



## **Diving into the methodology: Investigating climatic and geologic controls on local groundwater dynamics**

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The abstract “Investigating climatic and geologic controls on local groundwater dynamics” (EGU2018-6827) describes a newly developed approach to delineate different types of groundwater dynamics based on a number of non-redundant indices derived from time series characteristics. Furthermore, the interconnection between these indices and system descriptors controlling the dynamics are analyzed. Controls with high relevance in the separation of groundwater dynamics classes, are selected from a number of candidates by applying and comparing cluster analysis methods. This contribution presents details of the methodology by illustrating how the candidate controls of climate and geology were derived. Examples for descriptors are aquifer characteristics, climatic descriptors, surface properties and topography-based descriptors. We explain the concepts and discuss the underlying hypotheses of how the controls influence groundwater dynamics. We especially focus on the newly introduced topography-based and bore log derived descriptors, which were selected from recent literature and expert knowledge. Further, we show the influence of cluster methods to identify dominant controls from candidate descriptors. The results are used for a groundwater system classification based on a joint evaluation of dynamic and static aspects of groundwater systems in terms of inputs and responses and for a subsequent regionalization of groundwater dynamics.