



## **Porosity and permeability studies along fault zones in the Wetterstein platform (Triassic) of the Hochschwab area (Eastern Alps, Styria)**

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The Hochschwab area is a karst plateau in Styria (Austria) that covers an area of about 560 km<sup>2</sup>. Springs in this area provide about 60% of Vienna's drinking water. The stratigraphic sequences comprise Permian to Upper Triassic sedimentary rocks, including limestones and dolostones of the Wetterstein Fm.

The groundwater circulation follows an E-W directed fluvial pattern and is mainly controlled by major tectonic faults. The aim of this study is the investigation of the porosity and permeability evolution along these faults from main slip zones to unfractured protolith.

Using the standard fault core and damage zone model, we grouped samples into unfractured and fractured protolith as well as in different fault rocks, like breccias, cataclasites and stylolitic-fault rocks. Rocks of the damage zone are classified by their fracture density (m<sup>2</sup> fracture surface per m<sup>3</sup> rock) and fault rocks according to their matrix content and differences in grain sizes.

A total of 287 samples from 10 different faults has been investigated in the laboratory using different methods for porosity and permeability measurements. Results indicate that limestones and dolostones show different trends in the poro/perm evolution along fault zones. Also the different rock categories show complex poro/perm features within one lithology.

Furthermore this study also deals with the applicability of the used methods for the different rocks categories and presents ideas for further applications.