



## **Quest for the best method to monitor snow water equivalent**

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The water equivalent of the snow cover (SWE) is an important variable for water resource management, flood warning and the determination of snow load requirements for buildings. The measurements of SWE are particularly important in mountain regions where measuring winter precipitation by conventional rain gauges is problematic due to wind under-catch. Manual measurements of SWE are time consuming and therefore often only performed on monthly time-intervals. The automatic measurement of SWE is often not reliable despite the fact that some commercially available devices are on the market. These devices need either regular calibration, complicated post-processing or are limited by a maximum SWE they are able to measure. Therefore, SWE is still mostly measured manually in the all European countries. We use multi-year parallel measurements of SWE with snow pillow, snow scale, ground penetrating radar and GPS receivers from the high alpine site Weissfluhjoch (2540 m asl) in the Swiss Alps to analyze pros and cons of the different methods. We assess the different SWE measurement methods during the typical seasonal evolution of the snow pack and compare it with state of the art parameterization and modelling approaches. A special focus will be given to the correction of the often occurring under-measurement of pressure based sensors.