European Union

Copernicus Europe's eyes on Earth

EARSC European Association of Remote Sensing Companies

THE GREEN LAND

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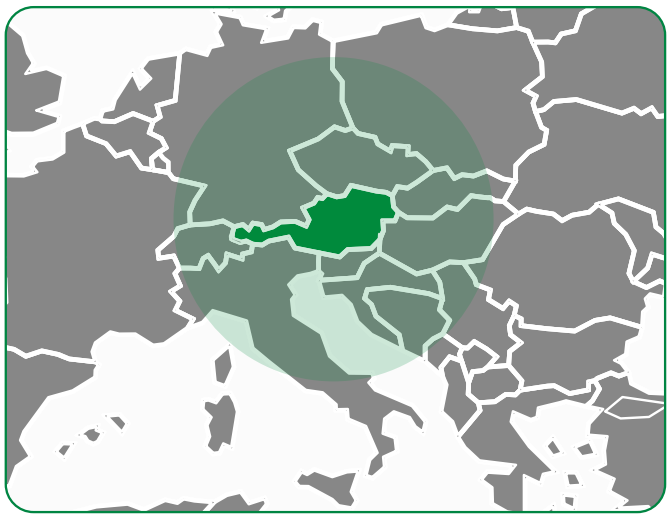
IRRIGATION DETECTION & MAPPING IN AUSTRIA

What it is about

The Umweltbundesamt – Environment Agency Austria, utilises Earth observation (EO) and satellite data from the Copernicus programme in response to water scarcity challenges to foster innovative water management policies. Austria, though generally water-rich, faces regional variations in water supply, with eastern lowland regions expected to suffer increased water shortages due to climate change. The Environment Agency Austria employs Sentinel-1 and -2 satellite data, coupled with machine learning techniques (ML), to monitor and identify irrigation patterns in crops like maize, soya, potatoes, and sunflowers. The insights benefit the Federal Ministry of Agriculture, Forestry, Regions and Water Management in planning and regulating water use sustainably. The efficient use of Sentinel data minimizes reporting burdens, providing a comprehensive overview of irrigation at the federal level. The long-term vision involves expanding the solution to the whole country, addressing diverse water-related challenges and incorporating additional parameters impacted by climate change.



What we found

- Public authorities in Austria are using Sentinel-1 and Sentinel-2 data to discriminate between irrigated and rainfed plots in order to improve their understanding of the use of local water supplies.
- Sentinel-1 and -2 data, in combination with ML techniques, can provide reliable and objective information across the country on irrigation patterns, allowing better planning and water management policies, thus complementing the existing reporting.
- The Federal Ministry of Agriculture, Forestry, Regions and Water Management sees potential capacity of satellite data for having a global and regularly updated view of irrigation needs among farmers

Copernicus Sentinels Benefits Study: A Show Case

Funded by the EU and ESA

Layout by ESA EO Graphics Bureau

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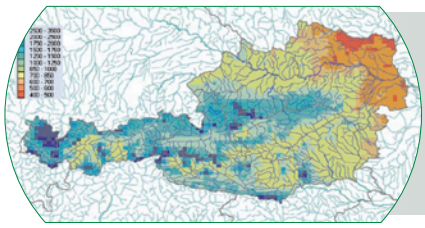
The Satellite Data

Copernicus Sentinel-1 provides free-of-charge frequent, all-weather, day-and-night C-band radar images over the entirety of Austria, while Copernicus Sentinel-2 provides free-of-charge frequent wide-swath, high-resolution multispectral imagery with 13 spectral bands over Austria.

The Service Provider

The Umweltbundesamt – Environment Agency Austria is the most important expert institution for the environment in Austria. Its remote sensing team develops innovative approaches to monitoring the environment including irrigation patterns in agriculture.



The Primary User

The Austrian Federal Ministry of Agriculture, Forestry, Regions and Water Management is engaged at both national and international level in sustainable agriculture, forestry and water management. It benefits from the service by receiving better and more comprehensive information that allows for better planning and policies.

Secondary Beneficiaries

Improved federal water management policies will benefit regional authorities, enabling them to grant water rights and permits aligned with environmental and climate concerns, safeguarding water bodies. Long-term benefits include enhanced farmer resilience to climate change, optimized water usage, risk reduction, secure crop yields, and support for sustainable agriculture.

End User Beneficiary

Improved water management policies benefit the public by ensuring water security, environmental protection and climate resilience.

About the project

Through a series of case studies, EARSC aims to gather quantitative evidence that the usage of Copernicus Sentinel data provides an effective and convenient support to various market applications. These studies are undertaken in the frame of the project "Showcasing the benefits brought by the usage of Sentinels data to society, environment and economy: a bottom-up assessment based on traceable impacts along selected value chains", under an assignment from the European Space Agency (ESA) funded by the European Union as part of the Copernicus Programme.

Download the full report from the project website

http://earsc.org/sebs