Revisions for egusphere-2026-1141: Enhanced removal of very low frequency (VLF) and low frequency (LF) radio noise from transient electromagnetic (TEM) data with modelling and adaptive filtering

Reviewer 1:

The work is devoted to the development of advanced algorithm for TEM data processing in the case when signal of standard (VLF, 3-30 kHz) and low frequency (LF, 30-300 kHz) radio stations are present.

Characteristics of VLF and LF radio signals encoded with minimum-shift keying methods are used to allow for a solution where the noise is modeled and subtracted. It has been shown that the addition of an adaptive filter can fine-tune the radio model and improve the signal-to-noise ratio.

Proposed algorithm has been checked on a synthetic noise data set and on a real field noise data.

Reply:

We thank the reviewer for the positive comments.

Reviewer 2:

The paper by Hardenberg and Larsen "Enhanced removal of very low frequency (VLF) and low frequency (LF) radio noise from transient electromagnetic (TEM) data with modelling and adaptive filtering" offers an improved method as described in the title. The paper is well-written and can be published after a minor revision, subject to clarification regarding the method's software.

I suggest simplifying the title. First and foremost, remove the acronyms from the title (they should be defined in the main text). Furthermore, simplify the title by removing the unnecessary details: "Enhanced removal of very low frequency and low frequency radio noise from transient electromagnetic data".

The method is described and demonstrated quite well. What about the software that implements the method? Will the author provide it as an open-source package or has it been

filed for patenting, or the like? Ideally, the software should be uploaded and referred in the paper text.

At the end of the abstract, the authors say that "…the standard errors […] are improved…" – it is better to say about errors that they are "reduced".

In line 39, "is that in unlucky cases" (remove "it").

In lines 61-64, mention numbers of sections instead of repeating multiple times "follow" and "following".

Reply:

We thank the reviewer for the comments.

Regarding the acronyms in the title, we will remove these as suggested. Regarding the final words "with modelling and adaptive filtering" we prefer to keep these as they provide direct information on the content of the paper.

As for the software, it is not possible for us to make it publicly available. We have done our best to describe the algorithms clearly and provided a data set that other researchers can benchmark against.

As suggested, we will change "improved" to "reduced" in the abstract.

Line 39: "it" will be removed as suggested.

Line 61-64: The text will be changed to "Section 2 gives a brief background of transient electromagnetics and commonly encountered noise, in particular MSK-encoded radio noise. Section 3 details our processing steps. In section 4, results obtained with both synthetic and real data are provided. The paper ends with a discussion in section 5 and concluding remarks in section 6."