Geosci. Instrum. Method. Data Syst. Discuss.,
doi:10.5194/gi-2017-8-AC2, 2017

Geoscientific Instrumentation Methods and Data Systems Discussions
Open Access
EGU

Interactive comment on "Stability analysis of geomagnetic baseline data obtained at Cheongyang observatory in Korea" *by* Shakirah M. Amran et al.

Shakirah M. Amran et al.

shakirah@sirim.my

Received and published: 6 May 2017

The authors thank to the Peer Reviewers for his/her valuable comments to the manuscript. All changes done in the light of the reviewer's comment are highlighted in the revised version.

1. A scatter plot of temperature versus baseline for each component can be included in the paper.

Author's response: The scatter plot of temperature versus baseline for each component has been included and denoted as Fig. 8.

2. In Figure 7, for Z component for the year 2016, the temperature varies from 5 degC

Printer-friendly version

Discussion paper

to 25 degC approximately whereas the Z component base line for the corresponding period varies from 39913 to 39927 nT approximately. This gives a temperature coefficient of 0.7 nT/degC. Similarly for H component in the same Figure 7 during the period Jul 2015 to Dec 2016, when the temperature range was 20 degC, the corresponding H baseline varied from 30250 nT to 30262 nT. This gives a temperature coefficient of 0.6 nT/ degC. As per the FGE fluxgate manual, the temperature coefficient of sensor is less than 0.3 nT/degC. The value of 0.7 nT/degC (for Z) and 0.6 nT/degC (for H) observed Cheongyang observatory is far higher than the temp. coefficients specifications normally observed. This along with a complete absence of temperature sensitivity on the D Sensor is intriguing. The baseline of H and Z appears to become more sensitive to temperature over time as seen from the same Figure 7. The authors may explain how they took care of this issue of varying sensitivity in the temperature correction applied and also explain how they arrived at a temp. coefficient estimate of 0.3 nT /degC .

Author's response: We are suggesting that by doing the temperature correction, the baselines variation can be minimized. We used the 2014 data to estimate the temperature correction for the H and Z baselines which give us about 0.3 nT/degC. However, 2015 and 2016 baselines shows that our fluxgate magnetometer indeed exhibits a large temperature coefficient, more than the normal specification of the FGE fluxgate. And the value increased with increasing amplitude of temperature change. Therefore, it is difficult to determine a general temperature coefficient as a correction factor. We explained this in the revised manuscript. And we also rework our abstract to reflect this. Currently, we did not performed the temperature correction in our baselines but we plan to install the temperature control system in the in the near future to minimize this temperature effect.

3. Please check whether the temperature effect observed in the baseline is due to temperature affecting the absolute instruments in absolute room.

Author's response: We have plotted DI against temperature in the absolute room shown

in Fig. 8 of the revised manuscript. The D and I show only a small change with the temperature in the absolute room. Therefore we assume that the temperature effect observed in baselines is not due to the temperature affecting the absolute instruments in the absolute room. We briefly explained this in the revised manuscript.

4. Please ensure that all entries in the bibliography are mentioned in the text.

Author's response: The bibliography was cited in the text.

5. Typo errors may be corrected. Line no. 19 page 1 and and, Line no. 11 page 3 Continous, Line no. 22 page 3 magntitude, Line no. 17 page 5 includeed, Line no. 6 page 8 annualy Line no. 10 page 10 reduceed

Author's response: Corrected as reviewer suggested.

Please also note the supplement to this comment:
http://www.geosci-instrum-method-data-syst-discuss.net/gi-2017-8/gi-2017-8-AC2-supplement.pdf

---

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., doi:10.5194/gi-2017-8, 2017.