



## Changing climatic variability in Switzerland

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This paper investigates the shift in variance under conditions of atmospheric warming, under the paradigm that a warmer climate induces greater variability, as has been suggested by a number of other studies. Based upon observational data since 1900 at both a low and a high elevation site in Switzerland it is shown that, at least for these locations, the inter-annual and decadal variability of both maximum and minimum daily temperatures has in fact *decreased* over the course of the 20<sup>th</sup> century despite the strong warming that has been observed in the intervening period. The decrease in climate variability is attributed to changes in daily weather conditions as well as these aggregated in weather types, with an observed reduction in the more perturbed weather types and an increase in the weather patterns that exhibit greater persistence, particularly since the 1960s and 1970s. The greater persistence recorded in daily weather conditions associated with more elevated pressure fields helps to explain the decrease in variability during a period where minimum and maximum temperatures have been observed to rise considerably since 1900. An insight into the future behavior of temperature variability in Switzerland, based on the daily results of a regional climate model applied to the IPCC A-2 emissions scenario (a high greenhouse-gas emissions scenario leading to strong climate forcing during the 21<sup>st</sup> century) suggests that a warmer climate may induce greater variability in maximum temperatures, but also greater persistence beyond selected thresholds; in the case of minimum temperatures, variance remains close to current conditions in the latter part of the 21<sup>st</sup> century, but the persistence of cold events diminishes substantially, as can be expected in a climate that is estimated by the climate model to warm by about 4°C on average in Switzerland.