

## Reply to the reviewers comments

### General impression:

Swiss Early Instrumental Meteorological Measurements. It's a very interesting paper! I really have the most positive things to say about this article. It is heading out for the science and innovative. Given these considerations and considering that the subject matter is clearly within journal scope I would recommend acceptance of this paper. I have only some small things to comment. Otherwise this is a very interesting focus.

We thank the reviewer for the positive feedback and the very helpful comments and suggestions.

### Quality assessment:

Scientific significance: The paper has an impact on the field. It has a high significance in this scientific field (climatological data rescue) and is within journal scope (1).

Scientific quality: It is scientifically correct and robust. The scientific arguments and interpretation accurate and consistent with the work presented (1).

Presentation quality: The tables, images and supplementary information give a picture of the inventory made, but I really miss the link to the repository. Additionally, it would have been fine to add information on how to find the images or how the repository is structured (either in section 3 or with a new column in table 2) to more effectively and quickly link the paper and the repository (2).

Thank you for this comment and your suggestions. The preparation of the dataset for the repository was not completed when submitting the manuscript for review, therefore no link is provided. In the revised manuscript we will add the link, as well as a few sentences on the structure of the repository in section 3. We will make sure that the dataset is well structured and the images of individual measurement series are conveniently accessible with the information given in the revised manuscript and its supplement.

### Presentation

The writing is clear, concise and it is good English.

#### Abstract:

Brief and indicate the purpose of the work and what was done, what was found.

#### Figures:

The figures are clear to understand and make a very good summary. Only a minor comment: it would be fine if in figure 4, if a station continued operative change the colour or size of the point.

This is an excellent suggestion; we will add still operative stations to the maps in a different color in the revised manuscript.

Tables: There are fine and useful tables and the captions are informative.

### Review

#### Introduction:

I think the introduction is nice. The purpose is clear. Goals and lacking in science are well illustrated.

Thanks.

#### Section 2:

In an easier way it allows the reader to figure out the characteristics of the earliest measurements and most of the comments can be extrapolated to other regions. Only one question:

- Phenological data can give complementary information to past climate conditions. Did you find data (line 199)? If so, was it catalogued?

Thank you for this question. Although we came across several records of phenological data from Switzerland in the context of this project, those records were not catalogued as our focus was on instrumental measurements. Nonetheless, a considerable number of phenological records from this era would exist that could provide additional information to gathered instrumental data. We will add a sentence on this topic in the revised manuscript.

#### Section 3

Fine explained with figures and tables. This is very easily readable, and information presented well balanced. Comment: consider above comment about to link repository and paper. Two questions

- The authors considered ecclesiastical records and religious orders publications? It is quite frequent, for example, to find meteorological information from third countries measured by Jesuits in their Spanish libraries.

Indeed, archives and publications of ecclesiastical institutions are very valuable and important sources of historical meteorological measurement series. While we found records from two such institutions (the archives of Einsiedeln Abbey and Great St Bernard Hospice), a systematic enquiry of these institutions would have exceeded available time and resources. Nevertheless, many meteorological series made in ecclesiastical institutions were found in secular publications (S. Gottardo, part of Grand St-Bernard) or have been transferred to public archives. However, some series may still be found in ecclesiastical archives. Regarding meteorological observations from third countries, only a handful was discovered in Swiss archives. Those originate mostly from travels or stays of Swiss scientists abroad.

- About metadata information. You said (or I understood) that only data sheets were photographed (l 240-241) but in some cases metadata information or incidents of this type earlier publications (according my experience) were found at the beginning or end of the publication. The person in charge looked at the entire publication, to be sure that this type of information will not be lost?

This is an important point. Such valuable metadata is crucial for e.g. homogenisation and quality control and must not be lost. In any case, we photographed the entire documents excluding only blank pages. Also metadata that could be located from other archive sources was photographed. This is not clear from the text. In the revised manuscript, we will clarify this procedure. All metadata photographed will be provided together with the corresponding measurement series in the repository.

#### Section 4

This section adds even more value to the work done, really well developed and clear. A minor comment:

- In line 300 - 301 you said “However, using not just the measurements but also the weather observations and comments (which were not the focus of the project and hence not systematically collected),...” As you have found, many times in very ancient observations, information, especially on precipitation, appeared qualitatively but it is very important

information to analyse past extreme events like your event presented or droughts... Even so, it seems that this information will not be recovered anyway.

Thank you for this apposite remark. Many of the measurement series found are accompanied by some sort of qualitative information on weather conditions, e.g. precipitation, snow, clouds or thunderstorms. In the inventory provided as supplement to the manuscript, we included this information in the "variables" column as wn (weather notes), not going in to detail with the specific type. However, entirely qualitative weather diaries, that are an important source of information on past weather especially before the availability of instrumental measurements, are not inventoried.

Conclusions / future work.

The conclusion is clearly stated and provide a complete picture of the study. It is summarizing well what has been learned and why it is interesting and useful. Nice to read that the inventory was added to a global registry and part of the data will be digitised.

Thank you.

References

Relevant and appropriate