

General comments

The manuscript investigates geomagnetic disturbances associated with the 2025 Mandalay earthquake sequence. However, significant concerns remain regarding the identification of earthquake-related anomalies, the reliability of the proposed source localization method, and the physical plausibility of the estimated rock currents. In particular, although the authors attempt to account for external geomagnetic disturbances, the possibility that the observed anomalies originate from magnetospheric, ionospheric, or instrumental sources has not been sufficiently ruled out. These issues require further investigation and quantitative validation. I recommend major revision.

Detailed comments

Lines 33–39: I suggest shortening this discussion and focusing more directly on the scientific background and motivation of the present study.

Lines 79–82: Although the manuscript addresses all three research questions, the proposed relationships between geomagnetic anomalies and seismogenic processes require stronger quantitative and independent validation. In particular, the reliability of the source localization method and the physical plausibility of the estimated PSRC values should be more thoroughly demonstrated.

The authors should also consider alternative sources of geomagnetic disturbances, including external geomagnetic activity, ionospheric currents, and instrumental effects, before attributing the observed anomalies to seismic processes. In particular, recent studies have demonstrated that some coseismic magnetic disturbances may originate from instrumental effects rather than crustal electromagnetic processes (e.g., <https://doi.org/10.1007/s11600-026-01975-5>, <https://doi.org/10.1002/2016GL069759>, <https://doi.org/10.1093/gji/ggx423>, <https://doi.org/10.1093/gji/ggaa374>)

The applicability of laboratory-scale PSRC observations to geomagnetic disturbances detected approximately 700 km from the earthquake source requires stronger physical justification.

The interpretation of pre-seismic TEC anomalies as evidence of substantial rock currents is speculative. The authors should acknowledge alternative ionospheric processes and moderate this claim.

Lines 121–125: Please provide additional information on the sensor resolution, noise level, calibration, orientation accuracy, and instrumental stability.

Lines 134–137: The assumption that solar and geomagnetic disturbances can be considered negligible under $K_p \leq 4$ is not sufficiently justified. External geomagnetic variations may occur even under relatively quiet geomagnetic conditions. Please provide additional evidence, preferably using relevant geomagnetic indices (e.g., Dst and SYM-H, e.g., <https://doi.org/10.1029/96JA04020>) and comparisons with reference geomagnetic stations, to distinguish local anomalies from external geomagnetic activity.

Lines 138–144: A correlation coefficient of 0.6 does not necessarily indicate strong similarity between daily geomagnetic variations. Please justify the selection of this threshold and assess its influence on the identification of geomagnetic anomalies.

Lines 148–155: For a normally distributed variable, approximately 95%, rather than more than 99%, of observations fall within ± 2 standard deviations. Furthermore, the authors should justify the combination of standard deviations from different months in Equation (1). Additionally, the selection of March 1–22 as the background period appears to depend on the subsequent identification of anomalies beginning on March 23. Please clarify how this period was selected.

Lines 160–180: The intersection of the HVGD normal with a known fault does not necessarily identify the actual seismogenic source. Furthermore, the suggested positioning uncertainty of approximately 1 km should be supported by a quantitative analysis.

Lines 190–193: Please clarify the justification for comparing the magnetic declination change of 0.5224° with the angular uncertainty in source positioning.

Fig 4, 6: The spatial agreement between the calculated intersection points and earthquake epicenters and the overlap with the supershear rupture segments require further validation, as the intersection points are constrained to the known Sagaing Fault. Please provide quantitative evidence supporting the significance of these spatial relationships.

The figure 4 is difficult to interpret, particularly the color-coded and stacked bars. Please improve the figure's clarity.

Lines 265–280: The estimated PSRC values of up to 91.9 MA require stronger physical justification. The authors should assess the sensitivity of these estimates to the assumed source depth, current geometry, and magnetic permeability, and clarify whether the temporal PSRC variations reflect actual changes in rock currents or uncertainties in the estimation method.

Section 4.2: Although the authors acknowledge the speculative nature of the proposed links between PSRCs, unusual animal behavior, and earthquake lights, this discussion is extensive given the lack of direct supporting observations. I suggest shortening this part.

Figure 7: Please specify the unit of the ΔMBT threshold.

Minor comments

The text requires careful English proofreading. (e.g., evnets, casued, intrepreted, possibly, Mandaly, and and.)

Sections 4.1 and 4.2 have identical titles. Please revise the titles.

lines 328–330: Please check the reference to Figure 6.