CLMS NCP:
Bio-geophysical parameters

Soil Moisture

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Surface Soil Moisture

Soil moisture is a key variable in the terrestrial water budget, closely linked to the water cycle and influenced both by short-term meteorological conditions and long-term climatic patterns.

The Surface Soil Moisture (SSM) product is one of the bio-geophysical parameters provided by the Copernicus Land Monitoring Service.

SSM is a daily estimate of the water content in the top 5 centimetres of the soil, expressed as the volume of water contained in a unit volume of soil (m^3/m^3) or percent of saturation. The observations are derived from the processing of satellite radar data.

The product is available for the entire continental European domain, with a spatial resolution of 1 km and a temporal coverage starting from October 2014.

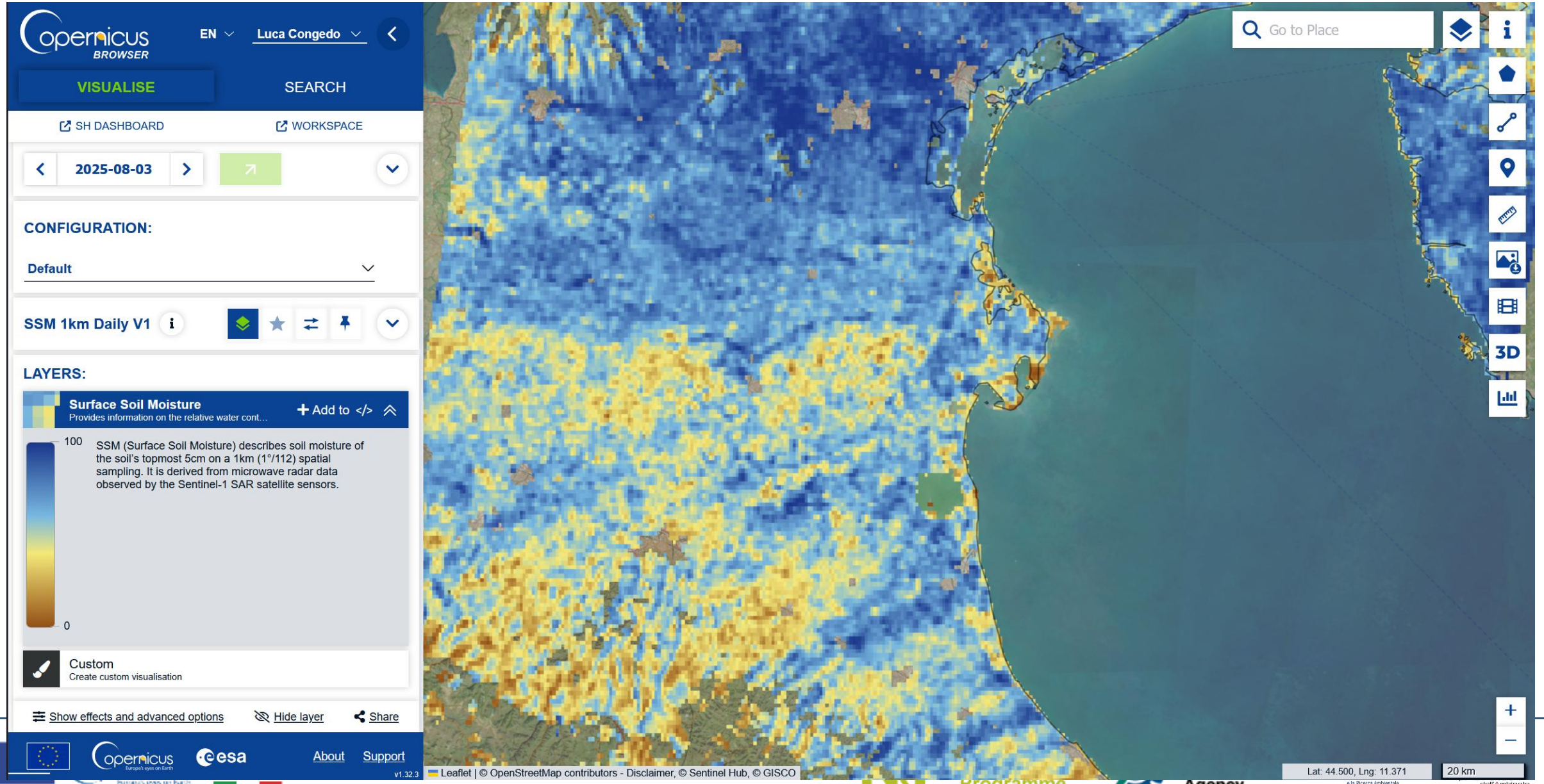
Surface Soil Moisture

The Copernicus Browser allows for searching and directly viewing Surface Soil Moisture (1km spatial resolution).

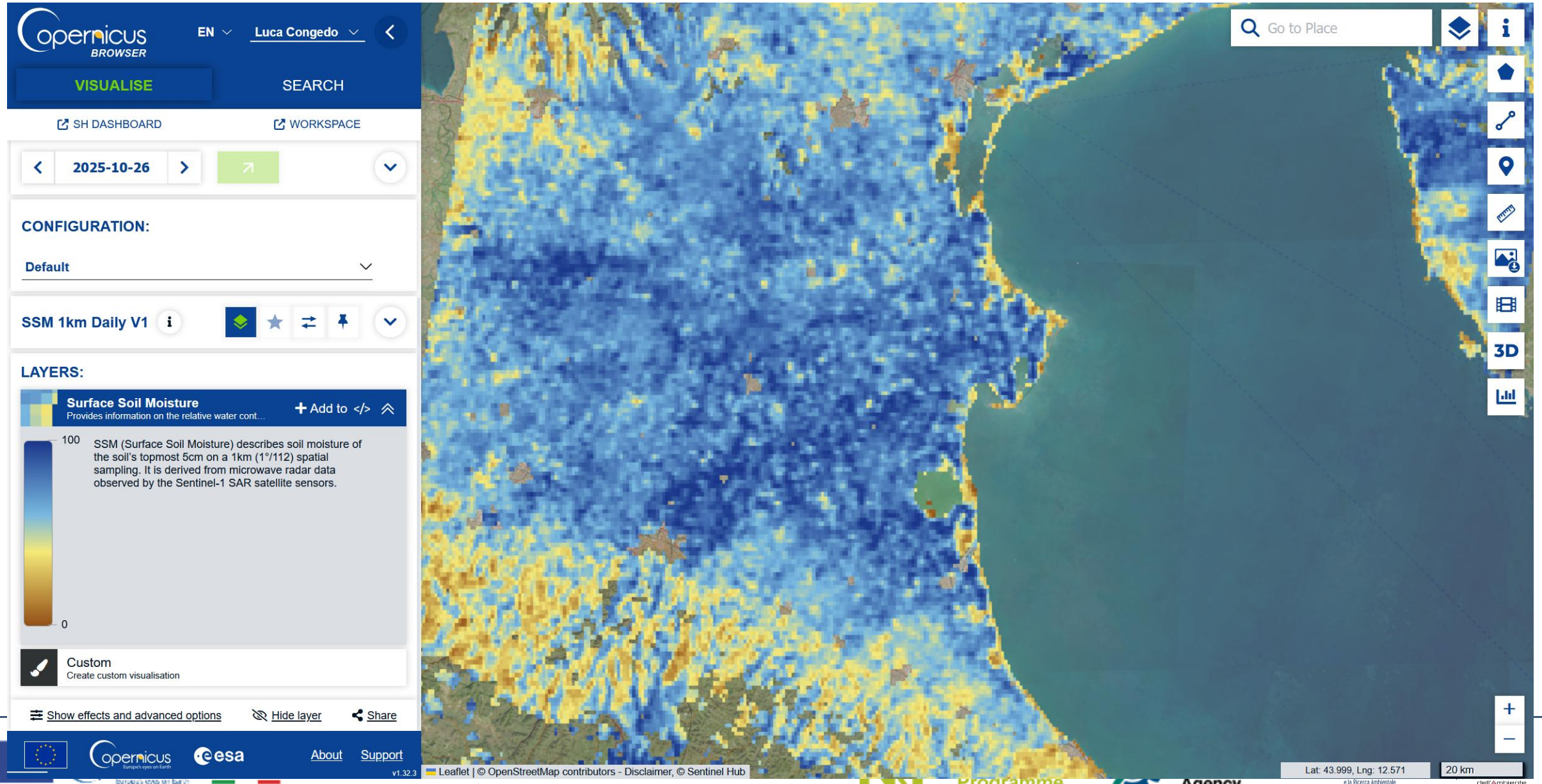
In this case, the Surface Soil Moisture of the North of Italy was monitored, comparing Summer and Autumn values.

The comparison showed evident variations in soil moisture, with significantly higher values observed in Autumn, in particular over agricultural areas.

Surface Soil Moisture (Summer)



Surface Soil Moisture (Autumn)



Considerations about Surface Soil Moisture

Access to soil-moisture information is extremely valuable for agricultural management, enabling early detection of drought conditions, monitoring of crop water stress, and optimization of irrigation practices.

Soil moisture also plays an important role in climate modelling (as it influences evaporation and the terrestrial energy balance) and in hydrological modelling. It is a central parameter in monitoring biodiversity and ecosystem health, as it affects the distribution, abundance, and survival of many plant and animal species.

The improvement of spatial resolution could be very useful to provide soil moisture information at the local level.

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