Review for manuscript egusphere-2025-497 "Improving the Gravity Anomaly Map of French-Belgian Hainaut using Multi-Scale Fusion of New Gravity Acquisitions and Legacy Data in an Adaptive and Open-Source Gravimetric Processing Workflow"

This paper mainly presents the acquisition and processing of a new gravity campaign MoreGeo, and how it is combined with existing gravity data in the region to obtain an improved gravity anomaly map. A short discussion was provided in the end regarding how this gravity anomaly map can be used to indicate geological structures. The topic is within the scope of the journal. However, at the current version, the manuscript reads to me more like a technical report documenting the data processing steps. For example, the authors used large content explaining the different types of correction applied (latitude, Bouguer, free-air, terrain correction and weighted least squares), which are already very well-established concept in literature. I would strongly recommend the authors to focus on their own innovative work. What is even more problematic is that these corrections are repeated here but not explained in a clear way, and there are some major mistakes. The figures are commonly difficult to read and presented without providing sufficient explanation and discussion. A large amount of reference are missing, i.e., equations or concepts are given without any references. Please find below a list of detailed comments:

1. P1L30 and throughout the whole manuscript: please correct the citation form.
2. P2Figure1: a) the text within the submap is totally invisible; b) for the same region, colors (gravity anomaly values) in the big map and the submap are different. This needs further explanation.
3. Throughout the paper, the author uses density value (e.g., 2.67 in Figure 1 caption) without unit. But sometimes the density value is used as 2.67 and sometimes as 2670. Please add the unit and keep consistency.
4. P2L37: "The gravity data used to ...available in public databases". Please provide references and where to access the data
5. P3Figure2: Again this figure is really difficult to read, especially the text in Fig2a, the boreholes in Fig2c are invisible, and the caption of Fig2d wrote seismic line L1903. What is L1903 and where is it in Fig2d? This is not explained
6. P3L76: "gravity anomaly that should be observed along these lines based on a density model and a geological model..." why gravity anomaly needs geological model?
7. P4L85: "improving the mapping of the anomaly in a sub-regional sense has many other advantages. For example, it would help to better constrain any future modelling of the geothermal reservoir outside the seismic lines." Please provide some explanation why gravity anomaly mapping can constrain geothermal modeling, it is not clear
8. P4L113: what is "WALCORS GNSS network", explanation or reference needed
9. P4L116: isn't "location of the stations" and "their distribution" the same thing?
10. P4L120 and throughout the paper: the term EPSG:XXXX is used a lot but

without explanation or references.

11. In P4L127: what is acquisition parameters, here it is written “As far as the acquisition parameters are chosen, the most important...” then in P5L133, it is written “Other acquisition parameters...”
12. P5L145-155, this section is difficult to understand.
13. Figure 3: what is the X and Y axis? unit?
14. P6L170 “The table below provides a summary by profile number.” I did not see any table
15. P6L175 “three areas along the seismic lines could not be covered by the gravimetric survey.” where are the three areas
16. P7L185 “These were implemented using notebooks written in Python 3. A Python module containing all the functions developed and used in these processes was also created.” Are the notebooks written by the authors or from others? If it is the latter case, references are needed
17. P7L192 “The model used in this paper is from (Longman, 1959).” Why to use such an old tide model, there are more recent ones and is this old model still suitable?
18. P7L196 “Figure 4 shows the range of this correction, which is between -0.2 and 0.1 mgal...” However, in Fig4, there are clearly values larger than 0.1 mgal
19. P7L199 “This panel also illustrates the 7-day period required to produce this profile.” How can this information be seen in Fig 4a
20. P7L201 and throughout the paper: what is et?
21. Equation 1-9: are these equations developed by the authors or from others, references are required in the latte case
22. P10L185 “Although it’s much better than the previous one”, Why Fig 8b result is now better, please add some explanation. Also why Figure 9 is also better than Fig8b
23. Equation 11-12, 21-23, 29 reference missing
24. P12L323 where does “These 111 loops” coming from
25. P13Fig10b, where do these numbers coming from? Also there are 80 equations in Fig10, why in L346 you wrote “these 84 equations”, there are no explanations
26. P13L344: Reference to “graph traversal algorithm” missing
27. P14Fig11, a) the authors claimed that this figure is gravity measurement and used the symbol g which is for absolute gravity. The values of gravity on Earth surface cannot be around 4300 mGal. Please check. b) it is not a good idea to change colors for representing base 1/2/3 between figures, this could be confusing. c) there is no purple color in fig 11b
28. P15L397 What is “outdoor correction”
29. P17L460, if equations are provided, then they should be explained, what are all the symbols in Fig14? They are not explained
30. P20 The X and Y axis of Fig16 and 15 are not consistent
31. P22 Figure19 not properly explained, what are the cyan color dots
32. P24L628, where did the “ ge, k and e2” come from? It was not in equation26
33. P25 Equation 27 is wrong, please check the reference. Also the statement following eq27 cannot be true, the effect of atmospheric correction would not be in the order of ugal according to the h

34. P25 Equation28: form g to gravity anomaly, the normal gravity should be removed
35. P26L677 “which is 12 cm, corresponding to a maximum error of about ±37 μgal” how is the 37 uGal obtained?
36. P28Figure26, the authors wrote that this is the raw collection of data for the three surveys. However, there is a mix of usage between absolute gravity value g (value ranging around 981100) and likely gravity anomaly/disturbance (value -15 to 2).
37. P29Figure27, also Figure28: These values in the figure cannot be gravity disturbance, they should be absolute gravity values
38. P32Figure30: it is difficult to read any information from the figure, please make it more clear
39. P32L839, where does the “R^2” coming from?
40. P33 L865 writes that Fig31 presents the Bouguer anomaly but in the figure it is written gravity disturbance. Please check and correct the usage between gravity, gravity anomaly and gravity disturbance throughout the paper.