

## **Response to Review Comment 2**

*We thank the reviewer for the time spent on this manuscript. We respond to each of their comments below (in italics) indicating how we intend to revise the manuscript.*

- *Adrian LaMoury, on behalf of the co-authors*

This manuscript presents the first in-flight assessment of the JUICE magnetometer (J-MAG) during the Lunar–Earth Gravity Assist (LEGA). The text is well written, clearly organised, and offers an overview of the instrument's performance at this early mission stage. The successful operation of both the fluxgate and scalar magnetometers is demonstrated. Comparisons with geomagnetic field models, ARTEMIS measurements, and OMNI solar wind observations provide evidence that the instrument is already performing at a high level, despite only preliminary in-flight calibration.

A strength of the manuscript is the clear presentation of the work as an early performance assessment rather than a final calibration study. This approach is appropriate for a first-results publication. However, since the terms "preliminary" and "final calibration" are referenced, it would be beneficial to briefly outline the planned calibration roadmap. Providing this context would clarify for readers which aspects of the current data are expected to improve as calibration progresses.

*We thank the reviewer for pointing this out. As also discussed in the response to Review Comment 1, we intend to revise the manuscript to clarify the current calibration status and outline the remaining steps. We hope this will aid the reader in understanding exactly what the data presented here do and don't represent.*

The discussion of the alignment calibration should be further clarified. The manuscript reports that a rotation of less than 1° provides the best agreement between the measured and modelled magnetic field, but this should probably be interpreted as an effective alignment correction rather than only as the magnetometer sensor misalignment. Such a rotation is likely to include contributions from the sensor mounting, boom alignment, spacecraft reference frame, star tracker attitude knowledge, as well as uncertainties in the geomagnetic field models. A short discussion of these contributions, particularly the role of the spacecraft attitude determination system, would help put the reported 1° correction into context.

*We will expand this discussion in the manuscript and note the possible sources of misalignment between measured and modelled magnetic fields.*

It would be helpful to add a short comparison between the in-flight measurements and the pre-launch magnetic cleanliness predictions or requirements. This would help put the results in context and more clearly demonstrate how well the spacecraft's magnetic cleanliness programme has performed.

*We will add a discussion on magnetic cleanliness requirements (and measurements) as determined on ground and make an assessment on these conditions in flight.*