



Can reservoirs and lakes alleviate future water scarcity in Switzerland?

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Runoff regimes in alpine regions are expected to change towards higher winter but lower summer discharge. This lower discharge will coincide with high water demand for irrigation and water shortages might become more likely by the end of the century. One possible adaptation measure is the extension of current uses of reservoirs to alleviate water shortages. We assess the potential of reservoirs and lakes for the alleviation of water scarcity in Switzerland. For this, we estimated water supply and demand under current and future conditions for 307 medium-sized catchments based on the EURO-CORDEX scenarios. Water surplus or shortage was derived as the difference between supply and demand. Estimates for summer water shortage were compared to regional storage capacity of reservoirs and lakes to determine the potential of the latter for alleviating summer water scarcity. The results show that water shortages are expected in the lowland regions north of the Alps and less within the Alps. In the former, natural lakes have a high potential for alleviating water scarcity. Alpine catchments with a high storage capacity can potentially also contribute to the alleviation of water shortage downstream. However, a spatial mismatch between water scarcity and storage availability often exists. Alternative adaptation strategies addressing the demand side of the water shortage problem might therefore be necessary.