

Interactive comment on “Historical K index data collection of Soviet magnetic observatories, 1957–1992” by Natalia Sergeyeva et al.

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Received and published: 19 February 2021

Three authors would like to express their gratitude to the Referee for his or her comments, that helped us to improve the manuscript.

Line 11: eight Solar cycles -> eight solar cycles? We agree with the reviewer. In this case, there must be a lowercase letter: eight solar cycles.

Line 23: K should be italics. We agree with the reviewer. K should be written in italics.

Line 48: Please explain the term Severny Polus (or Severny Polyus)? Also, I am not sure if the term 'romanized' is well known by many readers. How about 'transcribed into the Latin alphabet'? There are several variants of transliteration of Cyrillic letters in Latin: 'Severniy Polyus', 'Severnyiy Polyus', or 'Severnyj Polyus'. We have replaced

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the transliteration version in the text with 'Severnyj Polyus' and the abbreviations SP to NP. We have also replaced the term 'romanized' with 'transcribed Cyrillic to Latin'.

Line 71: extraterrestrial -> solar wind and magnetosphere-ionosphere interaction? We agree that it is better to reveal the term extraterrestrial and describe in more detail the mechanism causing disturbances of the geomagnetic field, which is characterized by the indices of geomagnetic activity. We have replaced the sentence "To estimate the geomagnetic disturbances caused by extraterrestrial sources quantitatively, the indices of geomagnetic activity are widely used by the geomagnetic community (Lincoln, 1967)." with "To quantify geomagnetic disturbances caused by the interaction of solar corpuscular radiation with the magnetosphere, processes in the magnetosphere itself, the interaction of the magnetosphere and the ionosphere, as well as processes in the ionosphere itself, the geomagnetic community widely uses geomagnetic activity indices (Lincoln, 1967)."

Line 98: relative to -> minus? We agree with the reviewer. We have replaced relative to with minus. In this particular case the variability is understood as the amplitude of the observed horizontal field minus the quiet daily variation S_q .

Lines 118 to 122: I am not aware of the significance of the geomagnetic disturbance of April 16, 1938. Can you give references for this information? We have added the following text to the article (line 125–127): "This fact is described in articles (Bartels et al., 1939; Lincoln, 1967). For observatories established after 1938, the lower limit of the amplitude for $K = 9$ is chosen in consultation with the working group on geomagnetic activity indices IAGA (before 1954 IATME) (Lincoln, 1967)."

Lines 122 to 123: Can you give a reference for this classification of events? We have added the following text (lines 127–132): "An event with $K \leq 2$ is quiet, $K = 2-3$ is slightly disturbed, $K = 4$ is disturbed, $K = 5-6$ is a magnetic storm, and $K \geq 7$ is a large magnetic storm. This version of the classification is published on the Paratunka Observatory website <http://www.ikir.ru/ru/Departments/Paratunka/lfg/txt/k-index-doc.html>.

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Another classification is given in the work (Menviell et al., 2011): “The modern consensus is that K = 0–2 correspond to periods of magnetic quietness; K = 3–5 correspond to periods of moderate geomagnetic activity; K = 6–9 correspond to periods of intense to very intense geomagnetic activity”. We added the corresponding reference (line 296): Menvielle, M., Iyemori, T., Marchaudon, A., Nosé, M.: Geomagnetic Indices, in Geomagnetic Observations and Models (eds. M. Manda, M. Korte), IAGA Special Sopron Book Series 5, Springer Science+Business Media B.V., 183-228, doi:10.1007/978-90-481-9858-0_8, 2011.

Line 144: definitions -> determinations? We agree with the reviewer. In this case, it is more correct to use the term ‘determinations’.

Line 193: Data is stored not in Excel but in ASCII-Text-files? The data in PANGEA is indeed stored as text files in ASCII codes. We agree with this remark.

Figure 3 caption: Please mention in the figure caption the quiet curve shown in panel (c) We have added to the Fig. 4 (formerly 3NA) caption explanation that the quiet curve is quiet daily variation S_q .

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-270>, 2020.

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