

Review of Hegymegi et al., “Measurement experiences with FluxSet digital D/I station”

The paper focuses on a digital version of a non-magnetic theodolite based on a Zeiss 020 instrument. Such device is therefore suitable for magnetic observatories as well as for in-field measurements. I recommend to publish the paper if authors consider the following comments:

Chapter 2 is a little light. In particular, authors do not give any information about the modified theodolite performances. The angular accuracy according to a specific norm (e.g. ISO 17-123) is not given. The pendulum has been modified in order to host the V-circle reading head. What is the effect on the tilt compensation? Does the temperature have an impact on the angle reading?

The FluxSet sensor remains somehow exotic for the magnetic observatory community. Authors have mentioned it in the title and should therefore spend little energy for a (short) description. What is the difference between a FluxSet and a more conventional Fluxgate?

Page 2: “Owing to this design...because it rotates with the telescope.” This is not evident for the reader. Author should include an experiment or a reference: (Gilbert D and Rasson JL, (1998). Effect on DIFlux Measuring Accuracy due to a Magnet located on it, Proceedings of the VIIth Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing, Scientific Technical Report STR98/21, pp168-171, GeoForschungsZentrum Potsdam.)

Moreover, it is true if and only if the magnetization remains constant during the whole set of 4 measurements. Is it the case?

Page 3 line 6: What is the minimum distance between DIM and CPU? What is the CPU magnetic signature at 1meter when it is switched on? What is the tablet impact?

Chapter 3: The authors should give some details about the measurement procedure (p4-l1). Residual or zero method? What sequence?

Also, neither a variometer description nor the reference instrument description are present. Are DS-1 and ref-DIM on the same pillar?

A robust comparison between two DIM is made by computing a variometer baselines for more than 1 day. Then baselines are compared. Such elementary validation test is not present in the paper. Fig 3 E-H are just a few points (3x2 points for reference instrument) plot. Authors promise a one-year comparison as future work. Maybe they could already provide 1 or 2 weeks comparison.

Page 5: Why the duplicated MDIIDM scheme? Is 20-25 min for the traditional DIM or for the DS-1? Could authors detail the handwork gain compared to traditional instruments?