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# Future road salt use in Switzerland: an example of an effective climate service

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The application of salt is the predominant measure taken to enhance road safety in Switzerland by clearing the roads from snow or preventing frozen surfaces during winter. The need for road salt exhibits a strong interannual variability, according to Schweizer Salinen AG – the Swiss monopolist for production and distribution of road salt. These fluctuations are to a large extent a direct consequence of the year-to-year variability in winter climate.
In the course of the 21st century, Swiss climate is projected to depart significantly from present and past conditions. By the end of the century, winter temperatures over Switzerland are expected to rise by about 2-4°C relative to the mean over the period 1980-2009, while winter precipitation may either increase or decrease based on ENSEMBLES regional climate model projections under the SRES-scenario A1B.
Faced with these changes, Schweizer Salinen AG asked for an estimate of the expected future road salt use for designing their long-term business strategy.
The study is based on climate change projections from the CH2011 initiative and later extensions thereof as well as monthly sales data of road salt from Schweizer Salinen AG. For the period 1997-2013, a linear relationship was derived between the average number of days with snowfall and the road salt amount sold over "saltation years" defined from October 1st to September 30th in the 26 cantons (provinces) of Switzerland. The ad-hoc linear relationship was applied to the climate change projections to obtain future salt use information in three future periods for the greenhouse gas emission scenarios A1B, A2 and RCP3PD.
We find that the expected future salt use is likely to be reduced by about 50% in 2045-2074 under the scenario A1B. Currently, the countrywide mean annual road salt use corresponds to about 220'000 tons. In a particularly snow-rich year, the company sells up to 400'000 tons. At the end of the century, following a pessimistic scenario such as A1B or A2, the long-term mean salt use may even drop below today's annual minimum of 70'000 tons.