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## Technical Note: Seasonality in alpine water resources management – a regional assessment

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**Abstract.** Alpine regions are particularly affected by seasonal variations in water demand and water availability. Especially the winter period is critical from an operational point of view, as being characterised by high water demands due to tourism and low water availability due to the temporal storage of precipitation as snow and ice. The clear definition of summer and winter periods is thus an essential prerequisite for water resource management in alpine regions. This paper presents a GIS-based multi criteria method to determine the winter season. A snow cover duration dataset serves as basis for this analysis. Different water demand stakeholders, the alpine hydrology and the present day water supply infrastructure are taken into account. Technical snow-making and (winter) tourism were identified as the two major seasonal water demand stakeholders in the study area, which is the Kitzbueheler region in the Austrian Alps. Based upon different geographical datasets winter was defined as the period from December to March, and summer as the period from April to November. By determining potential regional water balance deficits or surpluses in the present day situation and in future, important management decisions such as water storage and allocation can be made and transposed to the local level.

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