



Seasonal ERT monitoring of subsurface processes connected to freezing, thawing, snow accumulation and melt cycles

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For a better understanding of processes that influence snowmelt infiltration and runoff, and their consequences on soil erosion during spring periods, we established a long-term winter-spring ERT transect in the Gryteland catchment (Norway). The ERT transect is 71 m long, with 1 m spacing between the electrodes. It covers a depression with a north and south facing slope. The readings are collected once a week and, if needed, after a sudden change in weather conditions. Additionally, the soil transect is equipped with six TDR profiles, which register soil moisture and soil temperature every thirty minutes, at five depths (5, 10, 20, 30, 40 cm), for quantifying the ERT readings.

The measurements performed during winter 2014/2015 gave promising results and showed the potential of ERT monitoring for understanding the soil thermal and hydraulic processes occurring during a winter and early spring. Moreover, there are visible differences in temporal trends and spatial variations in observed ERT patterns on the opposite facing slopes, which are of special interest. With the on-going experiment, we are aiming to understand the reoccurrence of the observed processes as well as to quantify soil moisture patterns.

Herein, we would like to present the preliminary result of two ERT experiments (2014/2015 and 2015/2016) and discuss the advantages and limitations of our experiments. Moreover, we would like to stimulate the discussion about the potential of ERT for spatial and temporal monitoring of soil hydraulic and thermal processes and indirect measurements of soil water content.