

Interactive comment on “Building a Raspberry Pi School Magnetometer Network in the UK” by Ciarán D. Beggan and Steve R. Marple

Ciarán D. Beggan and Steve R. Marple

ciar@bgs.ac.uk

Received and published: 18 July 2018

Author's Response: Phil: Thank you for taking the time to review the manuscript. We have updated the manuscript as suggested and altered Figure 3 to be clearer. The detailed response is below.

1. Abstract - last sentence, system not systems. **Response: changed**
2. Introduction - "over periods" is ambiguous. Does this convey the time period i.e. 2 Pi/frequency or length of data window? **Response: we meant the length of the data window over a time range of several minutes to several hours. Wording has been changed.**
3. What is the actual price of one of the authors' magnetometers? Only a relative value

C1

is given. This might be helpful for others to see how much it would cost to join their network. **Response: The approximate cost is around 150 GBP at 2018 prices, though this is with a bulk-buy discount.**

4. Section 2, l1 varies both <in> time.. **Response: corrected**
5. Section2, l14, temperature measurements of what? Please be more specific. Presumably you mean of the atmosphere, and direct measurements rather than by proxy? **Response: It measures the ambient temperature of the air using a thermistor. The text has been updated.**
6. l29 typo: seasonal **Response: corrected**
7. Section 3.1, l23 the current <difference> is .. **Response: corrected**
8. Section 2.1, l33 can be calculated, <which may also be expressed as> D, l... **Response: changed**
9. Section 3, l22 if the <calibration> magnetic field.. **Response: I've left this as written because the resolution of each measurement is directly dependent on the field strength. Larger field strengths have lower resolution due to the limited range of the digitiser. In scientific observatories, the digitiser is 24-bit (rather than 16-bit) and the main field is 'backed off' using another set of coils wrapped around the fluxgate magnetometers to reduce the magnetic field variation to +/- 4000 nT for this very reason. These systems can achieve resolution of around 0.1pT or better, though other noise is around 5-10pT in general.**
10. Section 5. l4. Please make clear that X is the most sensitive component as the electrojet flows East-West. **Response: I've amended the text.**
11. Fig3. I found the bottom axis label confusing - it looks like its in units of nT/C. I suggest using a right axis, separating out the two quantities: i.e nT on the left axis, degrees C on the right. Also, you report only temperature variation - what is the baseline that you've used? i.e. what does zero temperature represent? **Response: The**

C2

Figure 3 plot has been changed to move the temperature variation scale to the right hand side. The scale is now in degrees C. The caption has been amended to state that the temperature varies around a baseline value of 18 degrees C, as the building was heated. The updated figure is shown below.

Interactive comment on Geosci. Commun. Discuss., <https://doi.org/10.5194/gc-2018-10>, 2018.

C3

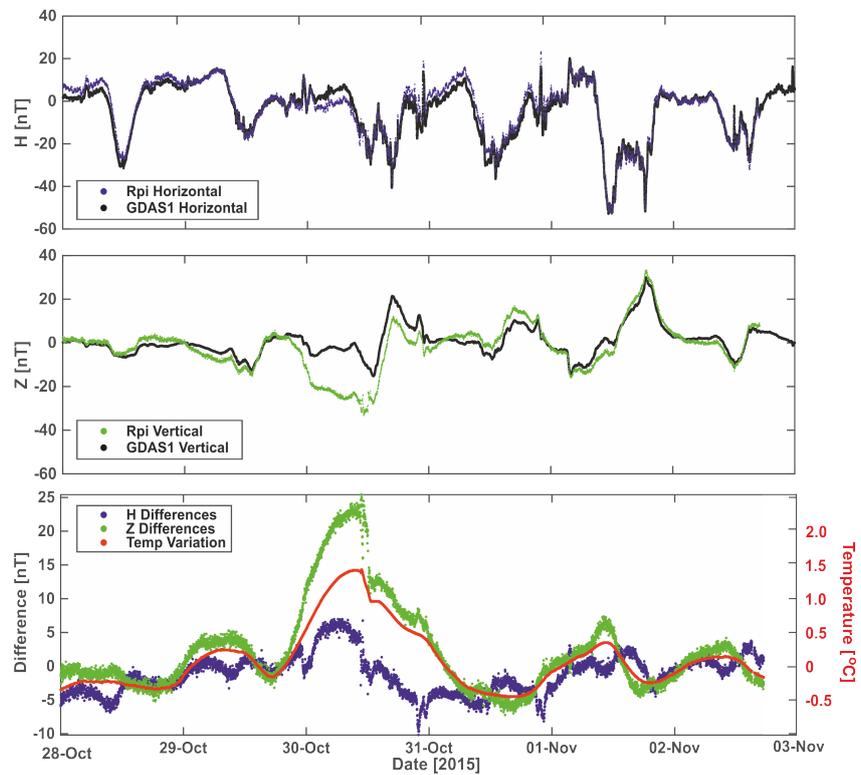


Fig. 1.

C4