Annales Geophysicae Discussions

Ann. Geophys. Discuss., referee comment RC1
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Comment on angeo-2021-11

Anonymous Referee #1

Referee comment on "The geomagnetic data of the Clementinum observatory in Prague since 1839" by Pavel Hejda et al., Ann. Geophys. Discuss., https://doi.org/10.5194/angeo-2021-11-RC1, 2021

Review of the manuscript 'The geomagnetic data of the Clementinum observatory in Prague since 1839' by Pavel Hejda, Fridrich Valach and Milos Revallo, https://doi.org/10.5194/angeo-2021-11.

The manuscript describes a valuable and successful data recovery effort, to which the authors are to be congratulated, and makes a first interpretation of the obtained data. I strongly recommend publication of the manuscript after minor revisions.

General comments:

There are not many references and parts of the manuscript could be improved by adding earlier relevant studies. That would benefit the reader.

A number of references could be added that deal with historic geomagnetic time series in Europe but are not included in the introduction or discussion, e.g.:

Malin, S.R.C. and Bullard, E.C., 1981. The direction of Earth's magnetic field in London, 1570-1075. Phil. Trans. R. Soc. London, 299, 357-423

Alexandrescu, M., Courtillot, V., LeMouël, J.-L., 1996. Geomagnetic field direction in Paris

since the mid-sixteenths century. Phys. Earth Planet. Inter., 98, 321-360

Korte, M., Mandea, M. and Matzka, J., 2009. A historical declination curve for Munich from different data sources. Phys. Earth Planet. Inter., 177, pp. 161-172, doi:10.1016/j.pepi.2009.08.005

Especially the last reference could be useful here as Munich is very close to Prague. The dataset presented in the manuscript would also lend itself to study historical Sq and the authors might mention this, cf.:

Cnossen, I. and Matzka, J., 2016. Changes in solar quiet magnetic variations since the Maunder Minimum: A comparison of historical observations and model simulations. J. Geophys. Res. Space Physics, 121, 10,520–10,535, doi:10.1002/2016JA023211

Referring to some review articles on geomagnetic observatories would also be helpful for the reader.

I regard it as very important to also show the declination values (or any other component that was additionally measured) for the storm of 1939 in Figure 7.

It would be nice to add plots of the data in the supplement, like annual means, all years, or daily means for each year. That would allow interested readers a quick evaluation of the data quality. (I have not plotted the data myself to evaluate the quality.)

Detailed comments (number refers to line number)

18

supplied -> supplemented?

19

to past few decades -> to the past few decades

Note: The manuscript is well written, still it would profit from a native speaker quickly checking it. I refrain from further language corrections.

23 Please explain the term 'scale units'.

28

mention space climate

47

1936 -> 1836

70

shine?

166

Ernest -> Ernst

166

Remove 'Out of GMU'

193

Mention in this paragraph that the next paragraph will explain how you determined the substitute values.

208

You estimate the annual mean from three measurements in the second half of the year. So your annual mean seems to be representative for the second half of the year, not for the full year. You could further take into account the estimated secular variation to estimate the annual mean for the centre of the full year.

212

Same comment as I had for line 208.

379 (and Figure 6)

Alken et al., 2021, International Geomagnetic Reference Field: the thirteenth generation, states that IGRF covers 1900 to 2025, but you use it for the 1840ies and 1850ies. Please clarify.

Section 5, Figure 7

Please add declination measurements to plot and discuss

407

registration -> recording

Figure 1

Please explain the colour of the plotted lines either in a legend or in the caption. Please also indicate the exact starting time of the corrupted data period.

Figure 5 c

Please indicated baselines determined by absolute measurements by symbols, then the reader can see on which data the blue line is based.