

## Reply

The manuscript consists of three essential parts: a text, the list of references, and at last a few Figures and 2 detailed Tables. This reviewer will make some short remarks on these three parts.

The text is very interesting and explains why the findings of the (Swiss) early instrumental meteorological observations will contribute to a better understanding of decadal variability of the weather. The manuscript is in line with the evolution of the building of historical climatological data sets where the basic elements moved from average monthly climatological data in the nineties of the past century, at a later stage to daily values and to sub-daily values at present. The latter division allows a better understanding of climatic, and also of natural climate-related events, which had pronounced impacts on environment and society.

The main subject of the paper deals with the findings of an extensive archive survey of early meteorological data in Switzerland. This search resulted to the incredible estimate of 3640 station years and reaching back to the early 18 th century. This reviewer having been engaged in a similar search in his home country could hardly find a fraction of that impressive result. However, it should be noted that the political and societal conditions in the 18 th and early 19 th centuries in his home country were entirely different which might maybe explain the lack of observational meteorological time-series. Over the last 20 years this reviewer could only add a few 19 th century discoveries of meteorological data sets which remained unknown under searches carried out by scientists interested in historical climatology. Therefore, sincere congratulations to the authors of this manuscript.

The section on the history of meteorological measurements in Switzerland is very interesting and explains how Swiss scientists in the wake of the Enlightenment quantifying ideas made weather observations using the instrumental devises of their time. Furthermore, the authors describe the attempts to install a networks with the aim to publish compilations of meteorological data at different national, and transboundary, locations. The history of the ‘Societas Meteorologica Palatina’, the publication of the ‘Ephemerides’ comprising the meteorological information of the transcontinental network is described into some detail as 2 stations of the network were located in Switzerland.

The inventory resulted from the archive search of Swiss early meteorological measurements is well documented in the 2 tables. The text ends with 2 examples which were studied on the basis of the collected information.

[Thank you for this very positive feedback and your suggestions to improve the manuscript.](#)

Concerning the text part of the paper, this reviewer has some minor ‘cons’.

It would be interesting to provide similar information on the initiating of meteorological observations by MeteoSwiss replacing the words “and later MeteoSwiss” (see lines 41 and 42). Of course, information on the founding of MeteoSwiss is given in lines 208 to 217.

[Thank you for this suggestion. While in the introduction \(lines 41 and 42\), we aim at giving an overview on previous work in digitisation of instrumental series rather than describing the initiation of the national meteorological network in Switzerland, the latter is described in section two \(as you mentioned\). However, we will state the development of a national network in lines 41-42 more precisely in the revised manuscript. Furthermore, we will add some more information on this national network in section two \(e.g. number of stations\).](#)

This reviewer has the impression on the present and future availability of the digitized data sets mentioned in the manuscript. It looks like the authors remain vague and elusive on the subject.

line 53: “This made many Swiss records easier to access”. How?

lines 70 and 71: “A subsequent paper will describe the digitized records”

lines 256 and 257: “The digitized data, ..., will be described in a subsequent paper.” Maybe this can be made more clear in the next paper.

Thank you for this comment. Indeed, the manuscript does not elaborate on the matter of digitisation in detail, as its focus is put more on measurement history and archive work. Following your comment however, we will give a more precise outlook on digitisation in the revised manuscript and would like to answer the individual remarks on this topic as follows:

line 53:

By transferring the archive collections from MeteoSwiss to the Swiss Federal Archives and the State Archive of the canton of Zurich, they became publicly accessible and were included in online databases of the respective archive holdings, which facilitated our archive work considerably. We will clarify this in the revised manuscript.

lines 70-71 and 256-257:

In the context of our project, more than 50 measurement series described in the inventory have been digitised (mainly pressure, temperature and precipitation) and are currently undergoing quality control and homogenisation. The digitisation concentrated on long continuous measurement series, as well as series from the 18th century. In the revised paper, we will add a sentence giving an outlook on the digitisation process and the subsequent paper.

Phenological observations has also been a source of meteorological interest. Maybe, recent research papers have probably been published on historical phenological observations in Switzerland linking them to meteorological observations and observers.

We agree that phenological data are of great value to historical climatology. In the context of our project, we encountered a considerable number of phenological records from the 18th and 19th century in Switzerland (see author's comment to RC2). To our knowledge, these records still remain to be subject to scientific investigation.

The first example dealing with the cold surge of December 1788 was not only restricted to Switzerland but encompassed a much larger part of Europe. Maybe a sentence telling this would enhance the example.

Thank you for this suggestion. In the revised manuscript, we will add a sentence on this topic to put the weather situation in Switzerland into a broader European context.

This reviewer concludes that this manuscript is excellent, its content deals with the domain of the journal ‘Clim. Past Discuss.’ and therefore suggests consequently publication in the journal.