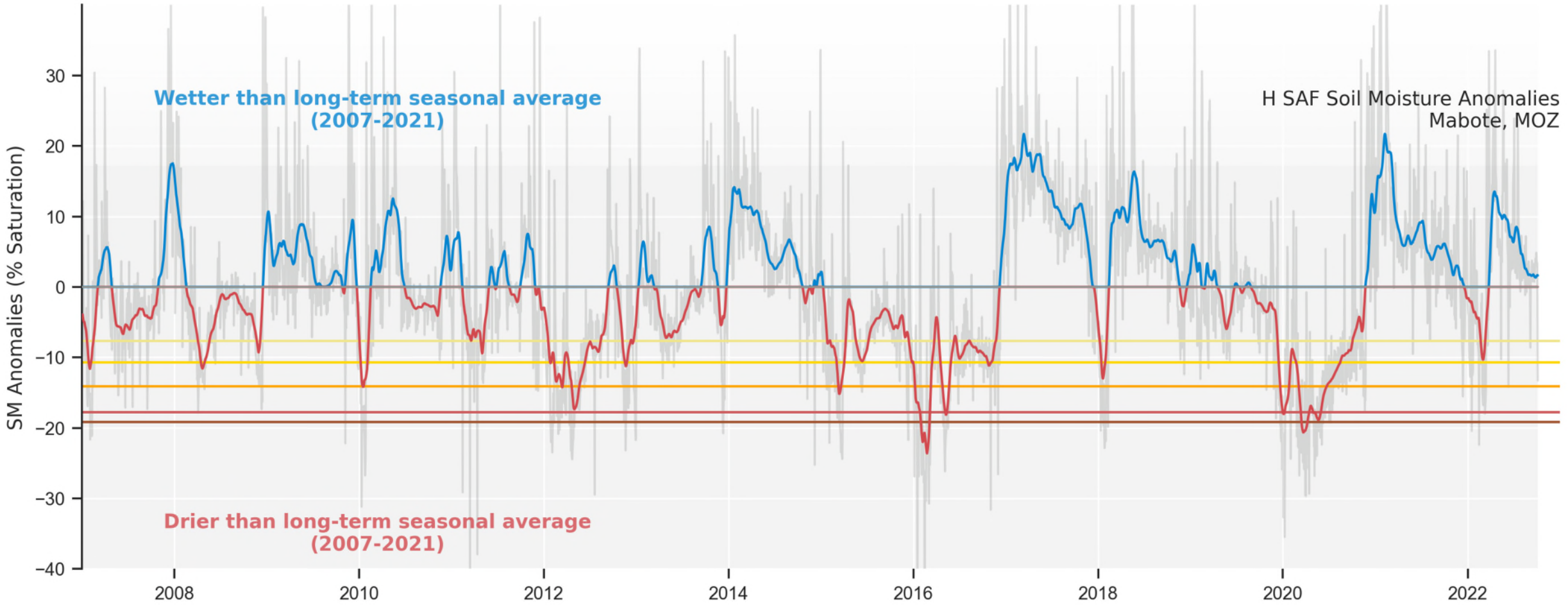
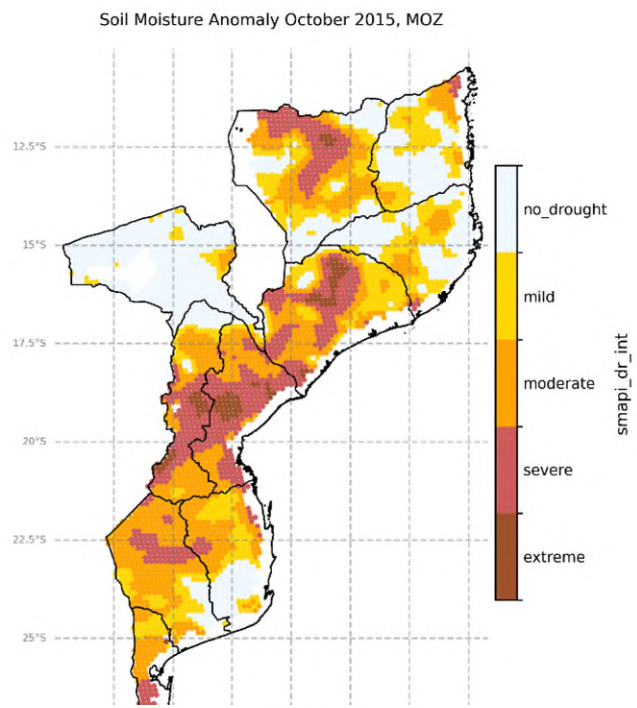
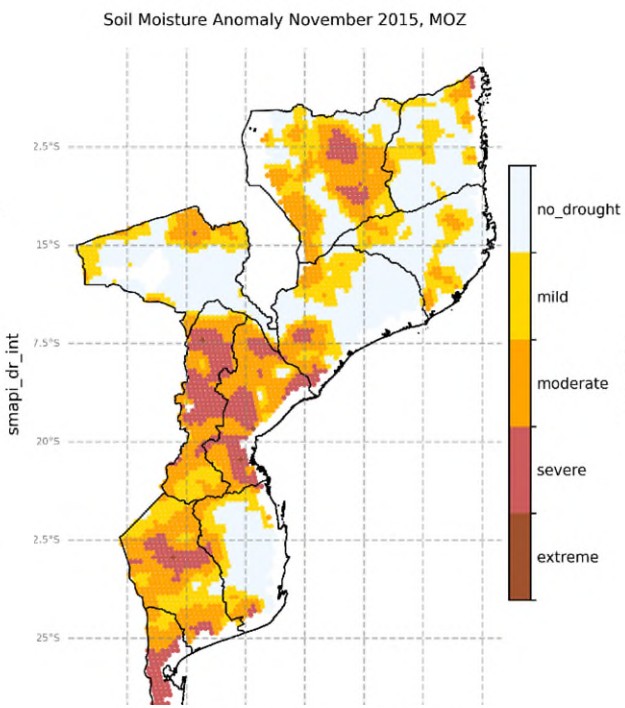
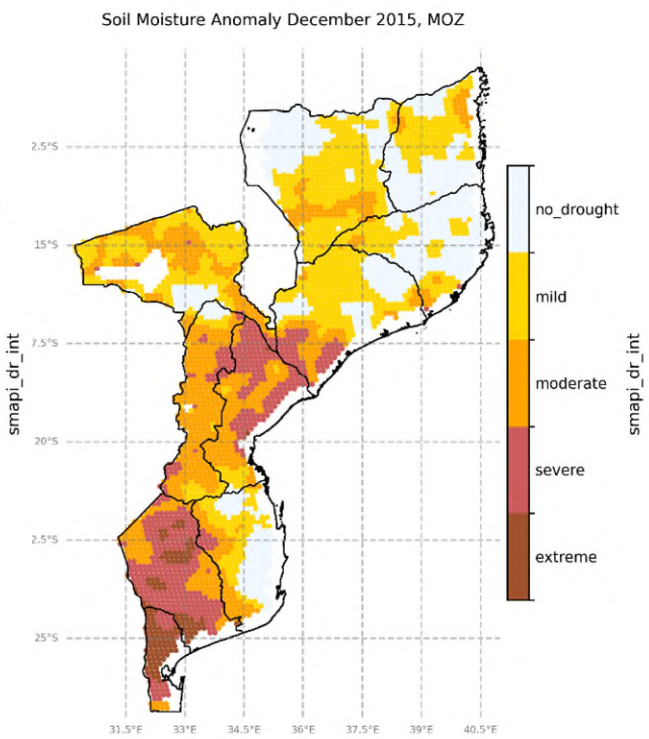
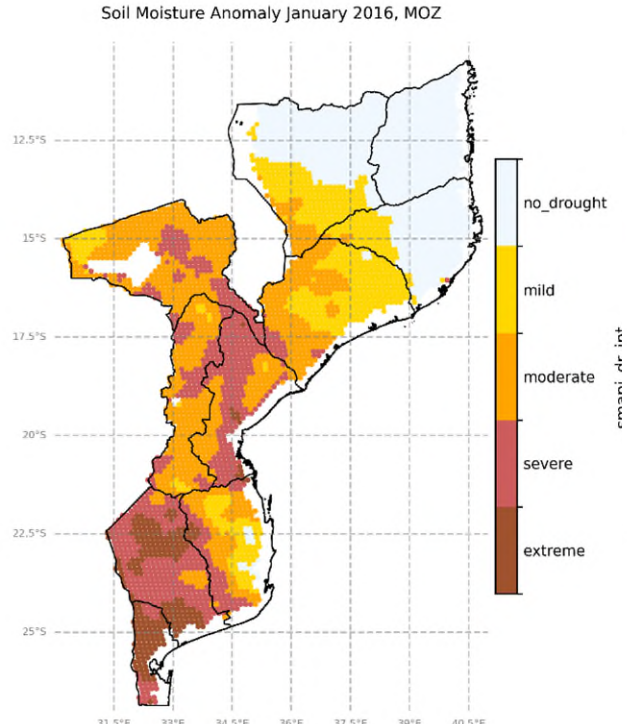
Temporal dynamics of soil moisture

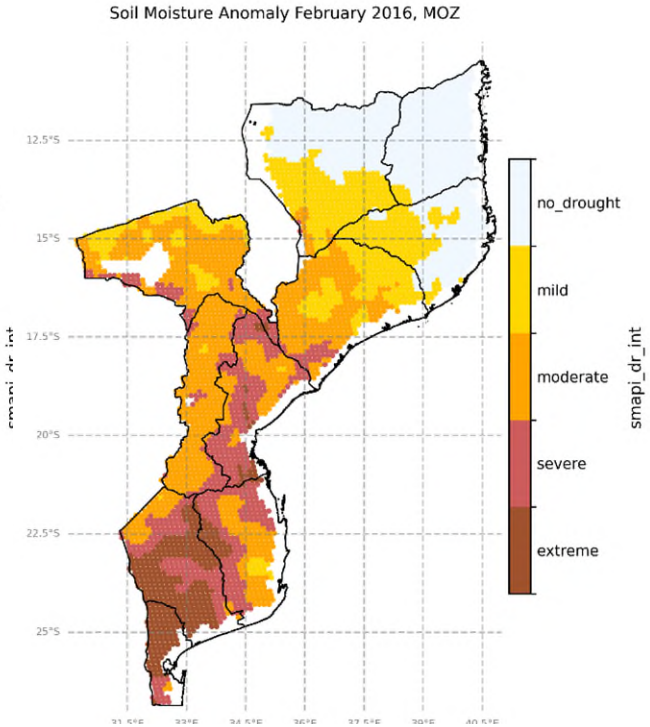












Drought indicators Mozambique

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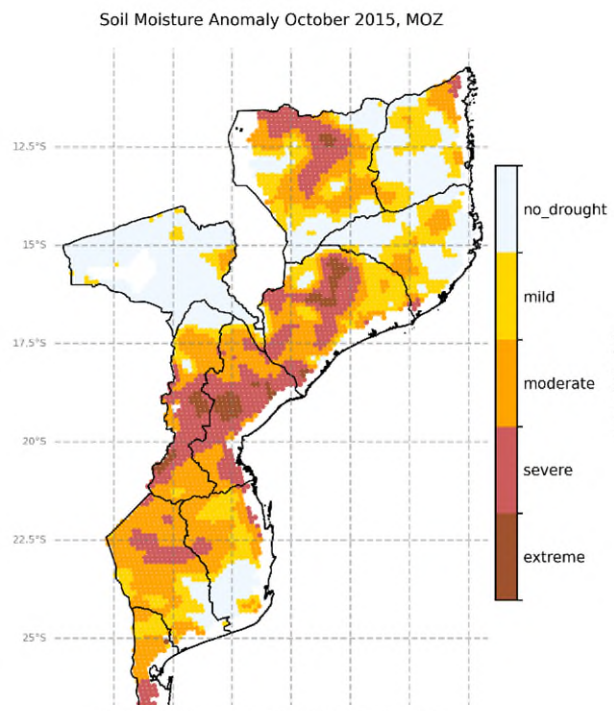

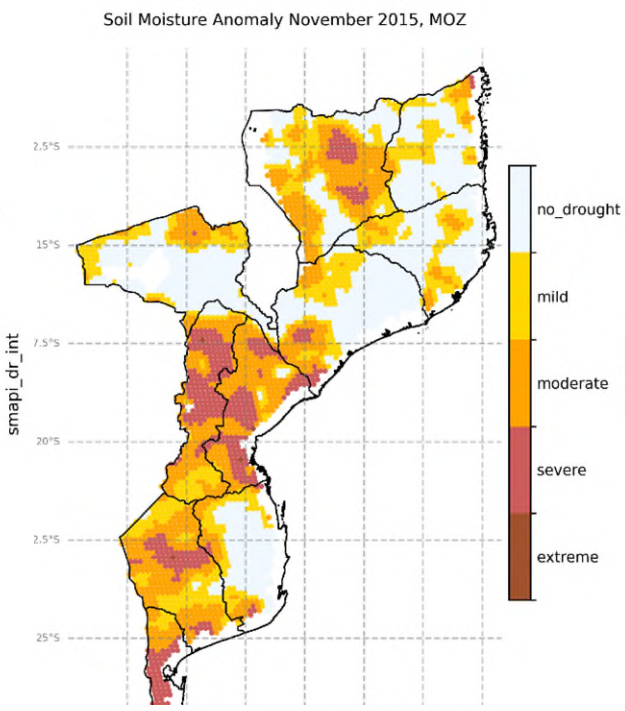

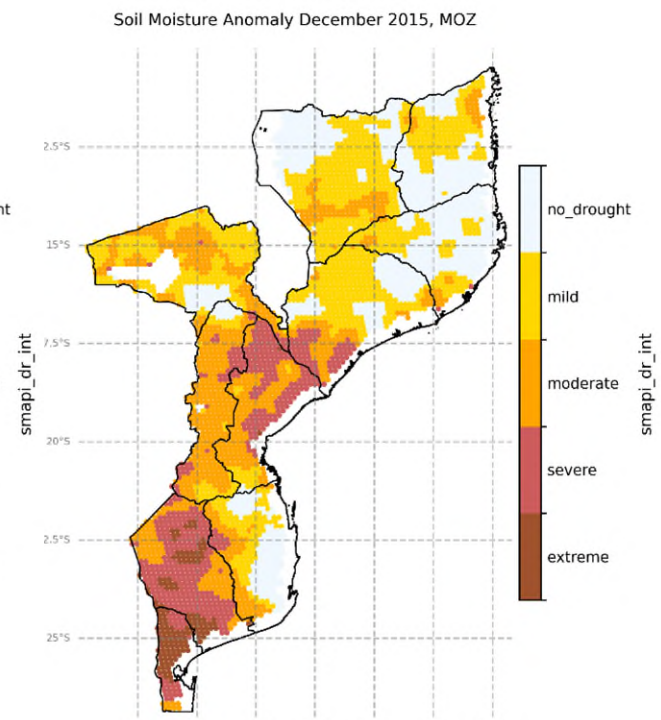

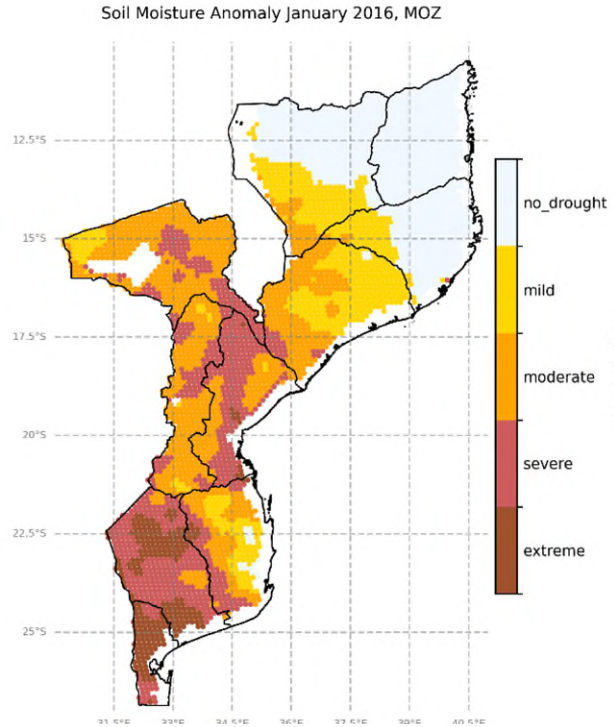

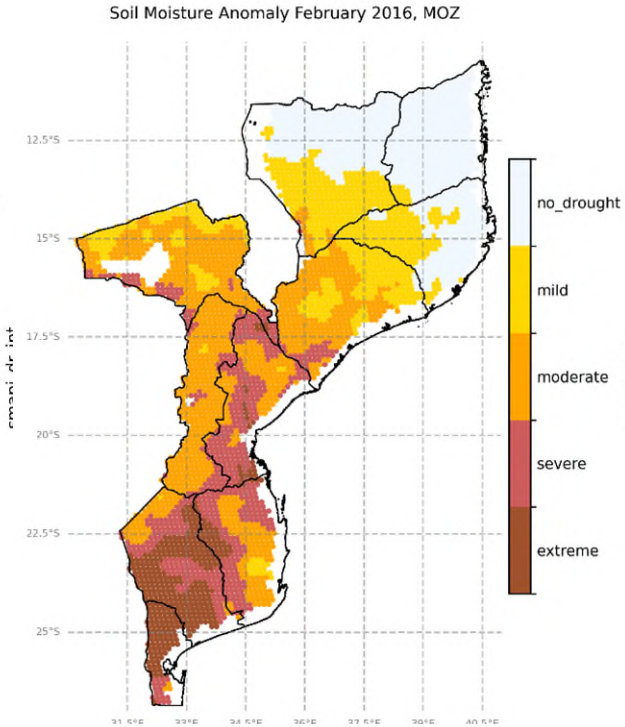

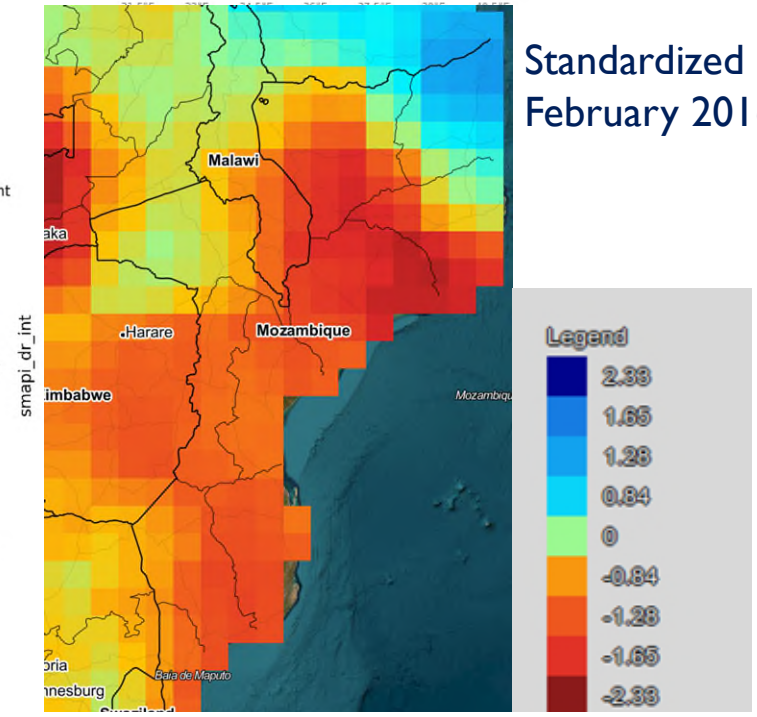

Standardized Precipitation Evaporation Index February 2016

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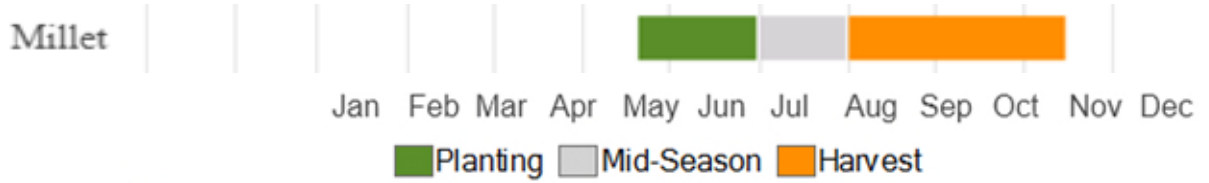
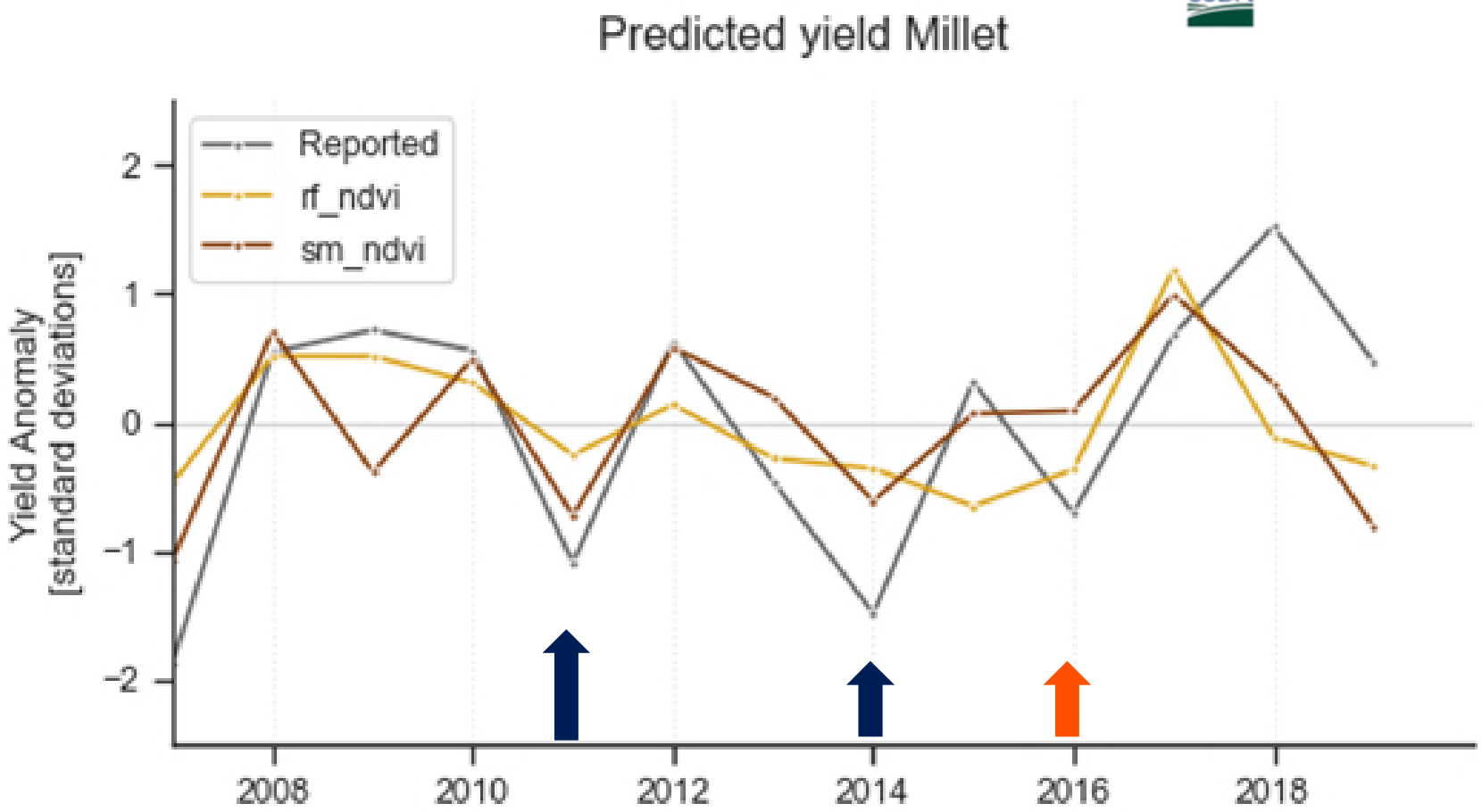
Yield deficiency indicator

Millet
Senegal



USDA

Source: FAS/GMA/IPAD



Reported Yield
Rainfall and NDVI
Soil moisture and NDVI

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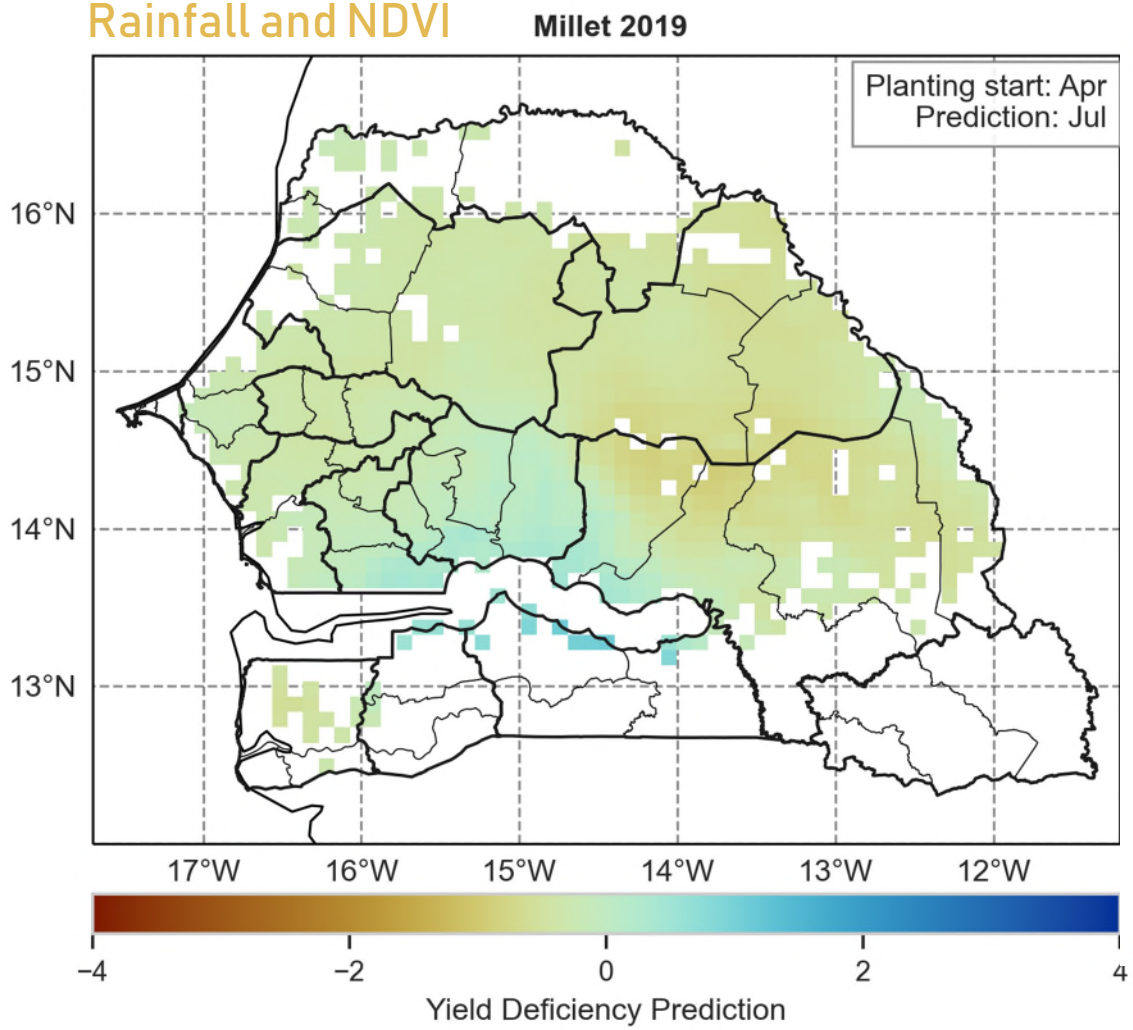
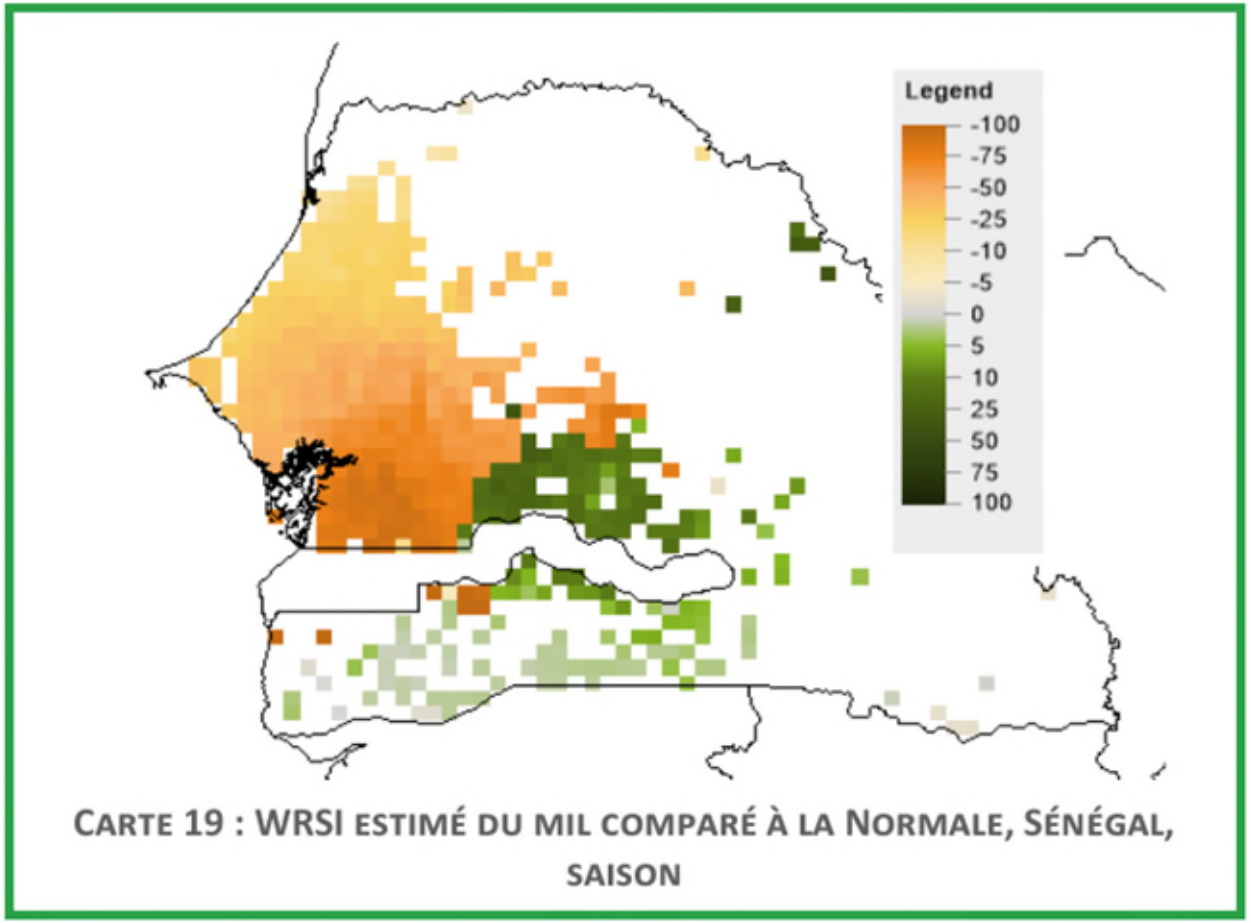
Spatial yield deficiency prediction made in July

Rainfall and NDVI

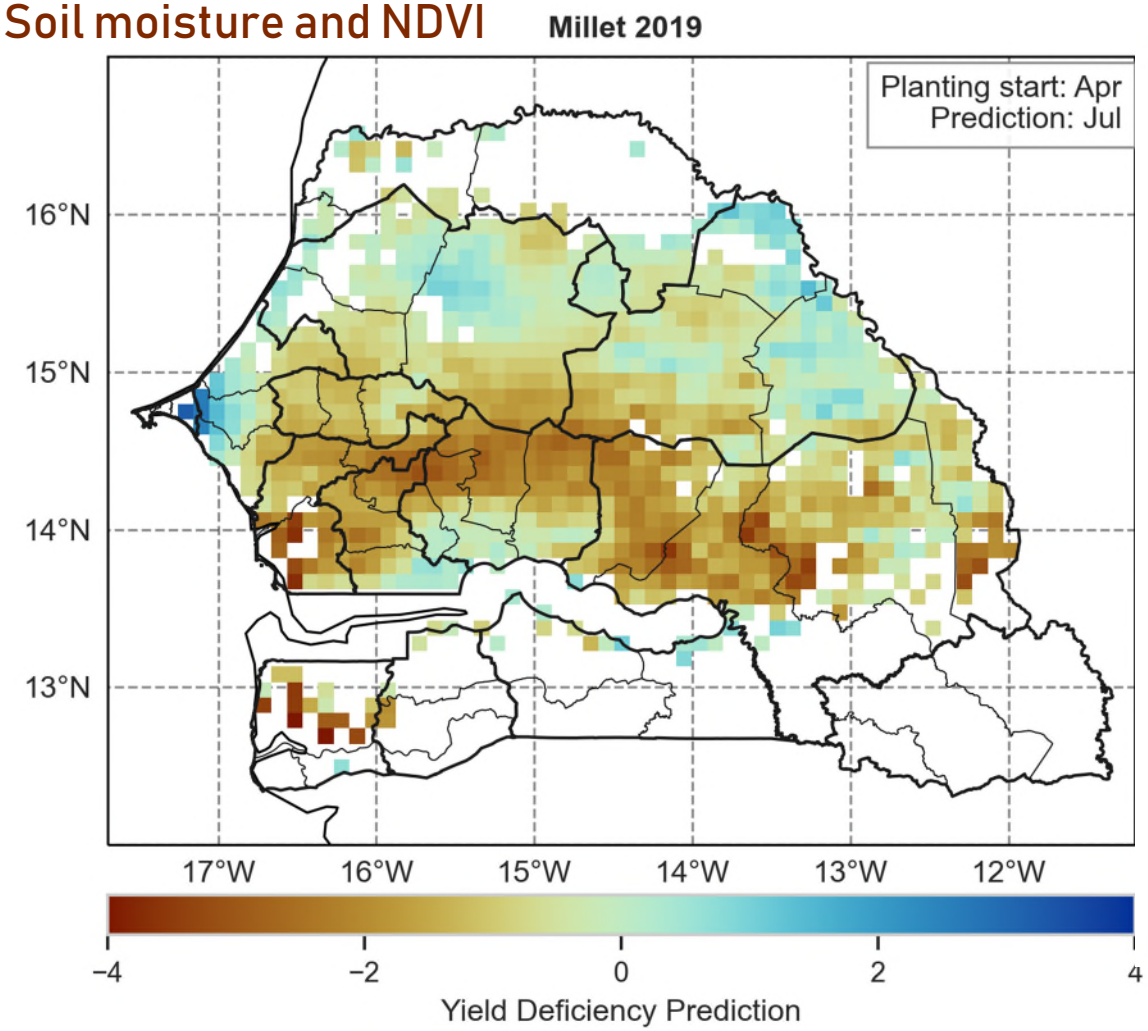


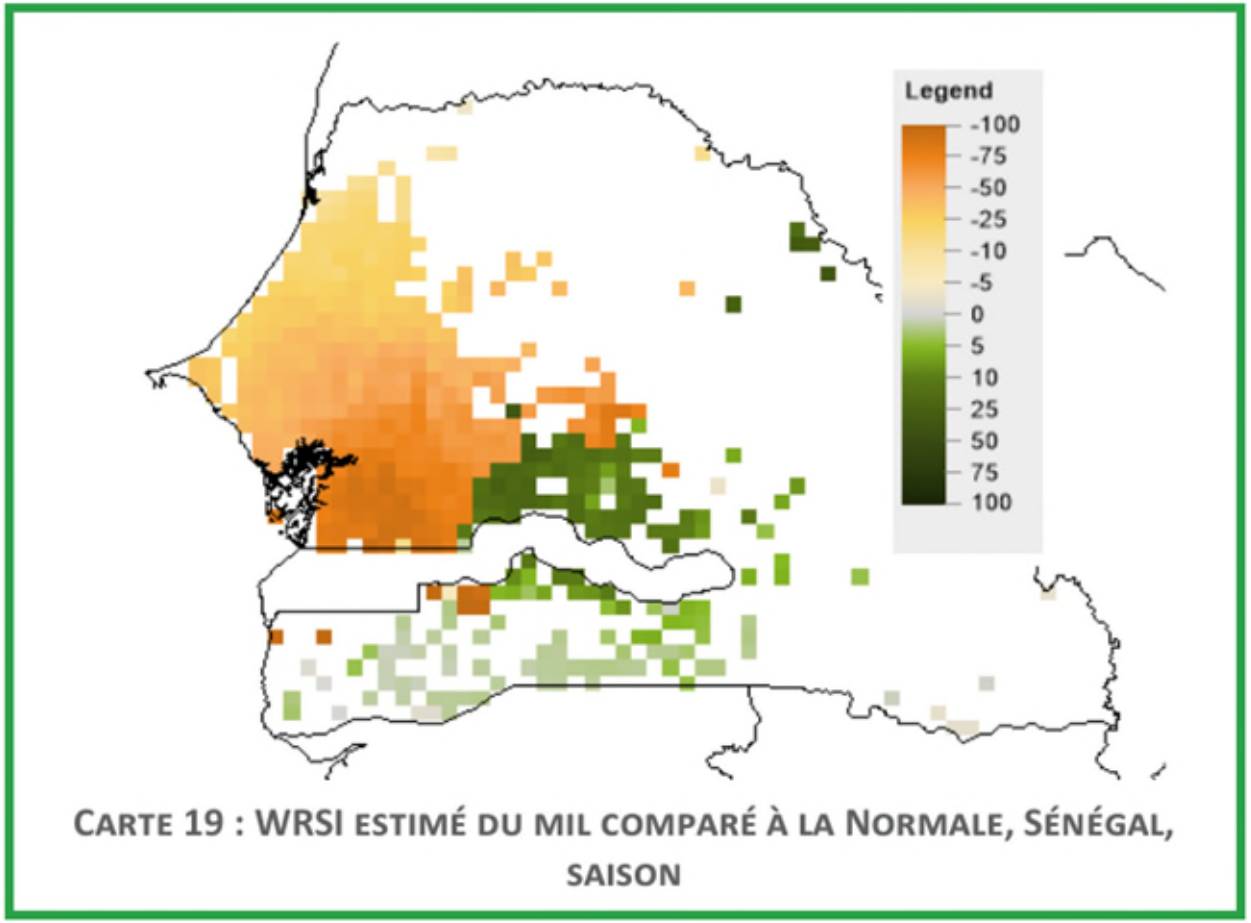


Water Requirement Satisfaction Indicator from African Risk View end of season report 2019

Spatial yield deficiency prediction made in July

Soil moisture and NDVI

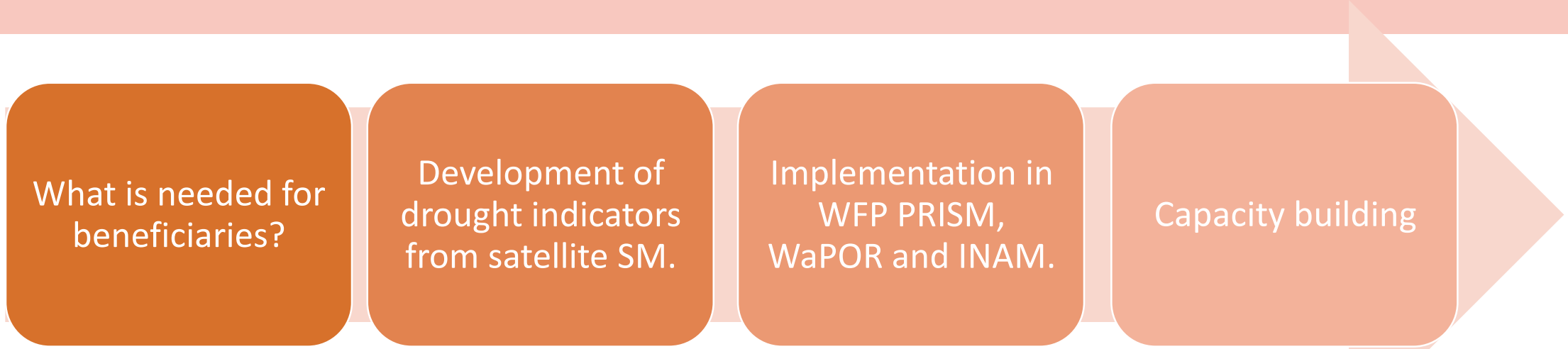




Water Requirement Satisfaction Indicator from African Risk View end of season report 2019

What is needed in Mozambique?

Intervention
Inhambane Mabote, **Sofala:** Buzi, Muanza, **Gaza:** Chokwe, Mabalane
December 2022 – December 2025



User workshop June 2023
Drought working group

Training courses
women2women network
Joint graduate course

How will this benefit farmers?