



The new Swiss climate change scenarios CH2018

Andreas Fischer (1), Kuno Strassmann (2), Sven Kotlarski (1), Christoph Schär (3), Mischa Croci-Maspoli (1), Reto Knutti (3), Angela Michiko Hama (1), and Cornelia Schwierz (1)

(1) Federal Office of Meteorology and Climatology MeteoSwiss, Climate Division, Zurich-Airport, Switzerland (andreas.fischer@meteoswiss.ch), (2) Center for Climate Systems Modeling (C2SM), ETH Zurich, Switzerland, (3) Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland

To make sound decisions in the face of climate change, governmental agencies as well as policymakers and private stakeholders require the most accurate information on future climatic changes on local to regional scales. As such, the new Swiss climate change scenarios CH2018 form an important working basis for the government's adaptation strategy. In addition, they also highlight the potential benefit of global mitigation efforts for Switzerland.

The new climate change scenarios are the result of a joint collaboration among the Federal Office of Meteorology and Climatology MeteoSwiss, ETH Zurich and the Center for Climate Systems Modeling (C2SM) as main partners. The CH2018 scenarios represent the third generation of national climate scenarios in Switzerland. From the start of the project, CH2018 has been set up as a climate service, constituting one of the priority areas of the Swiss National Centre for Climate Services (NCCS).

The new scenarios are based on the EURO-CORDEX regional climate projections. They reveal four main changes that will shape the climate in Switzerland by mid-century in the absence of strong mitigation efforts:

1. **Dry summers:** Near-surface air temperature for an average year will rise by 2.5°C to 4.5°C in the summer months by mid-century in comparison to today. At the same time, there will be up to a quarter less rainfall, and the longest dry period without precipitation will last nearly three weeks.
2. **More hot days:** On the hottest days of an average year, it will be 2°C to 5.5°C warmer than now. Hot summers such as those of the record years 2003 and 2018 could thus become the norm. Heatwaves will become more frequent and more extreme.
3. **Heavy precipitation:** Individual heavy precipitation events will be more frequent and more intense in the future than today. The intensity of a 100-year precipitation event will increase by about 20%. The projected changes in the intensity of heavy precipitation events on daily to hourly time scales are consistent with an increase of 6 - 7 % per degree warming.
4. **Snow-scarce winters:** Winters will be significantly warmer than current ones. The zero-degree line will climb from today 850 m to 1500 m above sea level on average. Snow will therefore become less frequent.

With strong climate mitigation efforts, about half of the potential changes by mid-century in Switzerland's climate could be avoided.