

Opportunities and limitations of near surface geophysical methods for the investigation of ungauged basins.

Characterizing field site at the hillslope and catchment scale, is usually based on sparse or incomplete experimental data. For example, traditional experimental approaches to measure the spatial-temporal variability of soil moisture rely either on point-scale measurements (such as time domain reflectometry, TDR), which usually provide a high temporal resolution, or techniques averaging over large spatial scales (such as satellite or aircraft based remote sensing), which often do not provide the needed temporal resolution. Thus, there is a well-known tradeoff between the spatial and the temporal scale as well as between the resolution capabilities and the subsurface area or volume covered by such traditional field techniques. Geophysical methods offer the opportunity to rapidly collect spatial subsurface information in a non- or minimally invasive manner, and, considering their resolution capabilities, to at least partly fill the measurement gap existing in the more traditional approaches. This explains the rapidly growing interest to use such geophysical methods in hydrological applications. In this talk we will show using examples how geophysical methods can contribute to the hydrological characterisation of the subsurface at different scales.