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Standarization, harmonization and innovation of soil hydrophysical properties through international exchange (SOPHIE)

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Soil Hydro-Physics (SHP) properties are the properties that determine the Soil-Water-interactions: i. water flow and water retention, and ii. with the water flow the transport of dissolved compounds, like for example nitrogen, phosphates, pesticides, antibiotics, organics. 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, among others. The need for reliable SHP-properties is widely emphasized by researchers and consultants. However, concurrently it is recognized that harmonization, and the development of new techniques is difficult to accomplish. This is due to the missing attention and missing direct visibility of SHP-properties in the societal topics they address. As a result 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 existing soil data bases, like LUCAS, and in large scale studies. To accomplish this, SOPHIE works on the development of an international network that is needed, and will be used as a driving force to harmonize, standardize and innovate towards cost-effective measurements of SPH properties. SOPHIE's ambition is to provide a generally accepted degree of harmonization and standardization of SPH 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. The INSPIRATION meeting on Dec, 6th 2017 in Brussels, was used to build upon commitment among policy makers, manufacturers, developers, researchers, and users. SOPHIE's motivation and approach was underlined almost unanimously during the workshop. Representatives of the International Soil Modeling 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. During the EGU meeting we will further elaborate on the implementation of SOPHIE and its program: the short and long term focus and the possible partners.