



Interactive comment on “Experiments on magnetic interference for a portable airborne magnetometry system using a hybrid unmanned aerial vehicle (UAV)” by Jirigalatu Jirigalatu et al.

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We thank you very much for reading the manuscript and providing very helpful and constructive comments.

General Comments

- 1. Does the abstract provide a concise and complete summary? Asses the possibility to shorten the Abstract.**

Response: We shortened the abstract to make it concise and readable as sug-

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gested.

- 2. Few figures and tables outside their respective areas. PG 5 line 103 I would move the Figure 1 after the line 106, FIG 15 out of place. Make sure the final document have figures in proper places.**

Response: We changed the layout as suggested.

- 3. I did run a grammar software and found 45 items, few plural words were missing, but overall a good grammar check where done, Few items such as Line 92 UAV's "own" magnetic, Line 200 "Apparently", Line 210 "owing to the fact that", Line 235 "It is evident that", Line 266 wires can "actually", Could be replaced or even removed. My system did recognized few non American variations of the words.**

Response: We revised the texts as suggested.

- 4. I would recommend to add an aircraft blueprint to include locations of items such as servos like found in Figure 3, But improve it the missing the PG 2 line 47 & 73 global positioning system (GPS) Replace to GNSS the non commercial name.**

Response: We provided an aircraft blueprint to include locations of items as suggested.

- 5. In the specifications, the stall speed is with Nose "cone", if is without, state the configuration, did any performance in stall speed was found, even by changing the items inside? Specially range of operation, it has changed? an important item for companies. And or changing the angle of the nose rod for magnetometer better position in level flight.**

Response:

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- (a) The stall speed should not change with the boom because the boom does not change the aerodynamic properties of the wings.
 - (b) The range of operation should be slightly reduced because of the drag introduced by the boom and the additional weight of the payload.
 - (c) As shown in Table 2, the dead zone of the magnetometer is the equatorial plane ± 7 degrees, so the magnetometers have to be tilted properly according to the direction of the local geomagnetic field to have good measurements.
6. **Fig 2, Is possible that the motors are Counter-rotating, thus having on each wing a higher Nt closest to the tip, but also might be redundant since in cruise flight those motors are off, and producing if any a small portion of electricity.**

Response: As long as a motor spins, there will be electricity. It will work like a small generator.

7. **Line 123 is mentioned the wing flex, by the elliptical wing shape it might need a modification to support it but some aircraft have an extension on wingtips by a boom, It does increase drag especially during climb, but data is received within parameters. Also mentioned that the carbon fiber line 85, is considered to install static wicks on the surfaces to compensate for it?**

Response: We are developing an active compensation algorithm to reduce the magnetic interference due to the eddy current in the wing. But in principle, the area the of the wing is fairly small, only up to 1 m², so the magnetic interference due to the eddy current should be fairly small as well.

8. **One of many issues I have in survey is the wire connection and wire loose in the fuselage (as mentioned) specially near connectors.**

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Response: We agree with the reviewer. Therefore, we will try to put the current-carrying cables in the back of the fuselage. If necessary, we may try to use some special material to shield the magnetic field generated by the current.

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https://doi.org/10.5194/gi-2020-29, 2020.](#)

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