Geosci. Instrum. Method. Data Syst. Discuss.,
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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "Error estimate for fluxgate magnetometer in-flight calibration on a spinning spacecraft" *by* Yasuhito Narita et al.

Anonymous Referee #2

Received and published: 19 November 2020

Full disclosure: this reviewer also reviewed Plaschke et al 2019.

While starting this review I had some concern there would be a large overlap with the earlier paper, and that my eyes would not be "fresh" enough. Happily this is not the case. The review of the earlier paper has the right level of detail, enough to provide a good picture without being excessive. The first reviewer provides a good discussion of this part of the present manuscript so I leave it at that.

I agree with the first reviewer, that the grey line/black line markings in Fig's 2 and 3 are difficult to observe.

Finally, it appears that this study of errors is targeted at low-field measurement settings. If this is the case is should be made clear. There is also no discussion of magnetometer

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Discussion paper

nonlinearity errors as distinct from the errors due to the nonlinear coupling of the parameters under consideration. The latter is suitably noted in the paper, and in low-field settings sensor non linearity is usually negligible.

In low earth orbit this can be different. Modern sensors which are often double wound, and even triple wound have excellent linearity, but not always. The 1979 MAGSAT single-wound sensor suffered from about 1% nonlinearity, and the same sensor design was used more recently on MESSENGER. With present thinking about the possibility of deploying large fleets of small magnetometer cubesats with just as small sensors one might ask whether nonlinearity issues can rise again. Also the potential quantity of spacecraft points to wanting automated calibration and error estimation methods. Perhaps the methods of Plaschke at al 2019 and the present paper will make that task easier.

Here is a small collection of additional minor corrections:

2-31 "sensor ourput"

9-189 "seconr order"

9-206 "?Auster"

12-266 "accuracy fo"

12-277 "Figure 2)"

14-307 "sows how how"

14-311 "error throughly"

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