

Geosci. Instrum. Method. Data Syst. Discuss., referee comment RC2  
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## Comment on gi-2021-4

Anonymous Referee #2

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Referee comment on "Production of Definitive Data from Indonesian Geomagnetic Observatories" by Relly Margiono et al., Geosci. Instrum. Method. Data Syst. Discuss., <https://doi.org/10.5194/gi-2021-4-RC2>, 2021

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The manuscript 'Production of Definitive Data from Indonesian Geomagnetic Observatories' by Relly Margiono, Christopher W. Turbitt, Ciarán D. Beggan and Kathryn A. Whaler deals with the production of definitive data from Indonesian geomagnetic observatories.

The manuscript is an important contribution and absolutely worthy of publication. I have some comments that I believe will help improve the manuscript (see below). There is, however, one point that I would like to have addressed before I can recommend publication: How stable is the temperature and the F difference for the individual variometers? This will be important to understand the data quality and the data's suitability for Sq studies. I suggest to add a plot that shows, from 2010.0 to 2018.0, the daily range of temperature variation (as well as the monthly range of temperature variation) of fluxgate sensor and electronics of the variometer that was used. Also add a plot of daily mean F differences (i.e. F from calibrated variometer data minus F from scalar magnetometer) and show also the daily range of F differences.

The abstract states that TNG started 1964. In the WDC, there is hourly data from 1957 to 1964. Why already since 1957? Please also check other observatories for consistency.

Please state in the abstract that data from four observatories dating from 2010? to 2018 has been processed and are now published in the WDC

p 1

l. (line) 5: measurements -> versions of the data

p 2

l. 8 to 10: please move the sentence on WDC down to line 13/14, otherwise the reader might think that WDC accepts QD. Submitting data to WDC requires absolute measurements and calibration of the data, please state this explicitly.

l. 17: WDC-G, which

l. 19: do you see a link between the EEJ and K indices? I would remove the information regarding K indices.

l. 29: is a manual

p 3

l. 8: How does 2010 relate to the numbers in Table 1 (2016, 2007, 2009, 2009

Table 1: since you discuss EEJ, please add geomagnetic latitude

p 5

l. 2: which formula were used to calibrate the HEZ orientation? (Linear formula require more frequent realignment of the sensor than more accurate, non-linear formula.)

l. 17: baseline, which include

note: HEZ baselines also account for the rotation of the variometer

Move Table 2 to Appendix?

p 6

l. 4: with a fluxgate

l. 9: Appendix ??

Figure 4a: please include date

Figure 5, figure caption: Would be nice to have better explanation:

What is step distribution? What is step period? 'differences' should read 'first differences'

p 10

l. 16: equatorial electrojet (EEJ)

Typically, yearly differences of monthly means are very good in suppressing EEJ signals.

Reading your text, I assumed that PLR is an EEJ observatory, but it turns out that TUN and TND are closer to the magnetic equator. Could you add a map of the stations and geomagnetic latitudes, preferably QD latitudes? Also, I am not sure why you state that PLR fits the CHAOS SV signal worse than the other observatories, comparison between observatories would be easier if the panels in Figure 6 have the same scale. State in figure caption that you plots annual differences of monthly means.

l. 23: What does 'original' refer to, not sure what this sentence means.

Appendix A:

p 14

l. 14: Do you combine  $P_v$  and  $P_o$  in the term  $P_b$ , or do you just rename  $P_o$  to  $P_b$ ? Looks like you did the latter.

l. 17: You linearise (A7) to get (A8). Is that useful? If you use this linear version and you have strong secular variation of declination, then you might have to rotate the variometer every few years to keep  $Q_v$  small and thus introduce unnecessary jumps in the variometer data.

Appendix B:

p 17

l. 14: should take place

References:

The Reigber et al., reference has a doi: [https://doi.org/10.1016/S0273-1177\(02\)00276-4](https://doi.org/10.1016/S0273-1177(02)00276-4)

I assume the Pocelet et al. reference also has one.

Fix the dot in Rasson et al.

Fix tech -nique in Rasson.

Please check all your references, complete the bibliographic information and bring it in shape.