



## Article Supplementary Data: A High-Speed, Light-Weight Scalar Magnetometer Bird for km Scale UAV Magnetic Surveying: On Sensor Choice, Bird Design, and Quality of Output Data

Arne Døssing <sup>1,2,\*</sup>, Eduardo Lima Simoes da Silva <sup>1,2</sup>, Guillaume Martelet <sup>3,\*</sup>, Thorkild Maack Rasmussen <sup>4,\*</sup>, Eric Gloaguen <sup>3,\*</sup>, Jacob Thejll Petersen <sup>1</sup>, Johannes Linde <sup>5</sup>

- <sup>1</sup> CMAGTRES, Geomagnetism, DTU Space, Technical University Denmark, Centrifugevej 356, 2850 Kgs.
- Lyngby, Denmark; ards@space.dtu.dk (A.D.); edsd@space.dtu.dk (E.L.S.d.S.); jacth@space.dtu.dk (J.T.P.)
- <sup>2</sup> DTU CERE, Technical University Denmark, 2850 Kgs. Lyngby, Denmark.
- <sup>3</sup> Bureau de Recherches Géologiques et Minières (BRGM)
- <sup>4</sup> Department of Civil, Environmental and Natural Resources Engineering Luleå Technical University, Luleå, Sweden
- <sup>5</sup> Geodesy and Earth Observation, DTU Space, Elektrovej 328, 2850 Kgs. Lyngby, Denmark; jlinde@space.dtu.dk
- \* Correspondence: ards@space.dtu.dk (A.D.); Tel. +45-45 25 97 73



Citation: Døssing, A.; Lima Simoes da Silva, E.; Martelet, G.; Maack Rasmussen, T.; Glouagen, E.; Thejll Petersen, J.; Linde, J. A High-Speed, Light-Weight Scalar Magnetometer Bird for km scale UAV Magnetic Surveying: On Sensor Choice, Bird Design, and Quality of Output Data. *Remote Sens.* 2021, *1*, 1. https://doi.org/

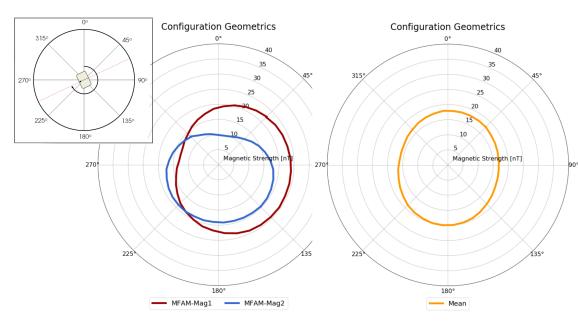
## Academic Editor:

Received: 13 January 2021 Accepted: 08 February 2021 Published:

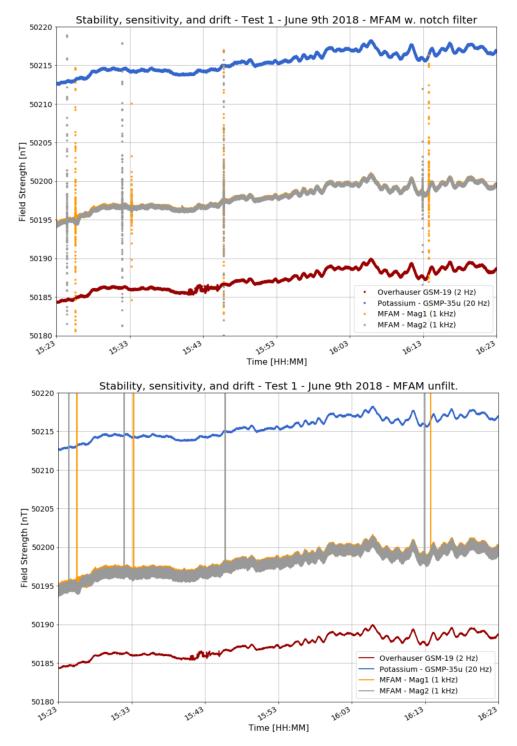
**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).



**Figure S1.** Heading error test of the *MFAM* conducted at the Brorfelde Geomagnetic Observatory in Denmark in 2018.



**Figure S2.** Data collected as part of Test 1. Notice the spiky behavior of the *MFAM*, its significant drift during the first 30 min and the undulations near 15:28.

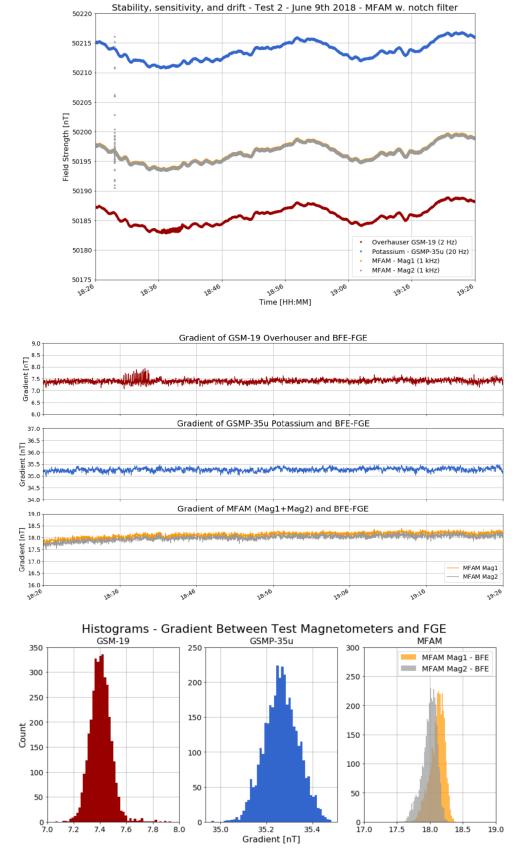


Figure S3. Test 2 magnetometer stability test. A similar test setup was applied as in test 1.

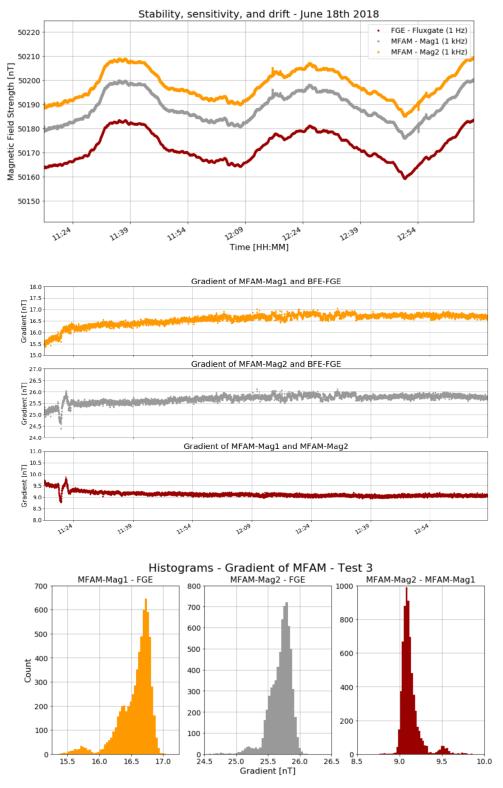


Figure S4. Summary of Test 3—an extra stability test of the MFAM.

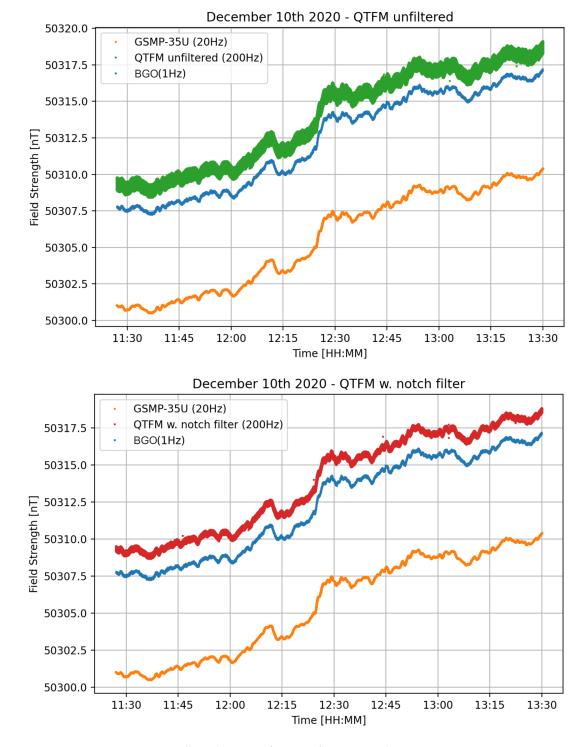
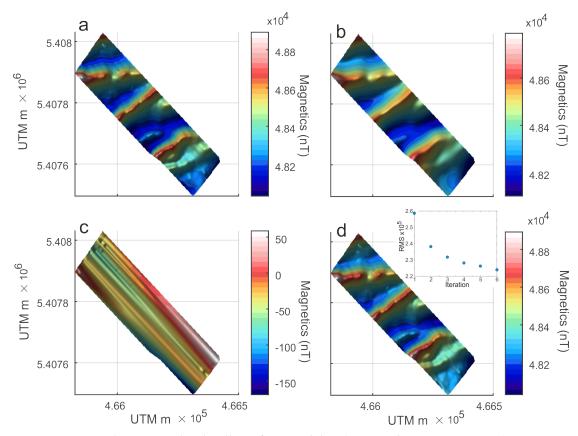
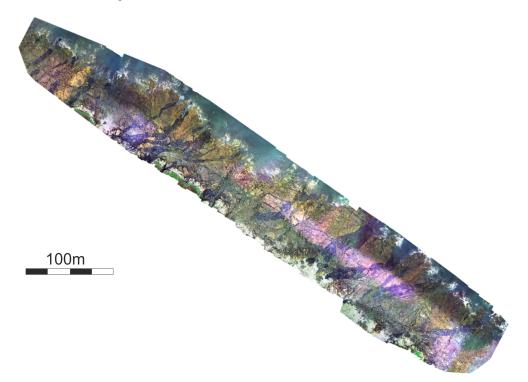


Figure S5. Data collected as part of Test 4—focusing on the *QTFM* sensor.



**Figure S6.** Sub-survey S3 line levelling of trimmed data (converted to UTM projection). (a) Unlevelled; (b) Regional field; (c) Residual; (d) Levelled. The data were levelled over over six iterations, each time with a decreasing root-mean-square error to the regional field (see inset figure in (d)).



**Figure S7.** Orthophoto from UAV photogrammetry of the southeastern part of the study area, near sub-survey S3.