PRIMA SOILS4MED: Soil Health Monitoring System for a sustainable management of Mediterranean region

Dimitris Triantakonstantis

Institute of Soil and Water Resources, Hellenic Agricultural Organization – DIMITRA, 1 Sofokli Venizelou, 14123 Lykovrisi, Greece
e-mail: trdimitrios@gmail.com
In line with the principles of the EU Mission A Soil Deal for Europe, SOILS4MED will engage a large platform of scientists, stakeholders and final users in the co-design of scientifically sound, sustainable, and policy-relevant integrated soil health monitoring systems harmonized across the Mediterranean region and will demonstrate the multiple societal benefits deriving from increased investment in soil data and information.
PRIMA SOILS4MED: Soil Health Monitoring System for a sustainable management of Mediterranean region

Organisation | Country
--- | ---
Università di Sassari (UNISS), Nucleo Ricerca Desertificazione | ITA
Mediterranean Agronomic Institute of Bari (CIHEAM-B) | ITA (INT)
Int. Centre for Agricultural Research in the Dry Areas (ICARDA) | LEB (INT)
Universidad de Sevilla (US) | SPA
Université de Poitiers (UNIPOI) | FRA
Direction des Sols (DGACTA) | TUN
Centro Ricerca Sviluppo e Studi Superiori in Sardegna (CRS4) | ITA
Hellenic Agricultural Organization (DIMITRA) | GRE
Università di Palermo (UNIPA) | ITA
University of El Zagazig (UZAG) | EGY
Lebanese Agricultural Research Institute (LARI) | LEB
University of Jordan (UOJ) | JORD
Università di Milano (UNIMI) | ITA
University of Cukurova (UCUK) | TUR
Università Federico II di Napoli (UNINA) | ITA
EC – Joint Research Centre (JRC) | ITA (INT)
SOILS4MED has the following objectives:

1) engage with stakeholders in line with the Living Lab approach and raise awareness on the benefits deriving from increased investment in soil data and information (SDI);

2) develop policy relevant integrated indicator sets and monitoring protocols adapted to the environmental specificities and stakeholder needs of the Mediterranean Region;

3) validate the protocols in study areas representing major agro-ecological regions and soil types, generating the first region-wide harmonized soil health datasets for the Mediterranean Region;

4) demonstrate the capacity of the SDI produced by the protocols, integrated by legacy soil data, to feed state-of-the-art tools to support sustainable soil and water management, land degradation neutrality, and to enhance regional soil health mapping including carbon stock mapping; and

5) design and implement standardized country-based soil information systems (SIS) for the effective management and use of SDI.
WP3: Policy-relevant indicators of soil ecosystem health for PRIMA countries

Task 3.3: Potential indicators, alternative or proxies

Task goal: Review potential/innovative datasets and methods that could generate alternative cost-effective indicators or proxies

Soil challenges in the wider Mediterranean region

- Erosion
- Soil organic matter loss
- Desertification
- Salinization
- Biodiversity loss

How can remote / proximal sensing indicators contribute to tackling soil challenges in the Mediterranean region?
Remote / proximal sensing applications

**SOC estimation:** with remote sensing (spaceborne, airborne, unmanned aerial vehicles) and laboratory or handheld visible and near infrared (VNIR)- short wave infrared (SWIR) spectroscopy (Angelopoulou et al., 2019, 2020; Triantakonstantis et al., 2021)

**Soil salinity:** Soil Adjusted Vegetation Index as a predictor of soil salinity (Nouri et al., 2018)

**Drought Impact:** Normalized Difference Vegetation Index (NDVI) and Standardized Precipitation Evapotranspiration Index (SPEI) (Gouveia et al., 2017)

**Erosion:** proximal sensing with unmanned aerial vehicles (Takáts et al., 2022)

**Plant biodiversity:** spectral diversity correlates with plant species richness (H. Gholizadeh et al., 2018)

**Soil contamination:** vegetation stress as a proxy for soil contamination, different sensors and spectral ranges per pollutant (Gholizadeh & Kopačková, 2019)
PRIMA SOILS4MED: Soil Health Monitoring System for a sustainable management of Mediterranean region

References

Thank you for your attention!

Any questions?