Interactive comment on "Inter-instrument calibration using magnetic field data from Flux Gate Magnetometer (FGM) and Electron Drift Instrument (EDI) onboard Cluster" *by* R. Nakamura et al.

Anonymous Referee #1

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The paper presents a straightforward description of comparisons between FGM calibrations and EDI magnetic field results. The paper is generally acceptable for publication as is, but I do have some minor comments and a couple of questions (#5 is my primary question).

1) The abstract is well-written, but is missing a sentence or two about the main conclusion of the paper.

2) Rows 1 and 2 of Figure 1 look virtually identical. My conclusion from this is that it doesn't matter if one time mathces or not, as long as one has enough data. Is this the point here? If so, I don't see how time matching is useful statistically, and wonder if it's even needed in this paper.

3) Row 3, column 2, shows very large scatter in the 1Hz FGM data. Where did this come from? The only difference between the first and second column is a CAA calibration vs CSDS calibration? This scatter is very odd.

4) Figure 7 shows a comparison of Bc3-Bc1 using EDI, FGM and Tsyganenko data (description in lines 317+). The paper makes a point that dBedi provides an 'empirical value' which is a statement I do not understand. Just like FGM, EDI is making measurements of the actual field. If these measurements are close to the model field, it means the model is pretty good, and you've chosen appropriate model parameters (Kp, for example). In the second column, the slightly larger difference between observations and model could be removed by changing Kp, I would think.

5) I'm confused by the conclusion that the enveloping of the data shown in Figure 4 is due to FGM gain uncertainty. I don't think this is plausible based on two things. 1) The offset resets itself at each EDI change. How does a gain change explain this? 2) The error is randomly positive or negative. A gain uncertainty should not produce such randomization, unless – and perhaps this is the case – the gain uncertainty is really down at the LSB level. A more plausible scenario may be a +/- uncertainty inherent to EDI. The authors could be correct here in their interpretation, but it needs some more discussion.

Minor wording changes * Line 30, "Despite of the pre-flight", remove "of the" * Line 91 "usind" = "using" * references are made to a 'gray' line in Figure 4b. Should this be green? * Line 313, "an" -> "a"

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