

Editor Comment:

Thanks for all your hard work on reworking the paper.

Showing that the code works as intended is actually an essential feature of a GMD paper!! See the Manuscript types webpage for evidence. So, a write-up on the extra work that you completed to answer my editor's comment could most definitely have been included in the manuscript.

However, since you have already done so much revision to improve the manuscript, in this case I will be satisfied if you can modify the information you provided in the interactive review so that it fits into the general context, and upload it as a supplement. You must also include a paragraph in the main manuscript that summarises the issue and references the supplement.

Reply:

Thank you very much for your feedback and for the guidance throughout the revision process. I appreciate the clarification regarding the expectations for GMD papers and fully understand the importance of demonstrating that the code functions as intended.

In response to your comment, I have revised the material provided during the interactive review so that it fits within the overall context of the manuscript, and I have uploaded it as supplementary material. I have also added a paragraph to the main manuscript that summarises the issue, describes the additional work carried out to address it, and provides a clear reference to the supplement.

Specifically, in Section 4.2, immediately after the description of the sensitivity experiments analysed in the manuscript, we added the following sentence:

“To complement the sensitivity experiments described above, we performed a set of idealised tests with synthetic observations to verify that the assimilation system behaves as expected under controlled conditions. In these tests, the consistency of the implementation is assessed by analysing how the analysis residuals vary in response to the prescribed observational error. Full details are provided in the Supplement.”