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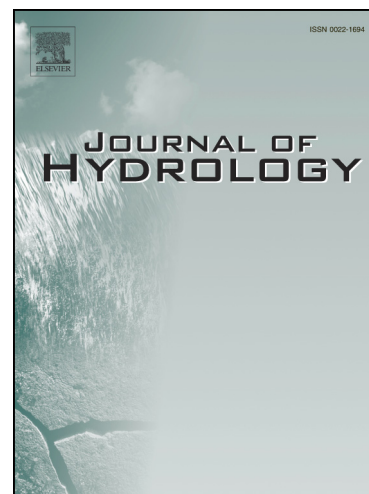
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THE SUITABILITY OF USING DISSOLVED GASES TO DETERMINE GROUNDWATER DISCHARGE TO HIGH GRADIENT STREAMS

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Abstract

Determining groundwater discharge to streams using dissolved gases is known to be useful over a wide range of streamflow rates but the suitability of dissolved gas methods to determine discharge rates in high gradient mountain streams has not been sufficiently tested, even though headwater streams are critical as ecological habitats and water resources. The aim of this study is to test the suitability of using dissolved gases to determine groundwater discharge rates to high gradient streams by field experiments in a well-characterized, high gradient mountain stream and a literature review. At a reach scale (550 m) we combined stream and groundwater radon activity measurements with an in-stream SF₆ tracer test. By means of numerical modeling we determined gas exchange velocities and derived very low groundwater discharge rates

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