

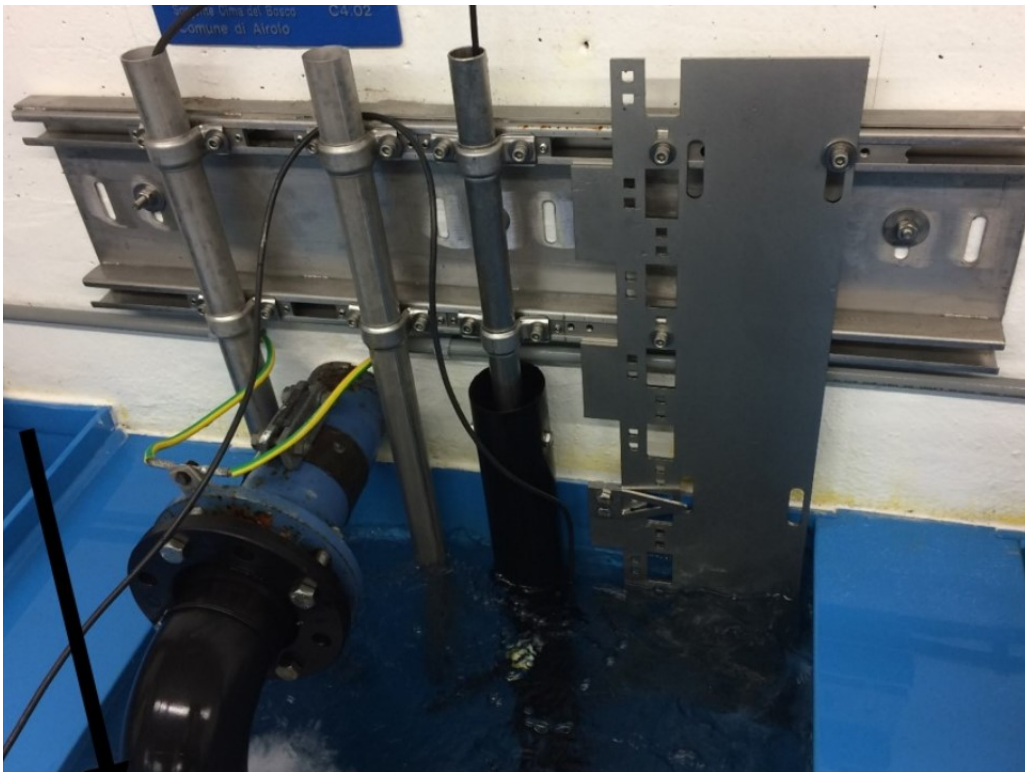


Basic information: Groundwater temperature

Groundwater temperatures in characteristic groundwater sources in Switzerland are monitored in the NAQUA National Groundwater Monitoring programme, QUANT and TREND modules.

Data acquisition

Groundwater temperature is recorded at springs, piezometers or extraction wells that allow direct access to groundwater. Measurements are made using fixed pressure probes that take a reading every five minutes and are registered by a digital data logger. The values are regularly inspected and checked for plausibility. The natural state in the aquifer is monitored at springs and piezometers. In an extraction well, however, the groundwater temperature may be temporarily disrupted during pumping.



NAQUA-QUANT spring gauging station for monitoring water temperature, electrical conductivity, turbidity and water level.

Statistics

Statistical evaluations at piezometers and springs are based on the average value of the groundwater level or discharge at each gauging station. This average value is calculated from the average values of the time period observed (day, month, year, standard period). The values measured in the standard period 2001-2020 are currently being used to compare the groundwater temperature of a particular year with the long-term development. At present, such continuous data sets are available from 48 monitoring sites. All the other monitoring sites operating in 2022 have a shorter set of data.

Reference values

Groundwater temperatures are usually classed in the long-term trend as below, above or equal to the expected conditions. The calculation is based on data set percentiles for the entire measurement period or a standard period. Groundwater level or spring discharge rates are considered significantly

lower than average if the current measurement is below the long-term 10th percentile, i.e. if it is in the lowest 10% of all values measured during the standard period of the given time interval (day, month, year). A groundwater temperature between the 10th and 90th percentile means that conditions are normal. If the latest measurement exceeds the 90th percentile, i.e. it is in the highest 10% of values measured, the groundwater temperature significantly exceeds the long-term average.

Link

NAQUA National Groundwater Monitoring

<https://www.bafu.admin.ch/bafu/de/home/themen/wasser/publikationen-studien/publikationen-wasser/ergebnisse-grundwasserbeobachtung-schweiz-naqua.html>