

# Hydrological Yearbook of Switzerland 2018

Discharge, water level and water quality of Swiss water bodies

Summary of the publication «Hydrologisches Jahrbuch der Schweiz 2018»  
[www.bafu.admin.ch/uz-1907-d](http://www.bafu.admin.ch/uz-1907-d)

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# Summary

## Weather conditions

The annual mean nationwide air temperature in Switzerland in 2018 was 1.5 °C above the 1981–2010 average and the highest since records began in 1864. Annual precipitation widely totalled 80 to 95 % of normal levels, with some areas south of the Alps recording 100 to 115 %. In eastern Switzerland, the annual total was significantly below average.

## Snow and glaciers

Over the winter as a whole, snow depths at altitudes above 1,500 m were around the same as in 2008/09. The last time they exceeded this level was the winter of 1981/82. By contrast, below 1,000 m there was only half as much snow as usual. In the hot summer of 2018, glaciers again suffered massive losses. However, thanks to the huge quantities of winter snow, the melt was much less dramatic than it would otherwise have been.

## Discharge conditions and lake levels

North of the Alps and in Valais, there were two major discharge events in January. In less glaciated areas, discharges dropped from mid-June to early December. During this period, many gauging stations recorded new monthly lows. Over the year as a whole, discharge levels were very low on many rivers in the Swiss Plateau. Only annual discharges in heavily glaciated catchments were well above average. In southern Switzerland, annual discharges were significantly above average, despite periods of low water levels. In late October and early November, persistent precipitation caused rapid and significant increases in discharge in the Ticino River and Maggia River catchments.

The levels of most large lakes were below the long-term average. At -21cm, Lake Maggiore deviated most markedly from the normal level. Due to the large amount of precipitation in January, the levels of Lake Constance and Lakes Neuchâtel, Biel and Murten reached very high values for the time of year. However, there were also new monthly lows on the larger Swiss Plateau lakes in the second half of the year, caused by the drought. North of the Alps, the low water situation did not ease until December.

## Water temperatures

Many monitoring stations recorded new highs for annual mean water temperature. Due to the low water flow and the long periods of intense sunshine combined with high air temperatures, many stations recorded new absolute maxima for water temperature over the summer.

## Stable isotopes

The mild winter of 2017/18 resulted in precipitation with above-average  $\delta$  values for the time of year. In parallel with high air temperatures, high  $\delta$  values compared with long-term observations were recorded at an early date in spring 2018. These seasonal changes in  $\delta^2\text{H}$  and  $\delta^{18}\text{O}$  values were also evident in watercourses.

## Suspended sediment loads

Due to the drought and low water levels, monthly total sediment loads in summer were below those of the reference period at nearly all monitoring stations. Above-average quantities were only observed on the Rhone in Valais over the summer and after heavy rainfall in January, and at the end of the year at several stations north of the Alps and in Ticino.

## Groundwater

As a result of the prolonged drought, groundwater levels and spring discharges became increasingly low over the course of 2018. Like the surface watercourses, they only rose again towards the end of the year. High groundwater temperatures were recorded at half of all monitoring stations in the second half of the year.

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## Further information

Further information on the topics of the Hydrological Yearbook and the FOEN hydrometric monitoring networks, and current and historical data can be found online at:

[www.bafu.admin.ch/hydrologicalyearbook](http://www.bafu.admin.ch/hydrologicalyearbook)

**Current and historical data:**

[www.hydrodaten.admin.ch/en](http://www.hydrodaten.admin.ch/en)

**FOEN Hydrological Bulletin:**

[www.hydrodaten.admin.ch/en/hydro\\_bulletin.html](http://www.hydrodaten.admin.ch/en/hydro_bulletin.html)

**FOEN Groundwater Bulletin:**

[www.hydrodaten.admin.ch/en/groundwater-bulletin.html](http://www.hydrodaten.admin.ch/en/groundwater-bulletin.html)

**Results of the NAQUA National Groundwater Monitoring Programme:**

[www.bafu.admin.ch/naqua](http://www.bafu.admin.ch/naqua)

**Results of the National River Monitoring and Survey Programme (NADUF) – data download:**

[www.eawag.ch/en/departement/wut/main-focus/chemistry-of-water-resources/naduf](http://www.eawag.ch/en/departement/wut/main-focus/chemistry-of-water-resources/naduf)

**National River Monitoring and Survey Programme (NADUF) – monitoring network:**

[www.bafu.admin.ch/naduf](http://www.bafu.admin.ch/naduf)

**Results of the National Surface Water Quality Monitoring Programme (NAWA) on maps:**

<https://s.geo.admin.ch/7902c509b7>

**National Surface Water Quality Monitoring Programme (NAWA):**

[www.bafu.admin.ch/nawa](http://www.bafu.admin.ch/nawa)

**Water indicators and further information about water**

[www.bafu.admin.ch/water](http://www.bafu.admin.ch/water)