Drought Monitoring and Forecasting

Launch of the African Drought Monitor and Advisory

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Drought

Characteristics

- Slow onset, “creeping” phenomenon
- Affects all compartments of the hydrological cycle (rainfall, soil moisture, groundwater, reservoirs, river flows)
- Impacts are non-structural, spread over large areas and long time periods (direct and indirect), affect many people, and depend on the exposure and the societal, ecological and environmental vulnerability
- Crop economic losses in 2022 in Billion US$, 13 Brazil, 6.2 Europe, 4.7 China, 0.3 Morocco *

* SwisseRe

Drought Monitoring

- Measuring
  - Rainfall
  - Temperature / Humidity
- Satellite Monitoring
  - Gravitation anomalies
  - Vegetation light absorption
- Modelling
  - Soilmoisture

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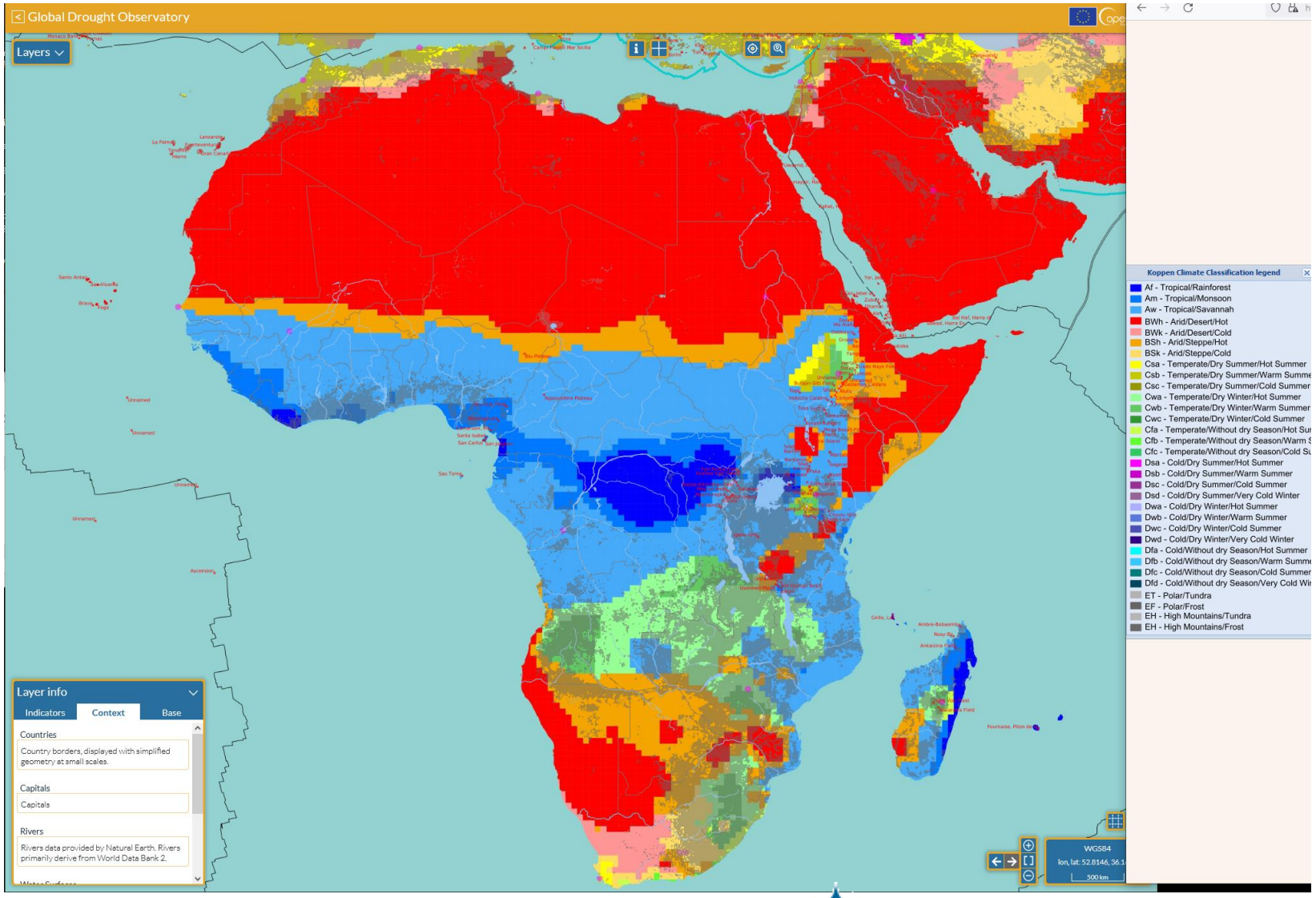
Forecasting

- Sea surface temperature
- Teleconnections
- Forest map / Landuse map
- Climate Zones
- Season start / end
- Long term climatology / trends



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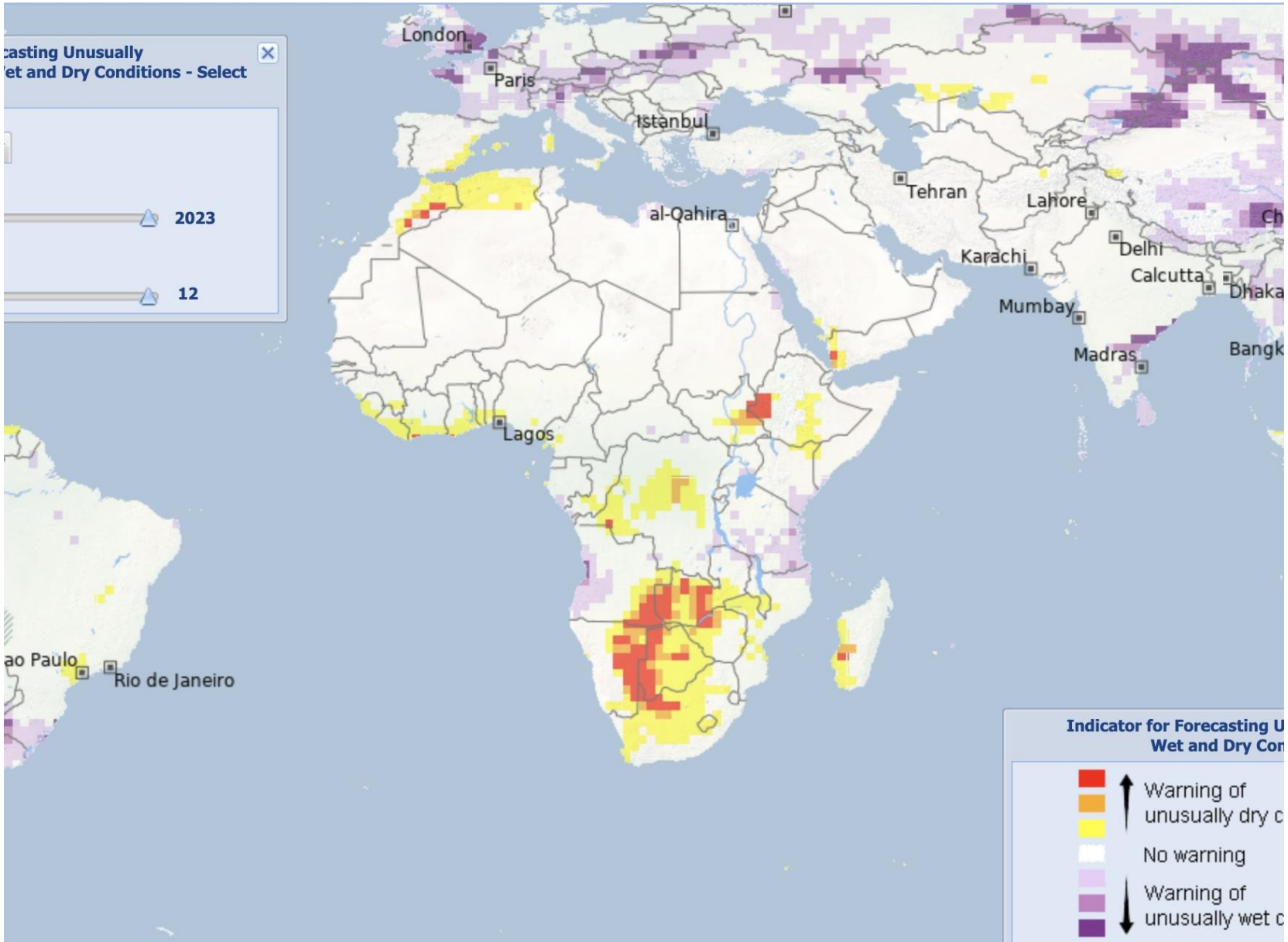
Forecast as SPI for 1 month

Valid for December 2023



Rainfall

Daily rainfall

- Summarize to monthly rainfall
- Standard Precipitation Index (SPI)
  - Accumulation (1,3,6,9,12,24,48) in months
- Deficit

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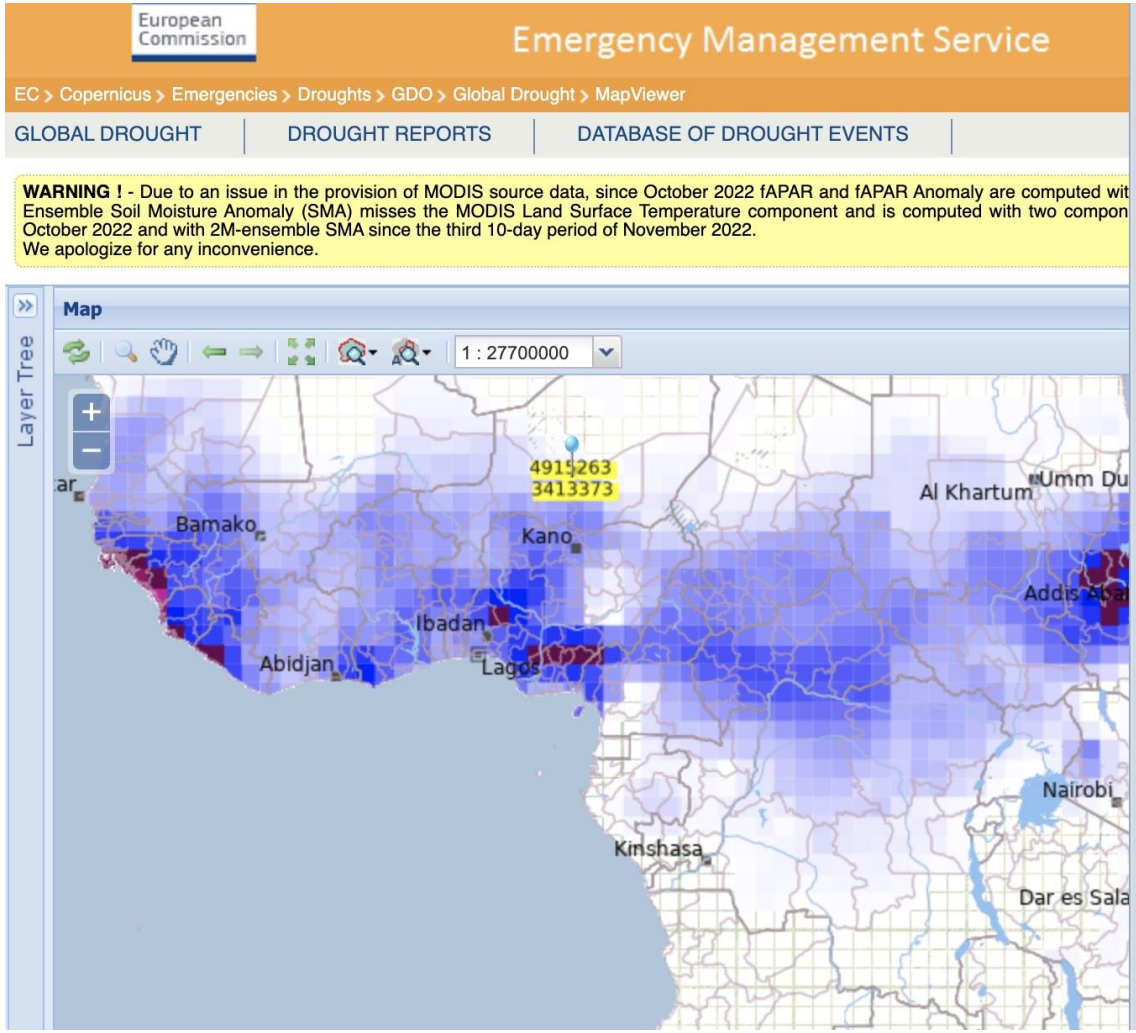
Summarized Monthly Rainfall



REFERENCE DATE	DROUGHT IMPACT	ID	NAME		UN REGION	AREA	POPULATION 2010	CAPITAL	UN HUM DEVELO
2023-08-2nd	Open Report	NE	Niger		Western Africa	1267000 km^2	15511953 inhab.	Niamey	Open re

Warning: the date selected in the Layer Tree on the left is visualized by default for every layer. Click in the indicator's row to change it.

Administrative Reporting Units (1)

Found **1** result for this layer at the clicked point

DATE	DROUGHT IMPACT	ID	NAME
2023-08-2nd	Open Report	2202	Agadez

Warning: the date selected in the Layer Tree on the left is visualized by default for every layer. Click in the indicator's row to change it.

Koppen Climate Classification (1)

Found **1** result for this layer at the clicked point

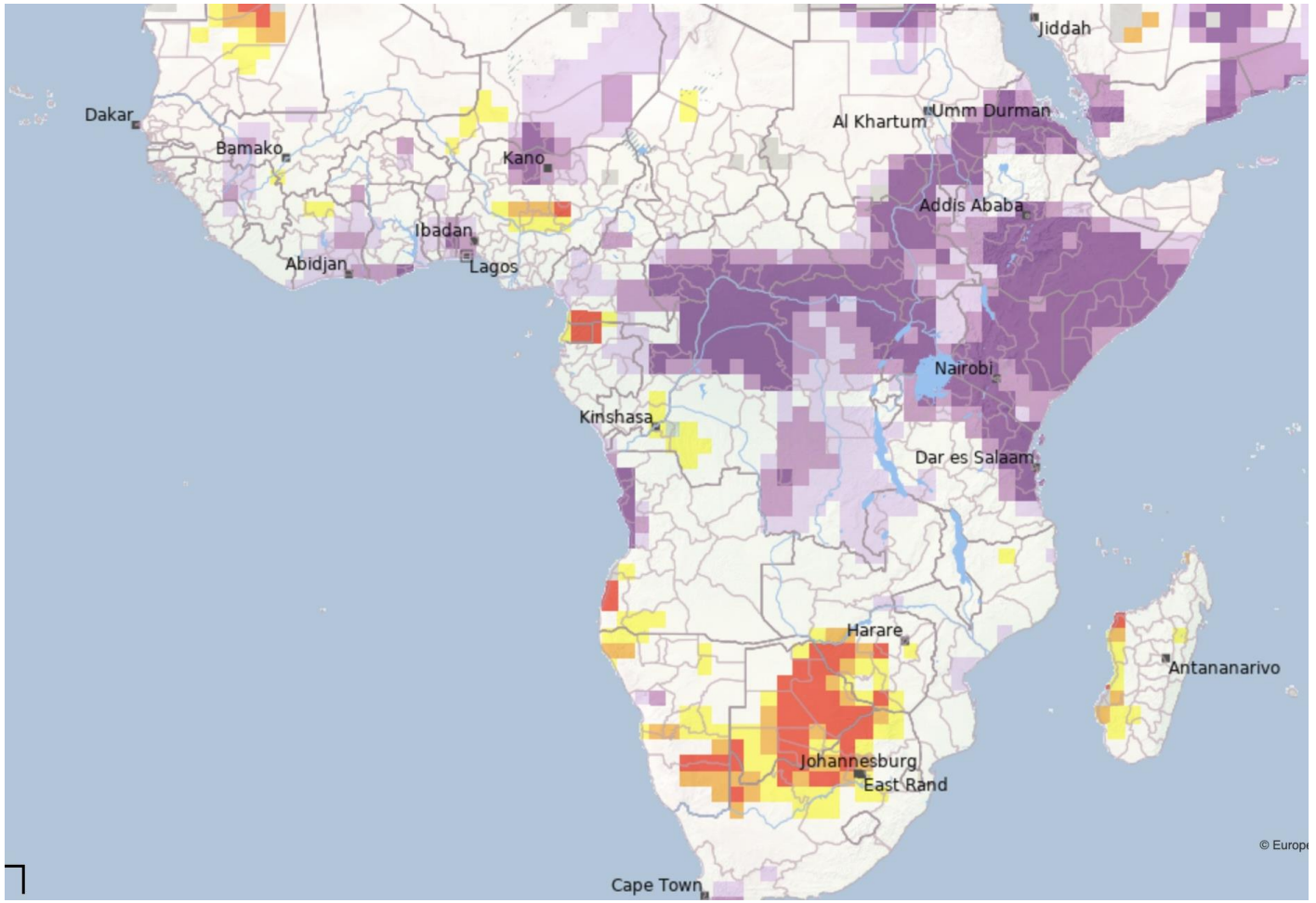
CODE	DESCRIPTION	CENTROID LAT,LON	KML
BWh	Arid/Desert/Hot	15.79,8.21	

All Drought Indicators (10)

Found **10** results for this layer at the clicked point

INDICATOR	VALUES	PERIOD
Monthly Rainfall	Grid 1 dd: **92.4 mm**	2023-07
Precipitation Deficit/Surplus	Grid 1 dd: **20.276 mm**	2023-07
SPI 1dd	Grid 1 dd: **1.735**	2023-07, timescale: 03
fAPAR (VIIRS)	Grid 1/12 dd: -	2023-08-11
fAPAR Anomaly (VIIRS)	Grid 1/12 dd: -	2023-08-11
fAPAR (MODIS)	Grid 1/12 dd: -	2022-09-21

Rainfall SPI Index (3 months)



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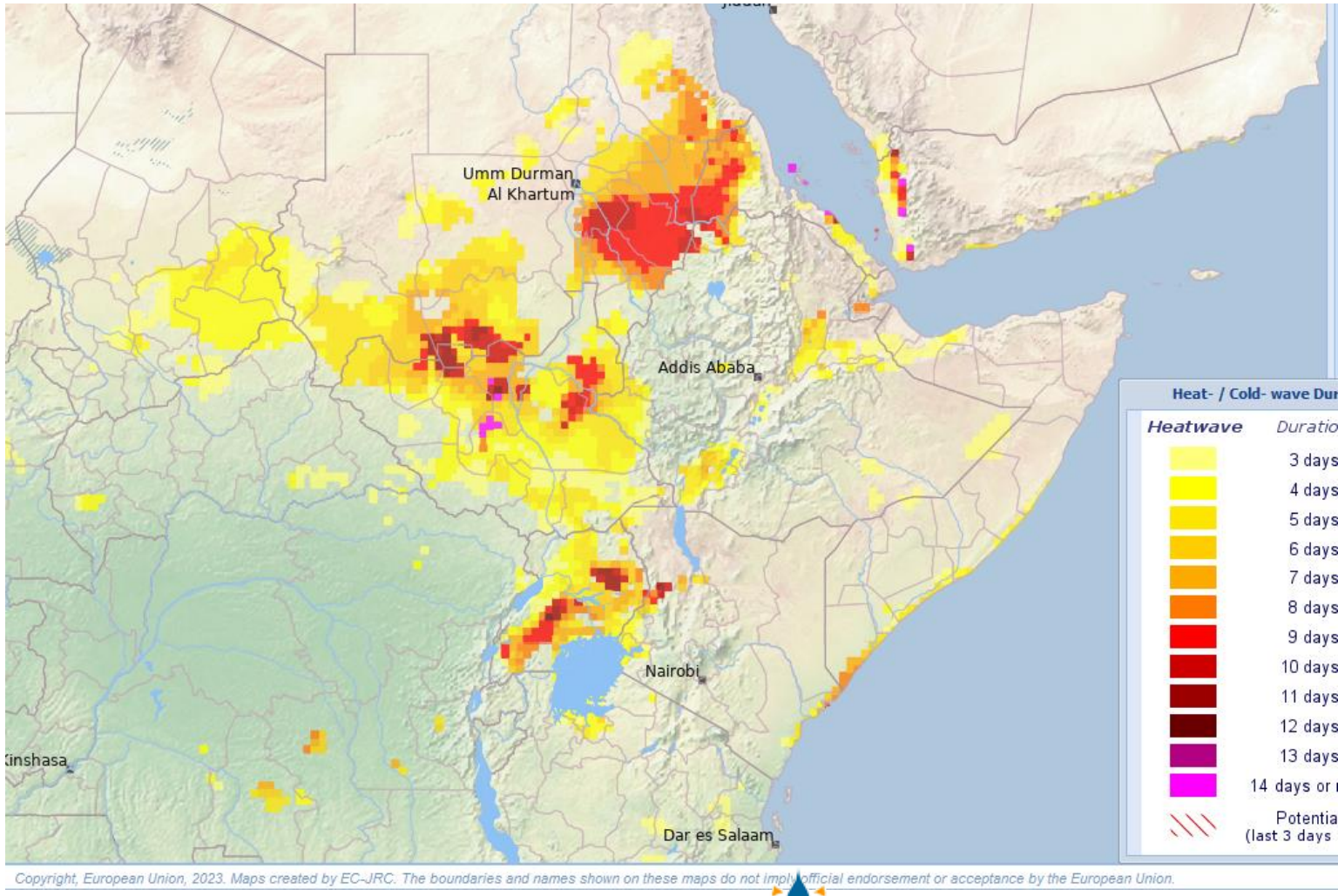
Temperature

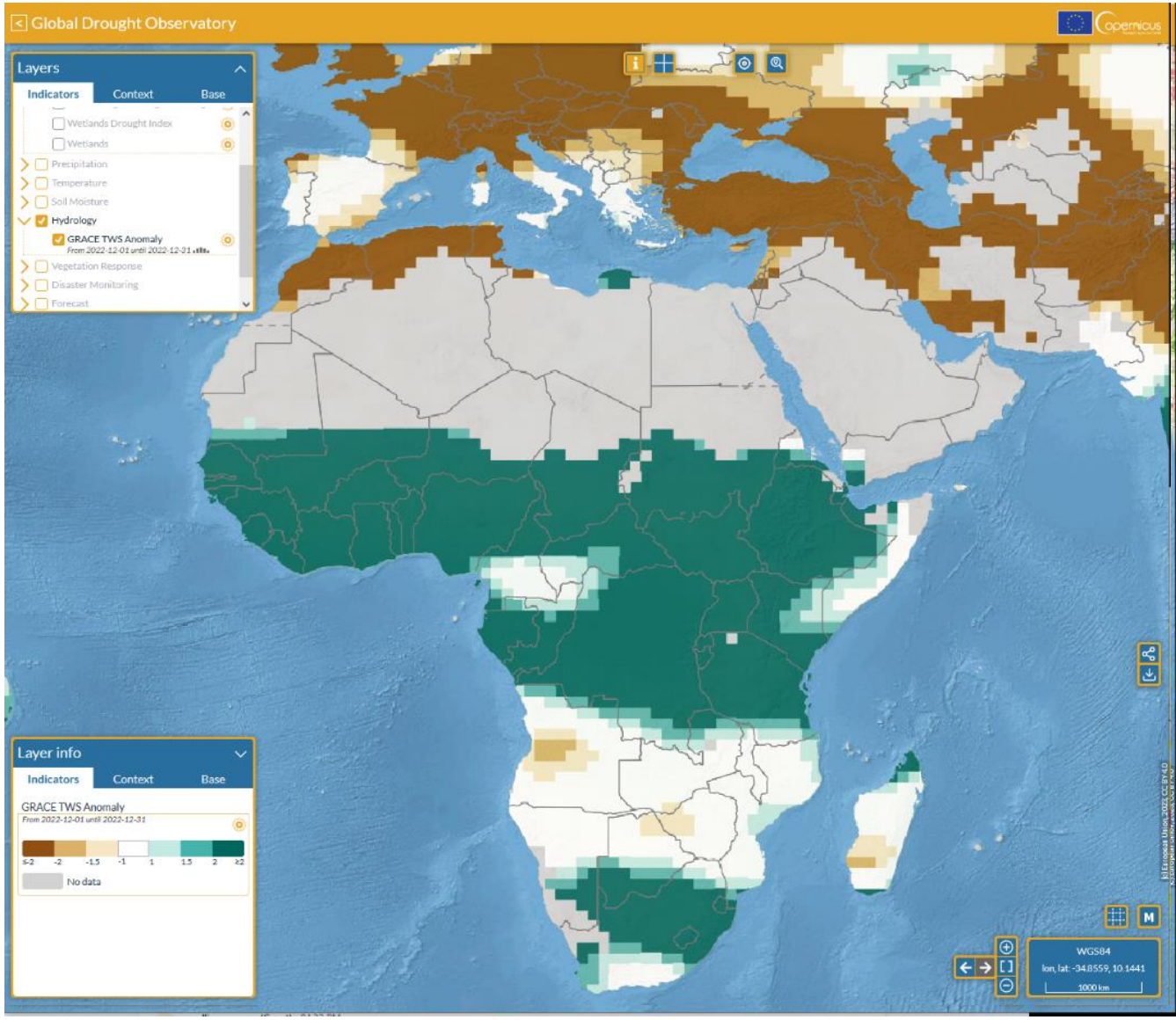
- Maximum and Minimum Temperature
- Long term thresholds
- Heat- cold waves
- Anomalies



Satellite

Vegetation light absorption

Gravity anomalies



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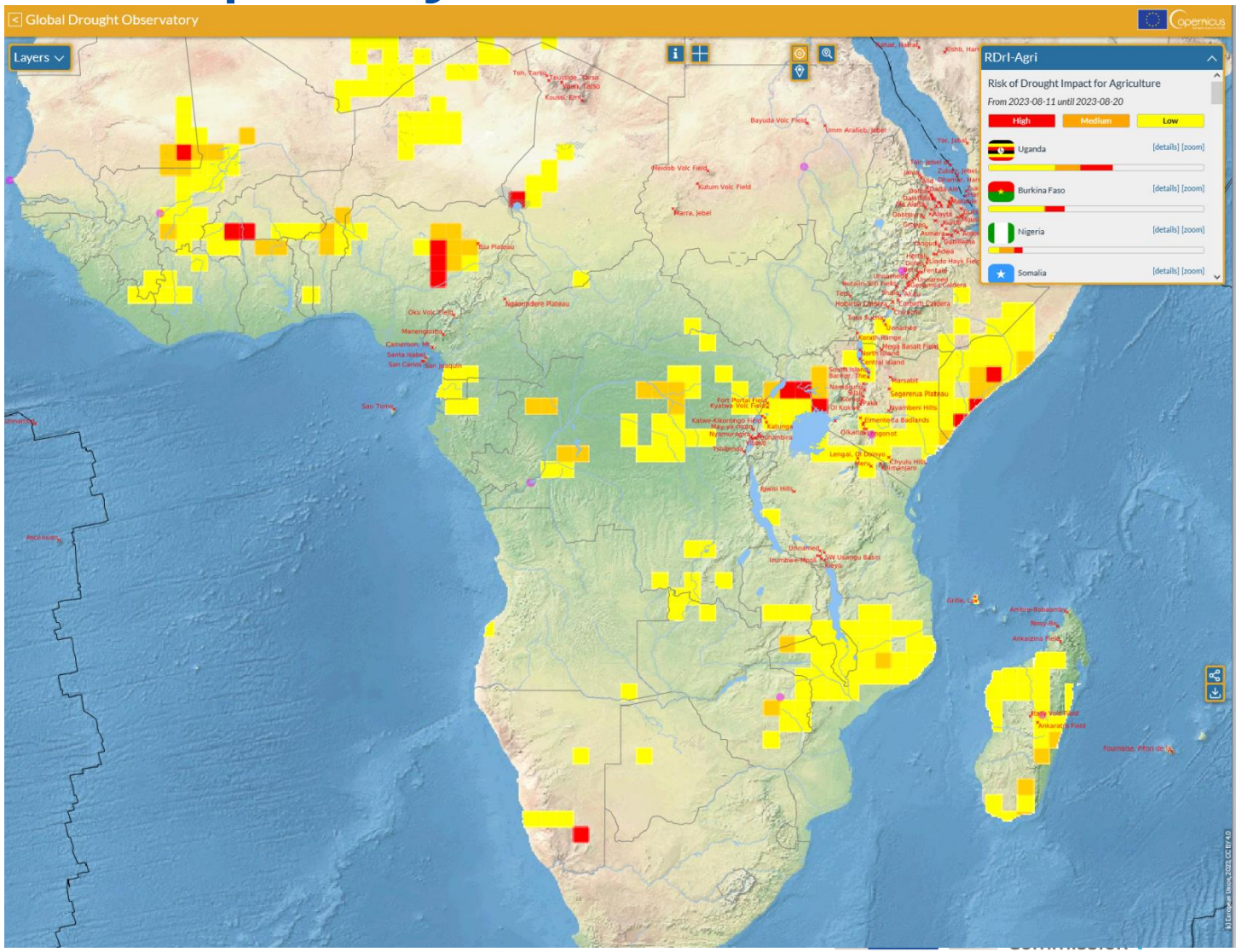
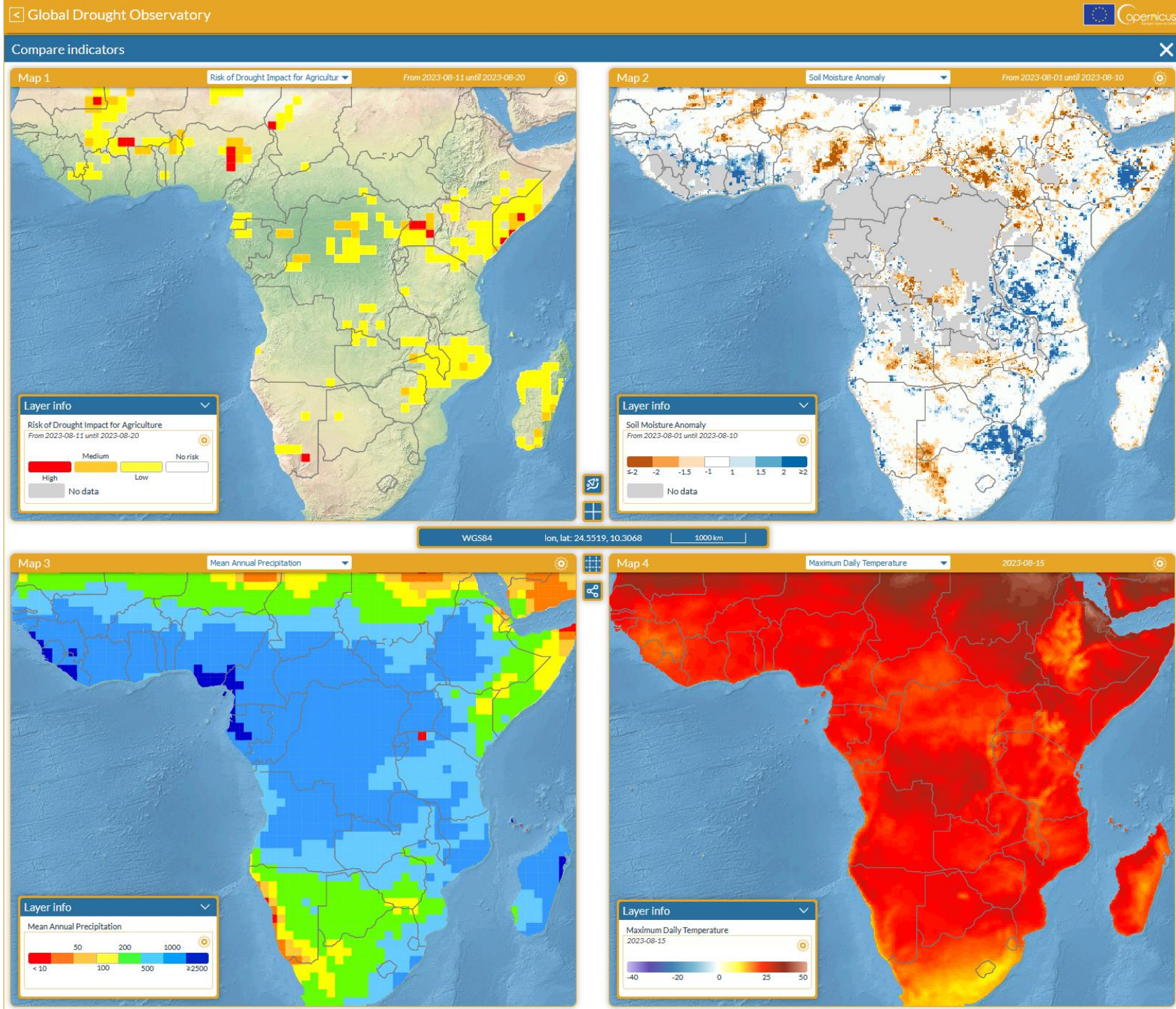
How to communicate complexity?

- Interactive Mapping
- Combining Parameters
- Time series
- Alert indicators
- Website
- Open data
- Social Media
- Atlases

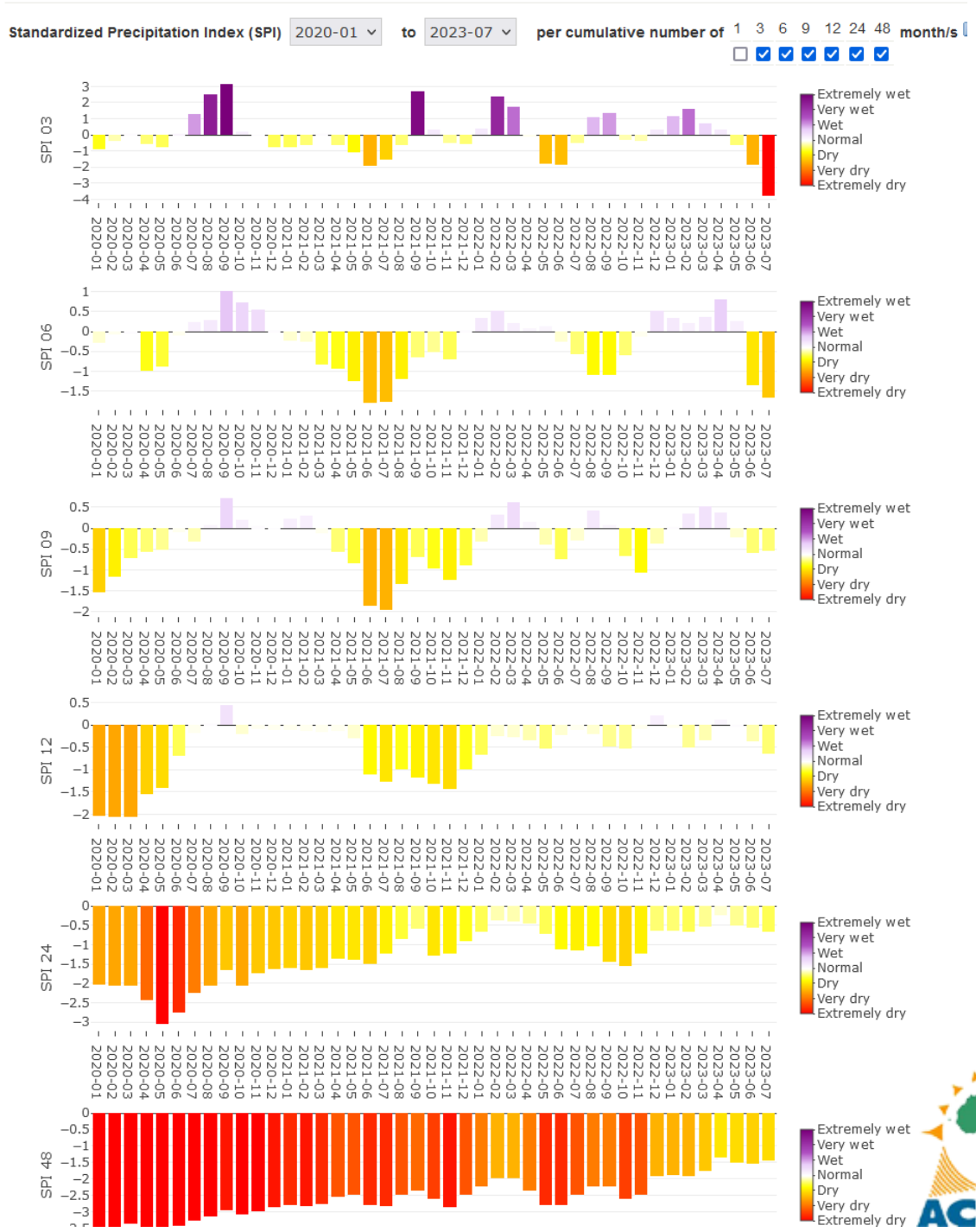


Comparing Parameters using WMS Technology



Time series

Shabelle Hoose (Somalia)



Drought: what to do?

In time

- **Keep water in the landscape**
- **Preserve Groundwater**
- **Base agriculture on deep rooting plants/trees**
- **Short-term maturing crops**
- **Conserve organic matter content in the soil**
- **Avoid evopotranspiration**
- **Make a shadowed landscape/city**

Too late

- **Bring in water (trucks/cisterns)**
- **Bring in fodder (warehouses)**
- **Bring in food**
- **Check for diseases**
- **Disrupt industrial water usage**
- **Prepare for fire**
- **Destocking of livestock**

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Keep in touch

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Thank you

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