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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "Protection against lightning on the geomagnetic observatory" *by* R. Čop et al.

Anonymous Referee #2

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This article adresses an important problem facing magnetic observatories: destruction by lightning strokes of its electronic equipment used for unattended continuous recording of the geomagnetic field. The study reported took place in West-Slovenia where lightning is one of the strongest in Europe, as measured by the EUCLID Network. This localization adds to the potential interest of the article since finding a solution to the problem there would mean the problem has been solved for many other locations in Europe.

However the article should really say more about the solutions applied as it would be difficult for others to duplicate the set-ups chosen by the authors: too little is disclosed about them. In fact the useful material appears on page 223 and 224 only. We re-

gret the following is lacking: - parts info about the TVS and Schottky diodes used - a testreport showing that the protections are working, using simulation set-ups creating transients on the wiring. Is it really necessary to use 2 isolation transformers? - detailed information on the effect of inserting the TVS in the sensor. It would have been interesting to know the following: Was the scalefactor of the magnetometer modified? How much? Why? What about introducing offsets? - A description of the lightning's secondary effects would have been useful: induction, propagation in the ground, capacitive couplings - Symbols description in the equation 1. Equation 1 is also missing a variable

We did not find gross errors in the remaining pages although the language problem could create some misunderstandings. Formally the References are sloppily abstracted on pages 214-218: there are repetitions across pages 215 and 217. In Figure 3. "Map of the maximum yearly number of lightning strokes per km^2 in the territory of the Republic of Slovenia" it would be useful to pinpoint the location of the observatory Sinji Vrh. In Fig. 4. "Variations in the geomagnetic field's absolute values during the thunderstorm on Gora above Ajdovščina", the used component of the vector should be mentioned.

In the abstract is mentioned: "The reliability of operations performed in the every building of observatory could be increased by understanding the formation of lightning in the thunderstorm cloud", but this is not explained in the article. Generally the abstract and the conclusions should better fit the content.

We believe that the pages 223-224 represent a valable contribution to GID but could be improved and developped as explained above. The rest of the contribution should be restricted to the relevant topics used in the following magnetic observatory lightning protection scheme.

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 4, 213, 2014.