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### Advances in Observation, Classification and Mapping of soils

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In this talk an overview is provided how soils are observed, classified and mapped. Soils can be observed in a soil pit, using a soil auger or push probe, along road cuts and in quarries. An overview is presented of the measurement of soil properties and morphometric characteristics, soil depth functions, and soil profile imaging and mapping. The overall purpose is enhanced understanding including more objective ways of identifying and delineating soil horizons and treating the soil as a continuum with depth. There has been considerable progress in the in-situ measurement of soil properties and soil functions linking a range of instruments with soil inference systems on delineation and assessment of soil horizon purity, and the realization. Systematic classification of soils started in the mid-1800s - initially focusing on geologic concepts and parent materials and then with an emphasis on climate and vegetation. Since that time, classification systems have been developed that have focused on, for example, chromatic aspects, soil age and development, textural differentiation, maturatal - based on age or zonal and azonal groupings. There has been wide discussion on whether systems should be genetic or morphometric. Soils are classified as-they-are, and not to classify them according to guesses about their origin. Soil classification leaped in the early 1950s. Both Soil Taxonomy and WRB have been endorsed by the International Union of Soil Sciences (IUSS) as the internationally accepted soil classification systems. There are great hopes and strides that newly developed Universal Soil Classification System may move soil classification in the 21st century following rapid advances in soil mapping. Soil cartography, which originated in Germany, France, Austria, the Netherlands, and Belgium in the 1850s and 1860s, was based on ideas and classification approaches from agrogeology. The demand for soil mapping was greater in Russia and the USA than in Europe because of the need for



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the development of new and extensive territories for agriculture. There are large differences among countries not only in the status of mapped areas (extent, scale) but also in the status of scanning and digitizing existing information and combining it with other data layers to produce digital soil maps.

**Keywords:** Soil profiles, soil mapping, pedology



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