



SOPHIE: Soil Program on Hydro-Physics via International Engagement

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Towards cost-effective SHP-properties

Soil Hydro-Physics (SHP) properties are THE properties that determine soil-water-interactions:

1. water flow and water retention, and
2. with the water flow, the transport of dissolved compound like nitrogen, phosphates, pesticides, antibiotics, organics, etc.

As a result, SHP properties play an important role in variety of societal issues: Crop water stress vs. food security, Salinity and Sodicity occurrence, Susceptibility for forest fires, Soil compaction, Dike stability, Greenhouse gas emissions, Soil health, etc. However, concurrently it is recognized that harmonization, and the development of new techniques is difficult to accomplish harmonization. Current methods remain time-consuming. They need to be improved towards cost-effective ones, and should be sufficiently harmonized to be used on EU-scale research.

There are many opportunities to markedly improve the situation, but these require large-scale adaptation, validation and standardization. One example is the adaptation and innovation towards novel remote and proximal sensing techniques. When they are used in combination with modern field and laboratory techniques, they can lead to standardized SHP-properties, directly usable for fast extending current soil databases like LUCAS, and in large scale studies.

SOPHIE has the ambition to provide a generally accepted degree of harmonization and standardization of SHP property determination in field and laboratory, and to provide SHP data that is based on standardized procedures to be used as a support for the EU Soil Policies.

Actions

On December 6th 2017 in Brussels, The INSPIRATION meeting was held to build upon commitment among policy-makers, manufacturers, developers, researchers and users. The Motivation and Approach (above) were underlined almost unanimously during the workshop. And three main goals of SOPHIE – Standardization, Harmonization, and Innovation were presented, discussed and concluded during workshop. Representatives of the International Soil Modelling Consortium (ISMC), the International Soil Reference and Information Centre (ISRIC), WEPAL, and the other participants indicated their commitment towards developing SOPHIE, and it was concluded that SOPHIE should be extended.

The following actions are currently being worked-out:

- Involvement in a COST-action, currently being written, upon SOPHIE to get things running
- Fourteen EU labs participate in a lab-inter-comparison for SHP-properties
- Methodology comparison for EY-HYDI database and meeting with JRC
- Inventory of funding possibilities, and links to existing PhD research



SOPHIE works on the development of an international network to harmonize, standardize and innovate towards cost-effective measurements of soil hydro-physics properties.



Website

A SOPHIE-website with subscription possibility is now online. After subscription you will be kept informed about any updates, and preliminary contribution possibilities.

<https://www.wur.nl/en/article/Soil-Program-on-Hydro-Physics-via-International-Engagement-SOPHIE.htm>

