Dear Sergey,

Thank you for your valuable hints and corrections. My replays are as follows:

Issue 1) We did add the sentence "The method works comparable to a filter. It acts on the measurements at the times t_i varying from $t_0-T_s N$ to $t_0+T_s N$, and produces one output value for the time t_0. For each new t_0 the entire process has to be repeated using a new set of measurements."

Issue 2) As shown in Fig.(3) the combined data have up to five orders of magnitude less noise than normal FGE data. It is clear, that such data are more susceptible to environmental noise. Figure (5,b) shows such artefacts. In data from another observatory we could see the Polarization currents of a proton-magnetometer. But also Fluxgate data may contain noise, which is eliminated by the combination with induction coils. Figure (5,c) shows an Example (signal content at 0.2Hz). Please note, that the long term stability is not at all influenced by such noise effects. The integration time is always restricted to the width of the environment around t_0 which is from −100sec ... +100sec. Please note also that the changes that we apply to the data are within the noise level of a normal fluxgate (+-0.1nT).

I tried to follow your comments and recommendations if ever we could. But we have the following comments:

P3,L08: Ts is the time between two Samples. The time-window of used IC data spans from −N*Ts to +N*Ts

P3,L11: The Integration starts at t0 and goes to ti. Yes, ti can be lower than t0. This is a bit particular, but mathematically absolutely correct.

P6,L02: We discussed to show a time set. But a time set spreads over 24h in time direction and, if I remember well, about 30nT X direction. The integration is maximal 100sec long and the effect of our method to the fluxgate data is within the noise of 0.1nT. In both dimensions a time series can not enlighten anything of interest with respect to our method. So we decided not to show the time series of the data.

P6,L04: Induction coils are not a known brand. They have been made about 30years ago in the Niemegk workshop. Also the data logging is a bit outdated. We sample the induction-coil data at 1sec only. It is planned to install a more up-to-date logger and to use a higher sample rate. The test data for the paper stem from the old system.

P8,Figure 5: Yes, there are many interesting spectrograms within this framework. We decided to restrict it to only four in order not to overburden the paper. I included the respective plot here. The Pulsation around 18:00 almost vanishes in the fluxgate noise.

Your effort is really appreciated. It would be good, if you could further contribute to the discussion, in case there are still open questions or ideas to improve the article.

Best regards, Heinz-Peter Brunke

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