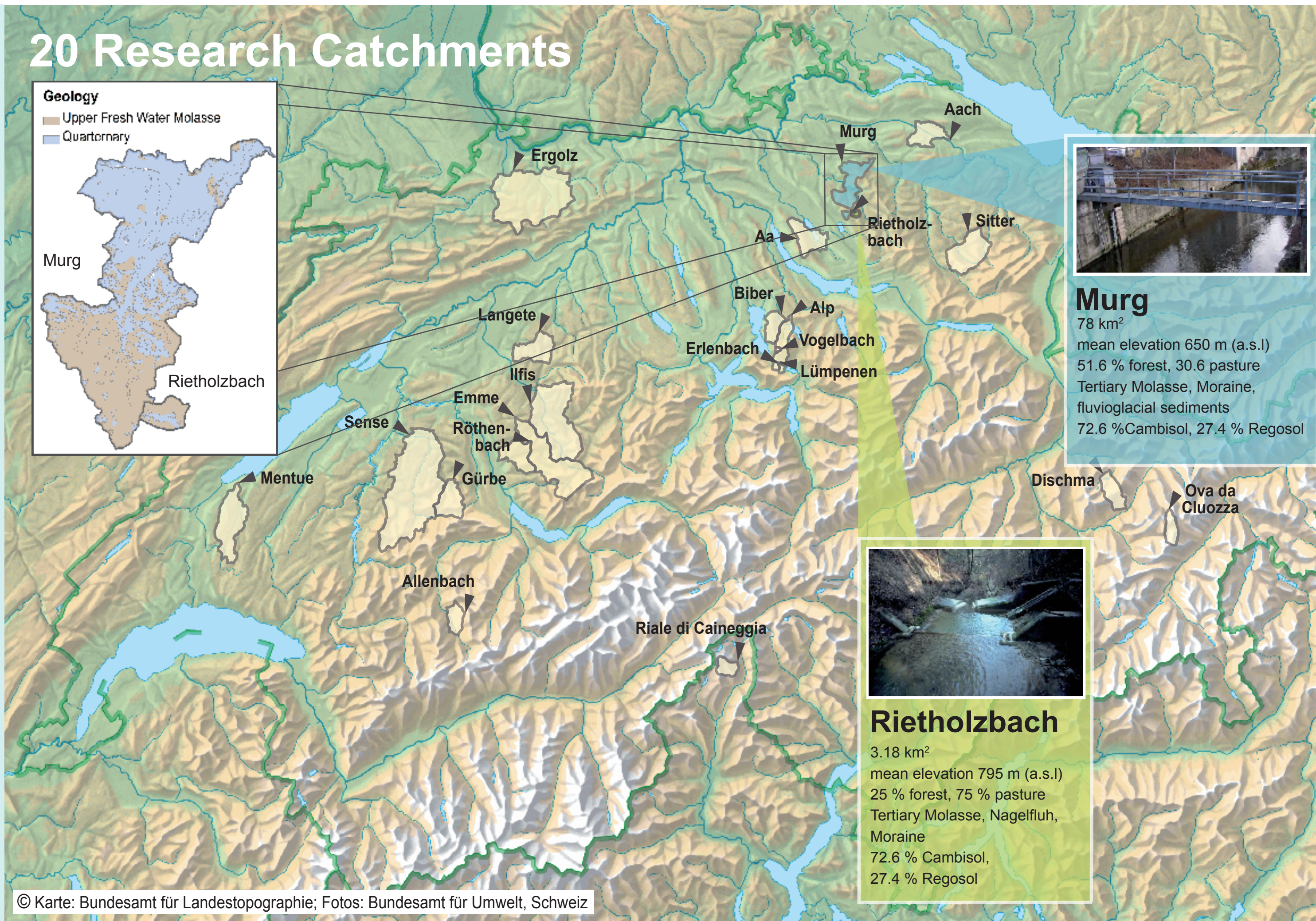


INTRODUCTION

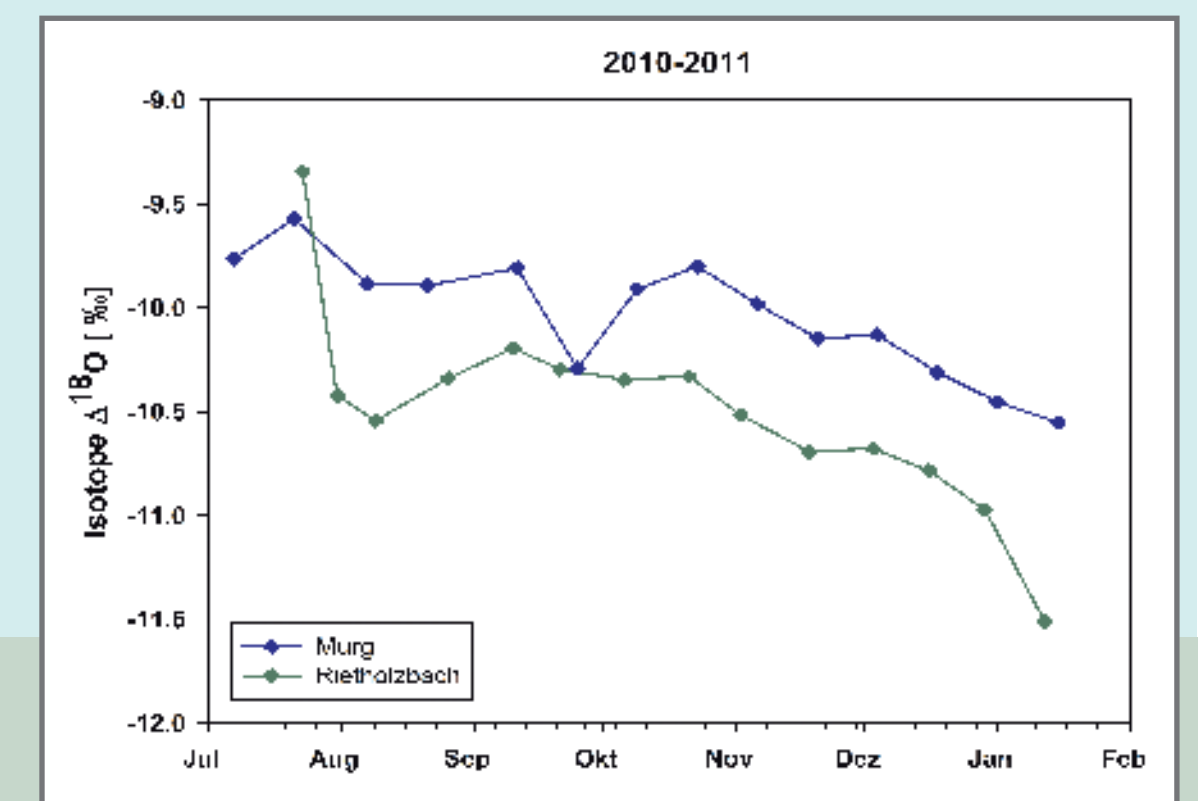
Groundwater storage in mountain regions takes place in fractured rock, moraines, alluvial valleys and talus slopes. Such various geological and morphological structures are therefore important water reservoirs and represent in their entirety the total water storage of mountain catchments. Groundwater modeling is widely used to study lowland aquifers and porous media, but there is still a lack of research and modeling in mountainous regions where measured data is often sparse. Particularly under drought conditions it is necessary to analyze subsurface processes to identify the vulnerability of mountain areas.



STUDY SITE

Selection of 22 catchments with different hydrological, geological and climatological conditions. The first focus is on the catchment Murg and Rietholzbach.

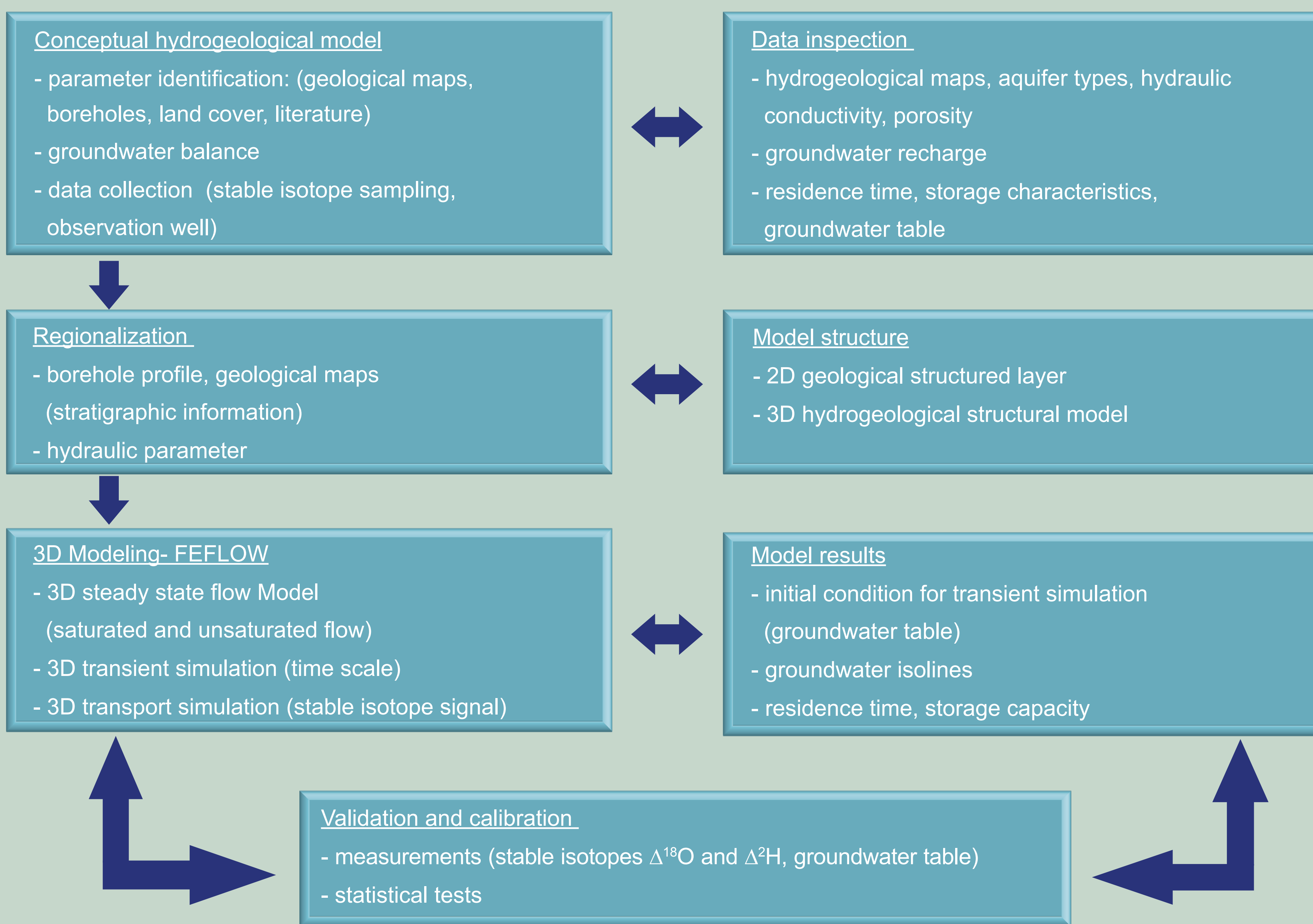
- Catchment selection and requirements:**
- Area of 20 - 200 km² with different catchment characteristics
 - Low impact of glacier, lakes or human activity
 - Bi-weekly isotope sampling at the runoff stations



METHOD

The approach will be based on a combination of alpine catchment analysis, groundwater modeling and stable isotope applications for the characterization and validation of catchment storage characteristics.

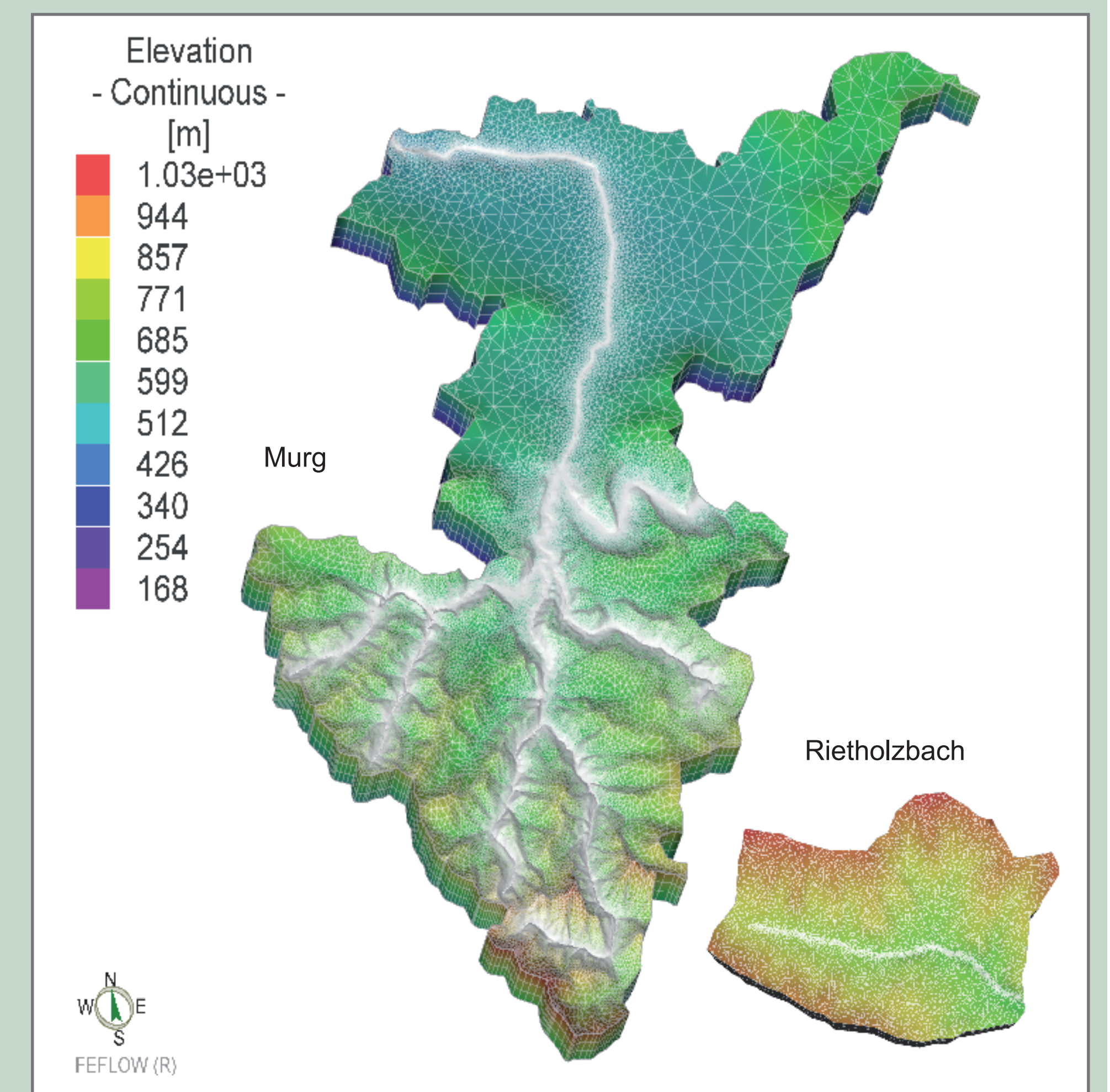
CONCEPT



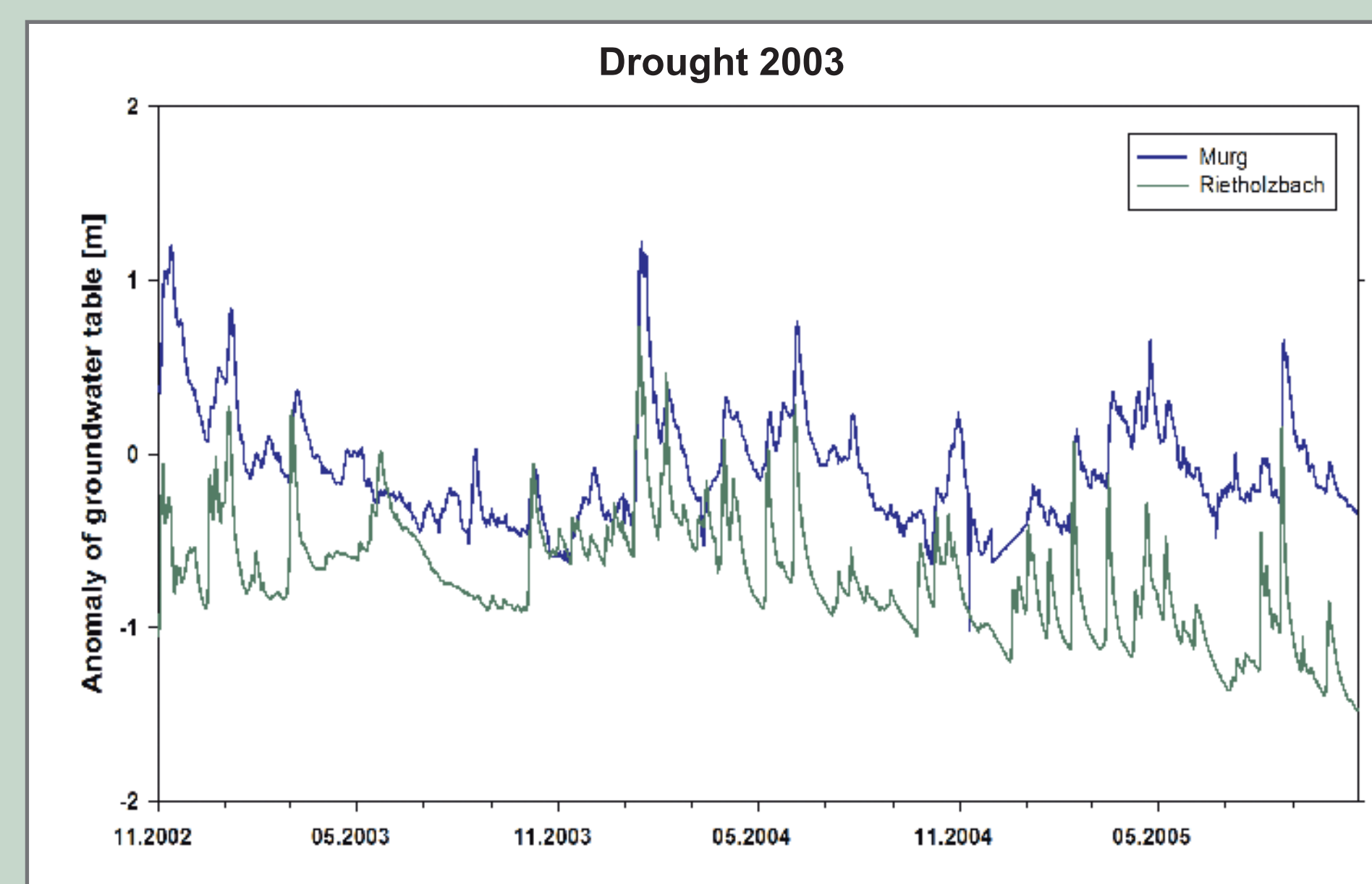
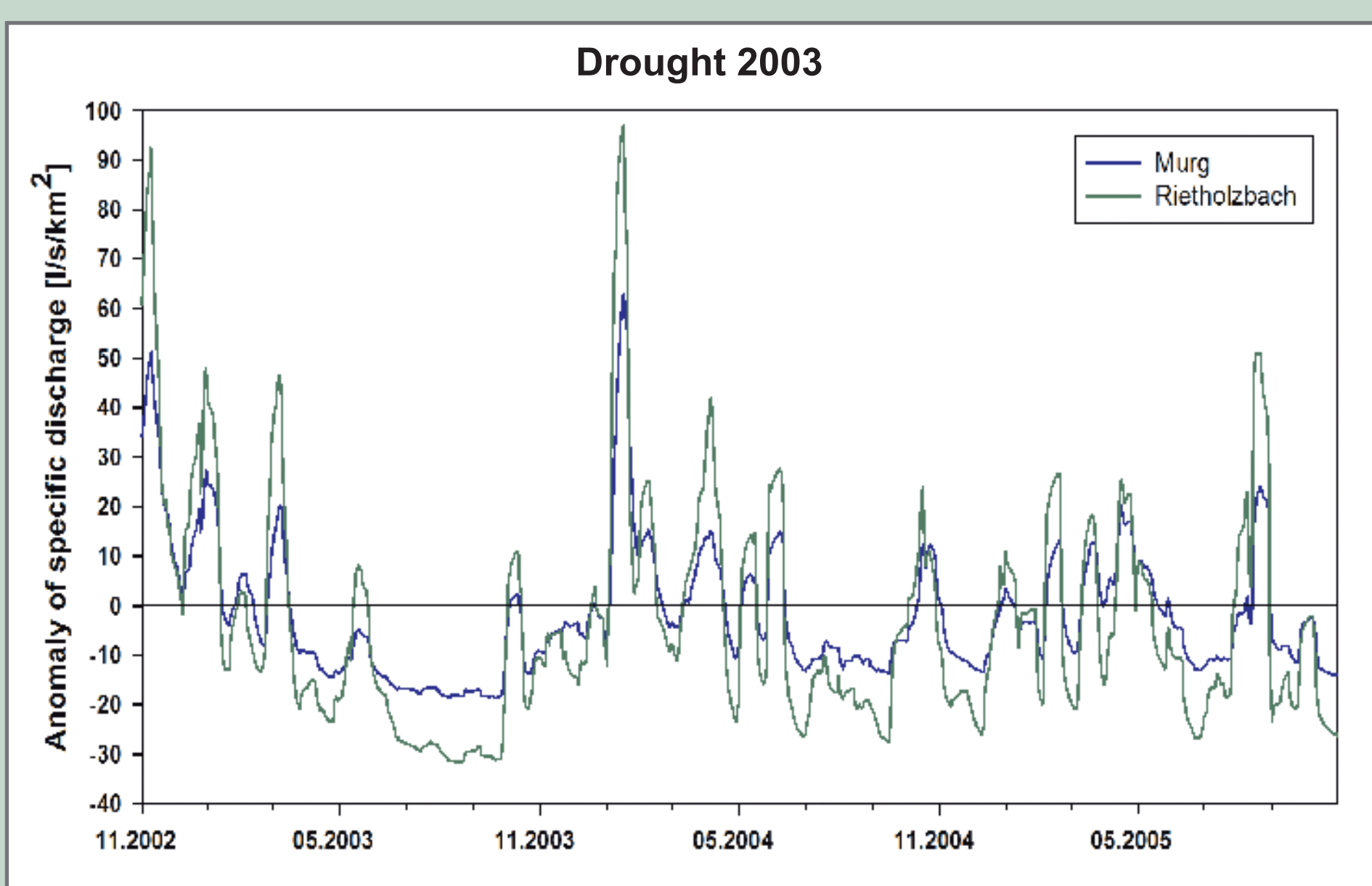
OBJECTIVES

- Identification of the vulnerability of different catchments to drought and critical low flow conditions
- Adaptation of existing groundwater modeling approaches to mountainous catchments
- Use of stable isotopes as an independent information for calibration and validation

MODEL



DATA



SUMMER DROUGHT 2003

- Different catchment response of Murg and Rietholzbach
- Effect of groundwater table depression noticeable until 2005
- Storage capacity of Murg and Rietholzbach depending on different catchment characteristics

Is Murg less vulnerable to drought as Rietholzbach?

EXPECTED OUTCOME

The project in general will support a better understanding of hydrological processes in mountainous regions, and in particular under drought and low flow conditions. Furthermore the proposed approaches will provide crucial information for a better drought risk management in the context of progressive climate change.

ACKNOWLEDGEMENT

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