

# MONITORING & MODELLING Spatially distributed water needs and soil properties in South Tyrol

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## INTRODUCTION

- Managing depletion irrigation requires local spatial distributed knowledge of climate, soil property, ground water and real-time sensor measurement.

## AIMS

- Deploy spatial distributed soil water monitoring network in apple orchards.
- Assess irrigation needs.
- Develop top soil properties maps.
- WebApp for irrigation scheduling.

## METHODS

- Network of soil moisture and soil water potential sensors.
- Large soil property database.
- ET modelling (Penman-Monteith).
- Regression Kriging.

## RESULTS

- Sensors highlight complex interplay of soil properties and ground water.
- Improved water balance model, validated with soil water sensors.
- Spatial distributed maps of ground water and soil properties.

# Soil texture and shallow ground water play a key role in managing depletion irrigation



## Water balance and soil sensor approach



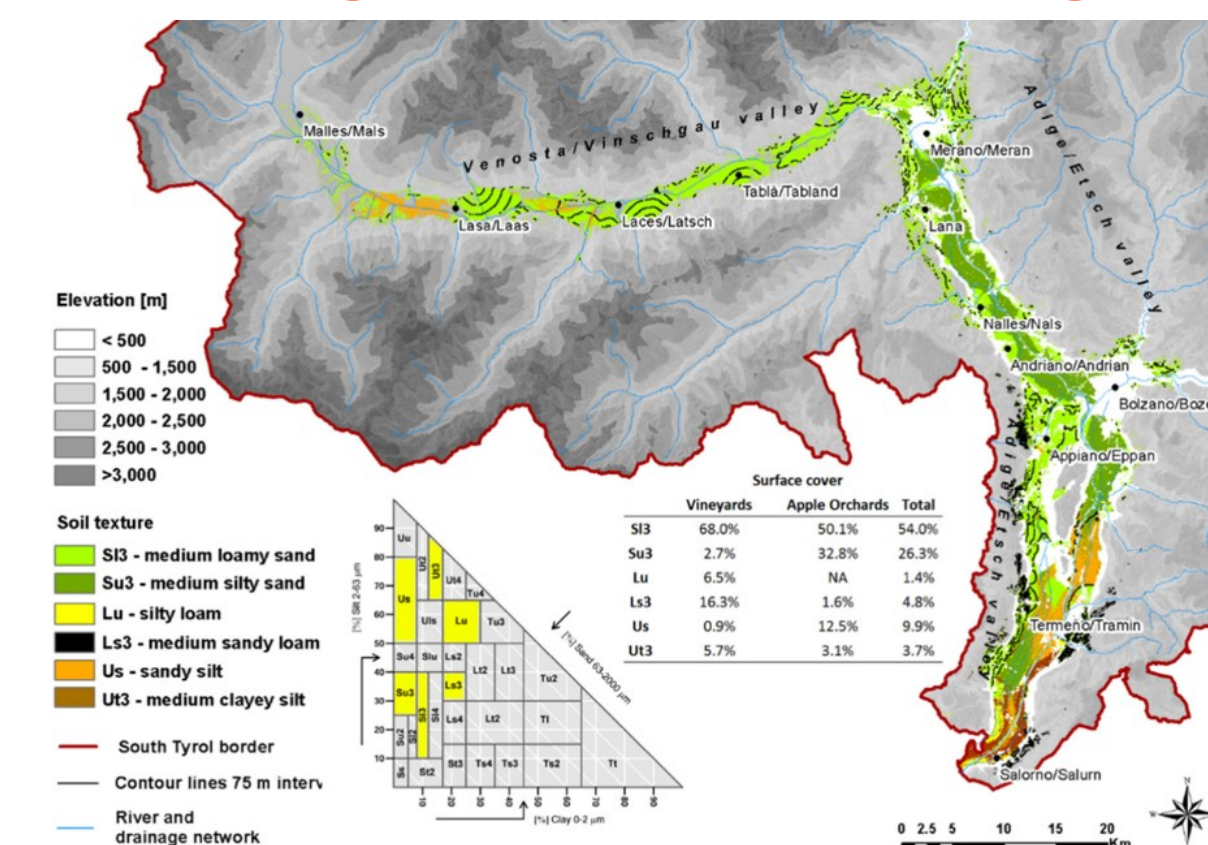
Web Soil Map



Soil Map Publications

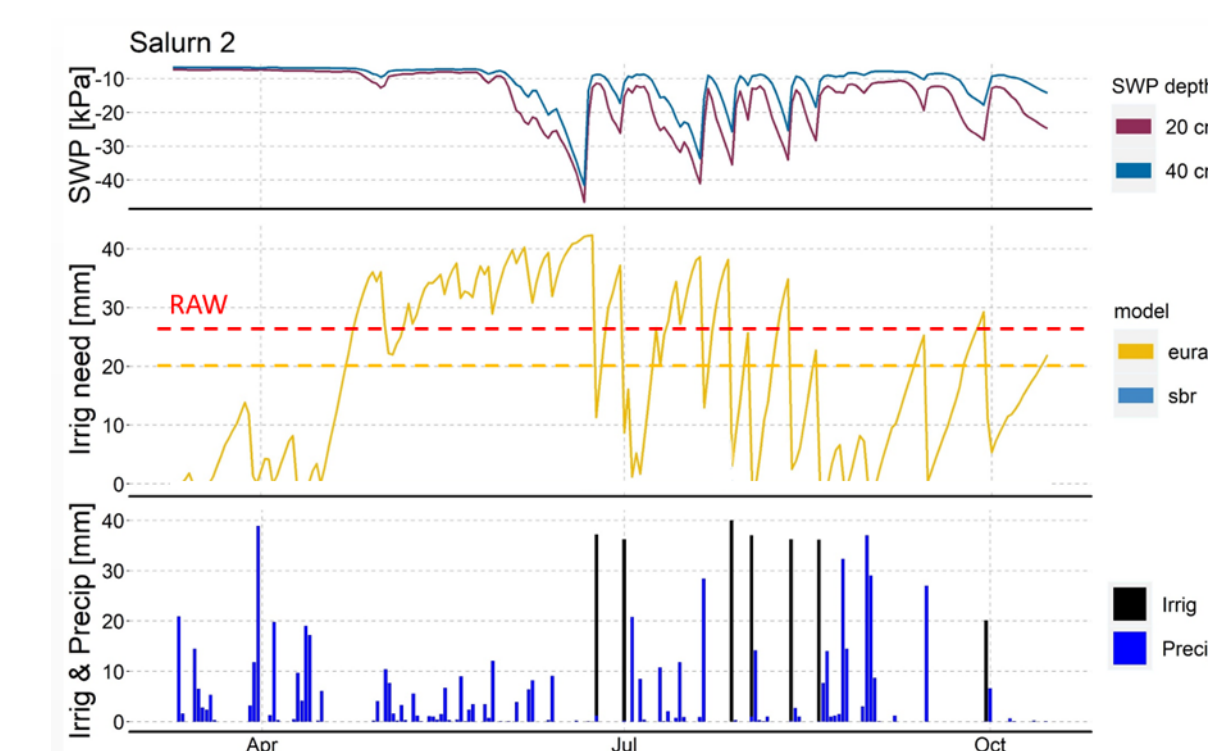


## Digital soil mapping



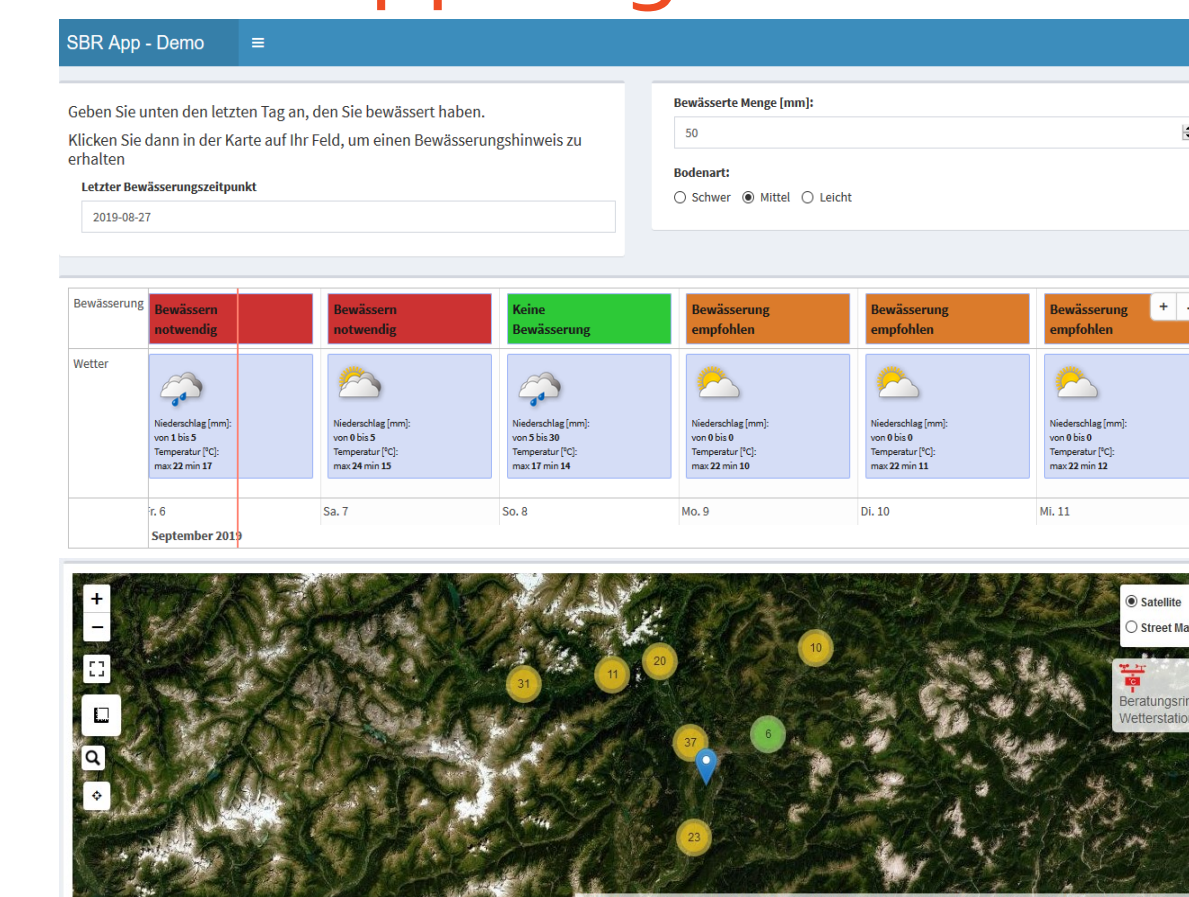
Topsoil texture maps derived from 20,000 soil samples. **Postglacial landforms** strongly influence soil texture spatial pattern.

## Water balance modelling



**Real-time monitoring** by means of soil water balance modelling and soil sensors approach simultaneously.

## WebApp irrigation needs



**Real-time irrigation scheduling** tool by combining soil maps, real-time plant available water and weather forecast.

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