

Comments on egusphere-2025-1015

Title: Analysis of Lightning-Induced Currents in Supply Cable Shields and Their Impact on LLS Sensor Site Errors

Author(s): Kohlmann et al.

Reviewer: Dylan Goldberg

General Comments

This study provides an interesting and thorough analysis on the physical mechanisms behind angle and amplitude site errors for magnetic direction finders in lightning location systems. This work is important for understanding the potential errors due to sensor and cable placement associated with sensor site locations. The authors provide a clear and concise description of their methodology towards evaluating sensor site errors and determining which variables are most important to their analysis. I don't have any major issues with this work but I have a few minor comments to add without repeating what the other reviewers have suggested.

Specific/Technical Comments

- Line 114: Is the theoretical shielded conductor single or double shielded? Do the results of this study apply to both? It would also be interesting for a future study to see if the results vary between types of shielding used (i.e. braid vs foil).
- Lines 204 - 205: Should "finite-length" be removed since that (at least to me) is implied by a cable of length L ?
- Lines 244 - 245: It's stated that contributions beyond 50 m are assumed to be negligible. Was this number decided based on a percentage from the $1/r^2$ dependency or were contributions beyond this number tested initially?
- Figure 7: The ground electric conductivity for the red line should also have units in the legend to be consistent with the other lines.
- Figure 8: The vertical axis labels are missing the closing parenthesis around the units. Also, should the $d = -0.0$ m burial depth be negative?
- Figure 9: It may be beneficial to use the same notation for the conductivities across the different figures and text; maybe switch the legend conductivities from scientific notation to magnitudes as shown in the figure caption? Also, I'm not sure I understand the change in the time scale of the horizontal axis for this figure compared to figures 7 and 8.
- Line 308: The equation " $d=1m$ " should probably be " $d = 1 \text{ m}$ " (spaces added) to be consistent with the other inline equations. This also occurs in the legends of some figures.

- Line 326 - 327: There seems to be an extra line/paragraph starting here.
- Figure 19: Fig (a) appears to be lower in resolution (dpi) quality than the other figures in this paper.