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Subdaily instrumental data from Graz, Austria, starting in 1795

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The meteorological station at University of Graz, Austria has been recently recognised as WMO "Centennial Station", with measurements taken at the same location going back to the year 1891. Combined with data from nearby downtown stations (in particular at the former location of the University) the record extends back to the year 1836 - in this form the data are currently used in the HISTALP dataset. This record can, however, be extended at least four decades back in time:

Mr. Rospini, a man of great interest in natural sciences (and later his son and grandsons) measured temperature and pressure three times per day (morning, noon and evening) in the historic center of Graz - close to the former location of the University. Measurements apparently started as early as 1781, and have been continuously published in the "Grätzer Zeitung" from 1795 onwards. So far, we have been able to compile an almost uninterrupted record since 1797 (with just a few weeks missing in total), and we are trying to fill the remaining gaps for the two previous years. Temperatures are given in Réaumur, recorded at 7, 15 and 22 (confirmed for 1823, very likely for the time before). For the year 1837 we performed a consistency check, comparing our recently retrieved data with those from the University (which are used in the HISTALP dataset), yielding an annual mean offset of just +0.2 °C.

With those subdaily measurements, we cannot only extend the climate record, but we can also attempt to analyse particularly interesting years. Using the temperature recorded at 15:00 as proxy for the maximum temperature, we could identify the extremely warm Summer of 1834, with at least 35 days, where the temperature maximum was 30 °C or higher. Since we slightly underestimate the true number of "Hot Days" with this approach, we can assume that this summer was not too different from the record Summer of 2003, where our meteorological station recorded 41 "Hot Days" (with actual maximum temperature measurements). The second highest value in the "official" time series was obtained in 2015 with 34 "Hot Days". The year 1816, on the other hand, was indeed a "year without summer" - also in Graz, with just 11 days reaching a temperature of 25 °C or more.