

**MONITORING SOIL HEALTH WITH EARTH OBSERVATION
THROUGH THE PRISM OF THE MISSION-ORIENTED APPROACH OF
HORIZON EUROPE**

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Abstract: The new mission-oriented “Horizon Europe” research and innovation program (EU, 2021-2027) is characterized by the introduction of five Missions, among them: “Soil Health and Food”. Soils play an integral role rendering unique ecosystem services that contribute also to the political commitments of EU, i.e., Paris agreement, Green Deal, Sustainable Development Goals (SDGs) of UN. Some of the most important ecosystem services are producing healthy food, protecting the quality of ground- and surface water, capturing carbon, thereby mitigating climate change, reducing emission of greenhouse gasses, and preserving and improving biodiversity on a landscape level. Remote sensing techniques can be used to rapidly assess soil properties, to estimate soil health, essential for plant growth such as %carbon and nutrient contents. These properties do, however, require a lot of manual work or machinery to collect. Rather than following traditional expensive and not very effective approaches, plant development during the growing season can be monitored continuously allowing application of management measures at the right time and location, such as fertilization, irrigation, combatting pests, diseases, and weeds. This cannot only result in higher yields, improved water quality, contributions to climate mitigation and biodiversity, but also in lowering costs by saving nutrient and pesticide/herbicide inputs thereby representing innovative forms of precision agriculture. Earth observations can, in this context, also provide essential information on greenhouse gas emissions contributing to the reporting mechanisms in the EU member states. Coordination among various remote sensing activities in different countries on an international level and development of widely accepted criteria and thresholds for soil health are essential to achieve the full potential of proximal and remote sensing techniques to meet the SDGs.

Presentation link: <https://www.youtube.com/watch?v=nbLZZQS2otU>