# Response to review by anonymous referee #1

## Opening remarks

We warmly thank the four anonymous referees and Tim Hewison for taking the time to review our manuscript and to provide valuable feedback. As there are commonalities between several of the reviews, we start with some general remarks.
To begin, we emphasise that our goal is not to encompass the entire AWS mission. First of all, this would be very challenging to cover within a standard manuscript length and would approximately double the number of co-authors. For example, the primary objective of AWS is numerical weather prediction (NWP), and addressing the aspects and applications of AWS within this area could be a manuscript in itself. The manuscript's aim is instead to provide the necessary information to understand the design of the AWS radiometer and to utilise the L1b data from this instrument. In the revision, we focus on improving the text around these aspects based on the provided feedback, as well as adding some new information.
A related question is how much in-orbit characterisation to include. Here, we hope to have an understanding of the difficulty of compiling the manuscript at the same time as the team is preoccupied with the satellite's commissioning phase. The initial aim was to submit the manuscript in 2024. In particular, the sudden deviating behaviour of the 174 GHz receiver (Sec. 6.3) caused significant concern and resulted in a substantial delay in the manuscript. Nevertheless, our approach is to include some initial basic results, primarily to indicate that the findings from the on-ground tests appear to be valid. We have added a sentence to exemplify this further and on the same time indicate the range of aspects that has to be considered. We avoid going further to leave room for one or several upcoming articles that are entirely focused on in-orbit testing. In addition, to fully cover the in-orbit testing would again require a considerable extension of the list of authors. This work is ongoing and far from complete. At least one update of the L1b processing algorithm is foreseen.
In summary, we find it reasonable to focus on the development of the instrument up to the launch. On this side, we think the manuscript is already more information-rich than usual. This brings us to an unstated objective. It is already difficult to find in the open literature the relevant background information about the satellite instruments we use for research. The trend towards new space and more substantial commercialisation risks making the situation worse; with this manuscript, we aim to demonstrate that this need not be the case.

The replies below refer to the revised version of the manuscript we have prepared.

## Replies on referee's comments

- "The hyperlink/URL does not appear to be functional."
    - URL for new location of AWS SRFs is updated.
- "Figures 8, 12, 13, 14, 15, and 16: Axis values are repeated and not easily interpretable."
    - As mentioned in author comment 1 (https://doi.org/10.5194/egusphere-2025-1769-AC1), the issues with the figures were due to a conversion problem and should now be resolved.
- "The text refers to the "new space" philosophy/principles. It would be helpful to include a reference or add one or two sentences briefly explaining this".
    - A clarifying sentence on new-space has been added to the Introduction. It connects with following sentences on how the approach was applied by ESA.
- "Minor textual corrections"
    - Textual corrections are applied as suggested.