

COPERNICUS EARTH OBSERVATION

DATA VISUALISATION WORKSHOP SERIES



PROGRAMME OF THE
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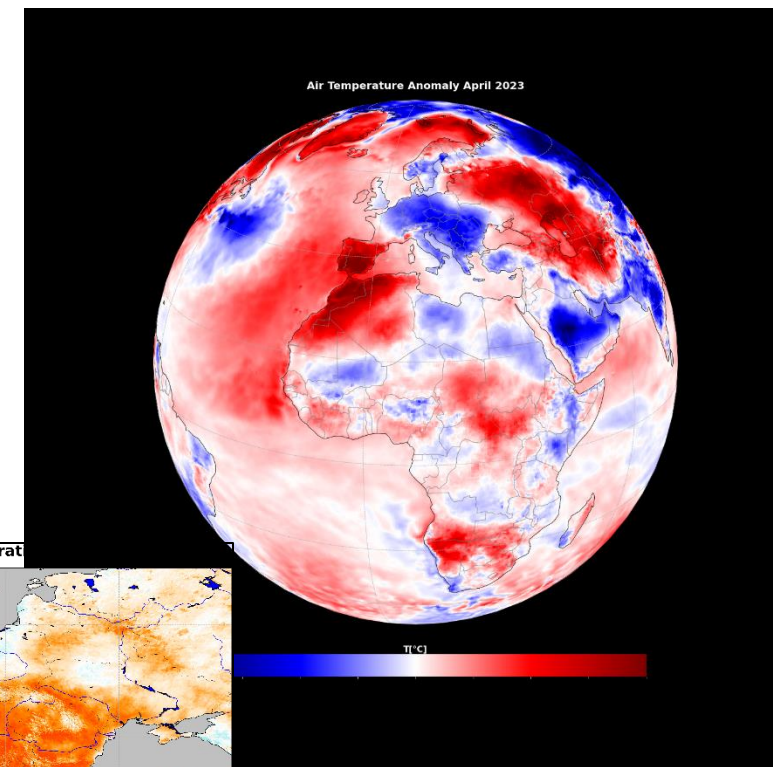
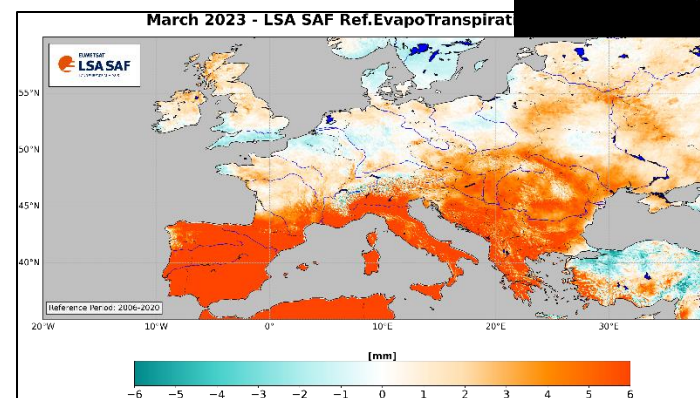
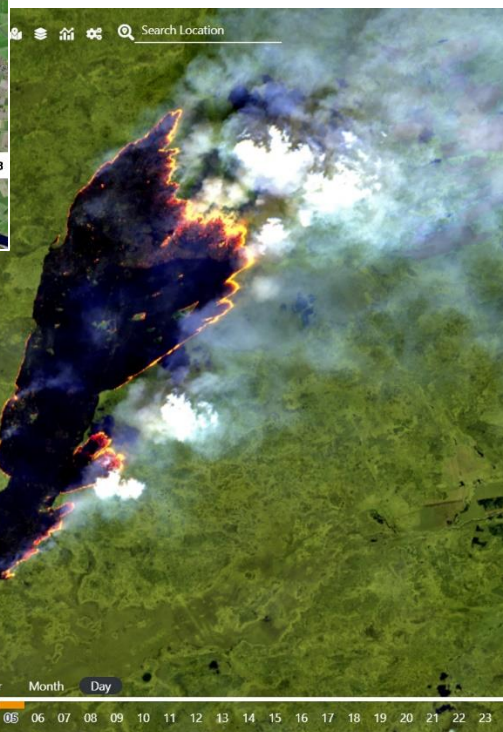


Climate and Weather

Practical Examples of Visualisations

Antonio Vecoli, MEE0 s.r.l.

From satellite imagery to climate data: **Visualization** is the key



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Data Visualisation Workshop Series
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Which climate data to use: C3S/ECMWF

Europe in 2022

Monitoring the climate

This section provides an overview of Europe in 2022, compared to the long-term trends of variables across the climate system.



Temperature



Lake and Sea
Temperatures



Wildfires



Precipitation



Soil moisture



River discharge



Land
cryosphere



Atmospheric
circulation



Clouds and
sunshine
duration



Wind and solar
energy
resources



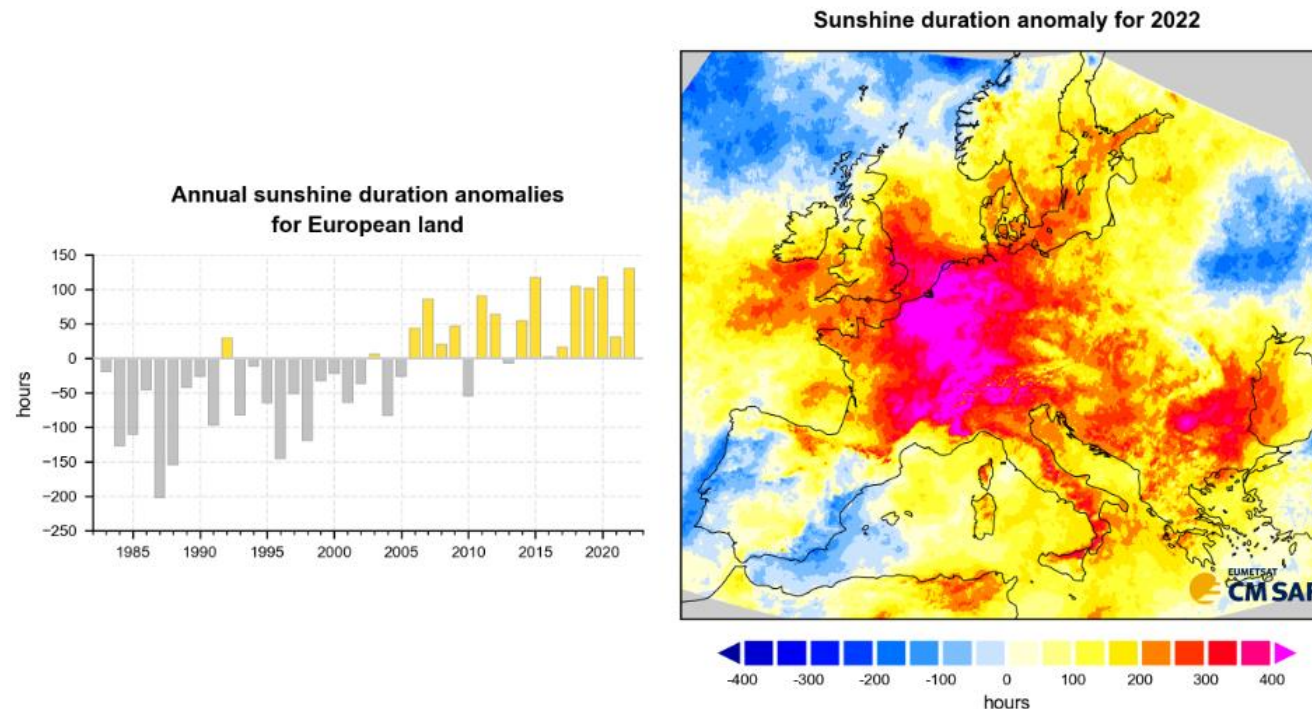
<https://climate.copernicus.eu/esotc/2022>

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Which climate data to use: EUMETSAT CM SAF

Sunshine duration



<https://climate.copernicus.eu/esotc/2022/clouds-and-sunshine-duration>

Data: SARAH-2.1 CDR/ICDR • Reference period: 1991-2020 • Credit: EUMETSAT CM SAF



The EUMETSAT climate **OPEN DATA**:

- Climate Monitoring SAF (**CM SAF**): sunshine duration, cloud cover, etc..

<https://www.cmsaf.eu/EN/Home/>

- Land Surface Analysis SAF (**LSA SAF**): land surface temperature, NDVI, faPAR, etc..

<https://landsaf.ipma.pt/en/>

- Hydrology SAF (**H SAF**): precipitations, soil moisture, etc..

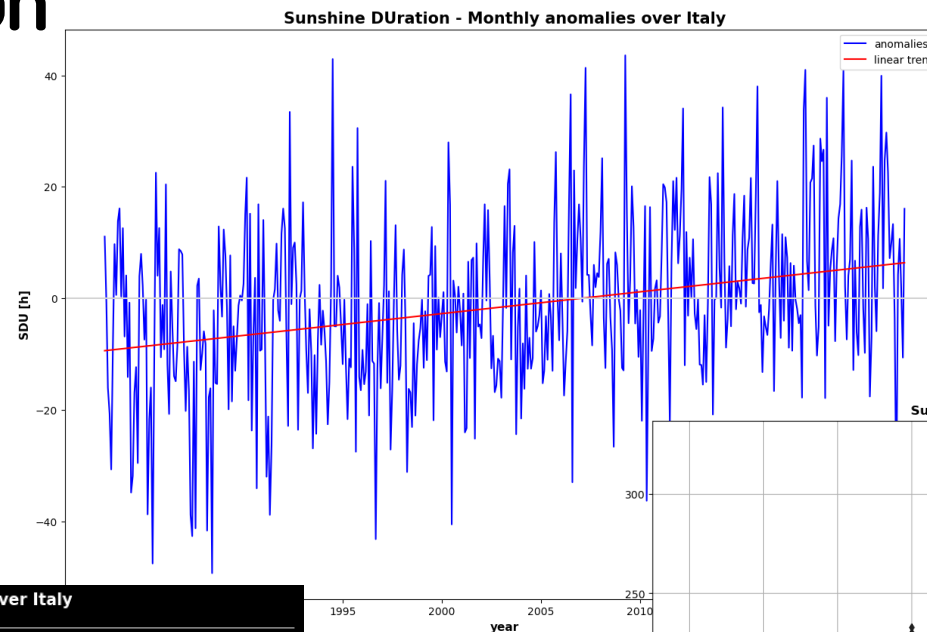
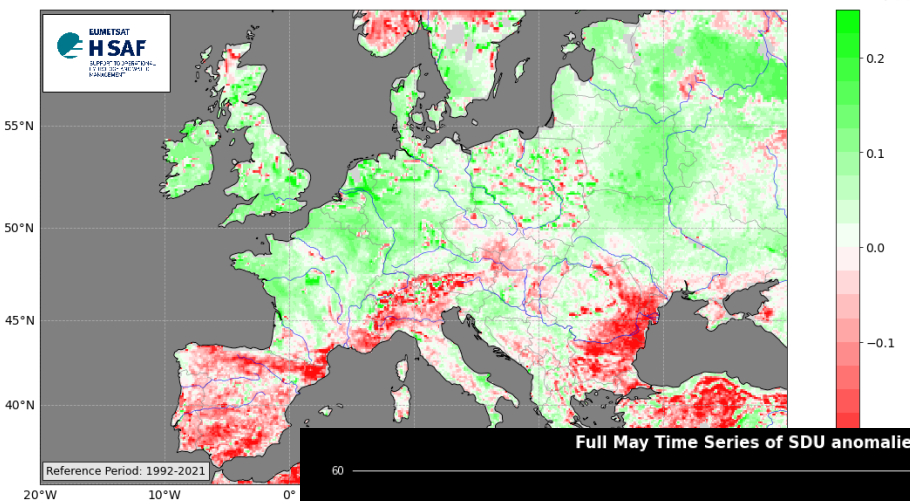
<https://hsaf.meteoam.it/>



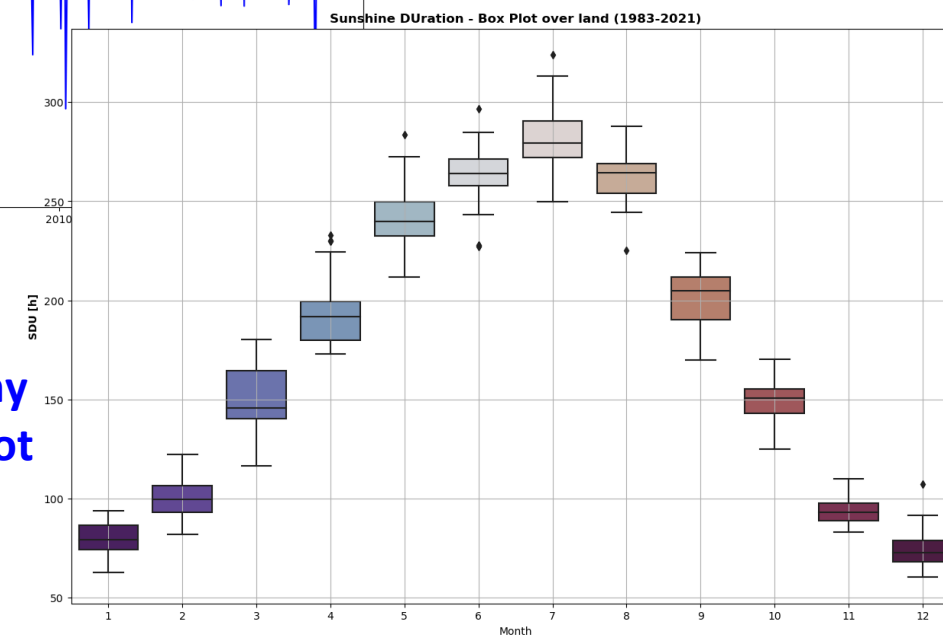
Climate data visualization

Monthly anomaly map

Anomaly of Soil Wetness Index (28-100cm) for April 2023

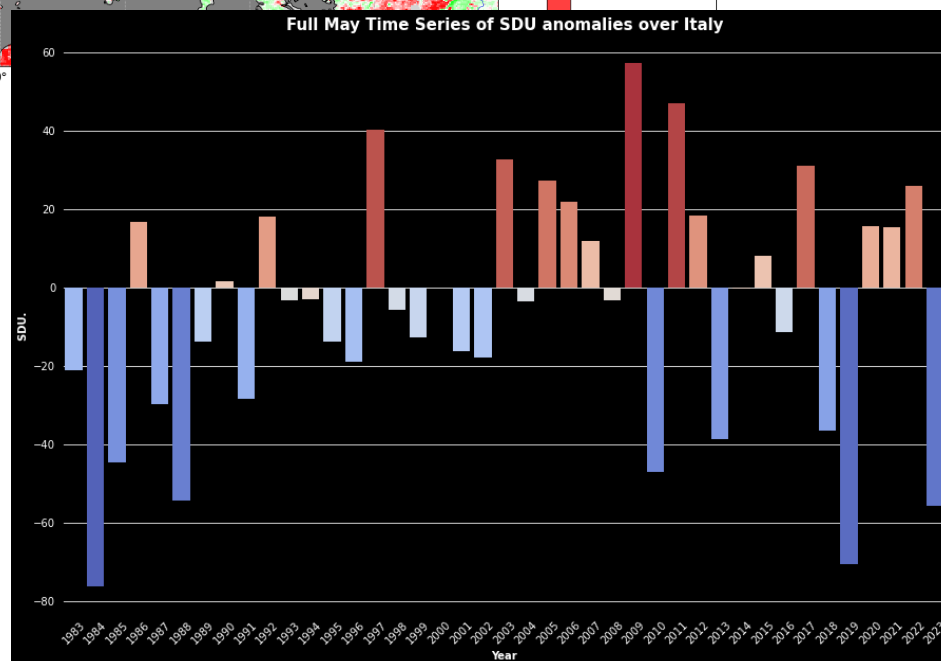


Time series of monthly anomalies + linear trend



Monthly Box Plot

Bar Plot



EUMETSAT TrainHub

<https://catalogue.ltpy.adamplatform.eu>


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 CLOUD COMPUTING-BASED INFRASTRUCTURE FOCUSED
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ATMOSPHERE ▾ CLIMATE ▾ MARINE ▾

Discover our notebooks



EUMETSAT Training

EUMETSAT offers training activities that support users in the application of EUMETSAT data and services, including Copernicus data provided by EUMETSAT.

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Filters Enabled

THEME:
Climate

Theme ^

- ☒ Climate (5)

Subtheme ^

- ☐ Eumetsat Use Case (1)
- ☐ Hydrology (1)
- ☐ Solar Radiation (2)

Platform ^

- ☐ ERS-1/2 (1)
- ☐ METEOSAT (3)
- ☐ METOP A/B/C (1)

Sensor ^

- ☐ AMI (1)
- ☐ ASCAT (1)
- ☐ MVIRI (1)
- ☐ MVIRI/SEVIRI (2)

Tags ^

- ☐ Land Surface Temperature(LST) (1)
- ☐ SDU (1)
- ☐ Soil Wetness Index(SWI) (2)
- ☐ Sunshine Duration(SDU) (3)

Originating Center ^

- ☐ CM SAF (4)

3. Statistics extraction from a Climate Data Record - Standalone user

This notebook shows how to analyse a specific climate data record for a selected product.

5. Time Series extraction and analysis

This notebook shows how to extract and analyse a time series for a specific climate data record, in a predefined point location.

H SAF Root-zone Soil wetness index products (part 2)

This notebook shows how to obtain an anomaly map of the Root Zone Soil Wetness Index over five countries in West Africa.

2018/2019 drought & heatwaves in Europe - Use Case

This notebook shows how to obtain the maps contained in the 2018 and 2019 drought and heatwaves overview report.

Final tips for climate data visualization

Maps

- choose an intuitive colormap: colors in the map should suggest the proper visual interpretation of the data (avoid rainbow colormap when possible)
- for an anomaly map a divergent palette should be selected. White color is generally associated to areas with no anomalies (nor positive, neither negative)
- An anomaly map should always specify the reference period for the climatology used in the calculation
- Define the minimum and maximum values of the colorbar so that the most relevant patterns of the data in the map are highlighted.

Plots

- for long TimeSeries of monthly anomalies, represent years on the x-axis in order to make the graph more readable.
- a bar plot representing the Time Series of an anomaly should be colored with a divergent palette, as well as an anomaly map
- Always specify the units of measurement of your x and y axes



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