Response to reviewers' comments

We sincerely thank the reviewers for their valuable feedback and constructive suggestions, which have substantially improved the quality and clarity of our manuscript. The major comments, in particular, have strengthened both the interpretative framework and the overall robustness of our model. All minor suggestions have been carefully addressed and incorporated into the revised manuscript. Below, we provide detailed responses (highlighted in blue) to each of the major comments. For clarity and ease of review, we have numbered and organized the comments from each reviewer accordingly.

Reviewer 1

The objective, significance, and practicality of this study are undeniably clearly. The data processing techniques employed are up-to-date and appropriate, adding scientific depth to the work, making it valuable for others facing similar challenges in similar geological settings. Overall, the organization of the manuscript is good and doesn't raise any significant issues. The abstract part is well-crafted and provides a clear summary of the manuscript's content. The title aligns well with the manuscript's descriptions, and no discrepancies are observed. The studies which utilize potential field data (gravity, magnetic), along with the seismic images, aim to map lithologies and structures that spatially or genetically influence the distributions of magnetic mineralization in North-Western Bangladesh. The references are quite enough and included recent publications. In this context, the manuscript clearly and understandably discusses the objective, geology, data processing (filtering) techniques, and results.

Author's response: We thank the reviewer for the encouraging and thoughtful feedback. We are pleased that the objectives, data processing techniques, and overall presentation were found clear, scientifically valuable, and relevant to similar geological studies.

Comment 1: The study used secondary data from the repository of the Bangladesh Geological Survey. However, there is no mention whether the data was collected through ground or airborne survey. Assuming the area is large, it could be airborne survey data. In any case, a brief overview of the data acquisition, including line spacing, sampling interval, flight altitude, instrumentation, survey accuracy, etc. is expected. This important information indicates the quality of the input data and the credibility of the conclusions.

Author's response: Thank you to the reviewer for highlighting this important point. While the original manuscript included gravity and magnetic data, it lacked details about the data acquisition process. In response, we have added a description of the gravity survey methodology in the revised manuscript.

Between lines 193 and 212 in the updated manuscript, we have included, *''The gravity data presented in the paper were acquired through a land-based gravity survey conducted during the dry season (November–April) in the 1970s across approximately 8,000 km^2 in northwestern Bangladesh. Observation points were spaced 1–1.5 km apart, with elevations measured using digital leveling referenced to benchmarks from the Survey of Bangladesh. The Sylhet Gravity Base Station, connected to the IGSN 71 network, served as the national reference, and local sub-bases were established to correct for instrument drift. Two gravimeters were used—the analog Sodin Worden and the digital CG-5 AutoGrav with integrated GPS—with frequent cross-verification to ensure data accuracy. Standard geophysical corrections, including those for instrumental drift, tidal and latitude variations, and elevation differences, were applied, with Bouguer corrections calculated using a slab density of 2.0 g/cm^3.*

Between 1979 and 1980, Hunting Geology & Geophysics Ltd. completed a nationwide aeromagnetic survey for the Government of Bangladesh, under the auspices of the Geological Survey of Bangladesh and Petrobangla. Flying a Geometrics G-803 proton magnetometer just 500 ft (≈152 m) above ground, the crew collected total-field data along flight lines oriented N 45° W on a nominal 3 km grid (locally tightened to 1 km) and crossed them with tie-lines oriented N 45° E at 5 km spacing. Measurements were recorded every two seconds with a resolution of ±0.05 nT, within a regional field that varied from 44 848 nT to 47 086 nT (inclinations 28° 30′–38° 30′, declinations 13° W–37° W). All readings were archived in both digital and analogue form, and the data were uniformly shifted upward by 900 nT so that every value is positive.''

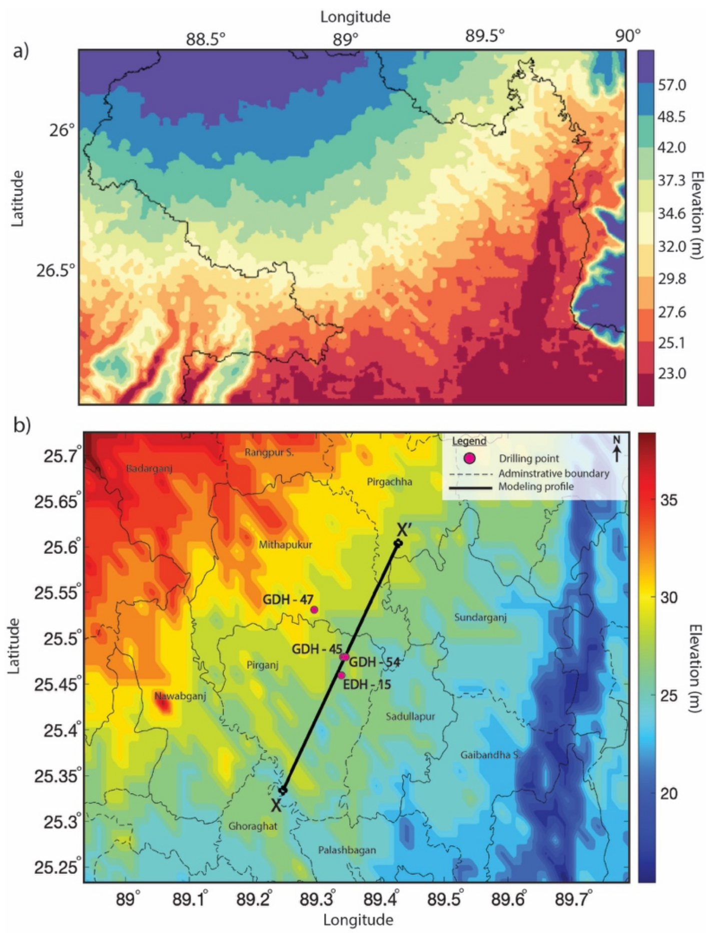
Comment 2: Fig. 2 shows the interpretation results of seismic profiles (Profiles-1 & 2), and the geological log results from boreholes EDH-15, GDH-54, and GDH-47. It is obvious that these results clearly illustrate that the basement is much deeper in the north than in the south.

Author's response: We appreciate the reviewer's comment. However, we cannot find the text where we suggest that the basement is not deeper in the north. In fact, Figure 1b presents basement depth interpreted from 2-D seismic data, clearly showing that the basement lies at approximately 1200–1400 m depth in the north and becomes shallower toward the south, reaching depths of 200–600 m.

Comment 3: An attempt has been made to generate a preliminary 2D model using GM-SYS software and characterize the subsurface features. This is generally good and appreciated, but the following points need to be clarified:

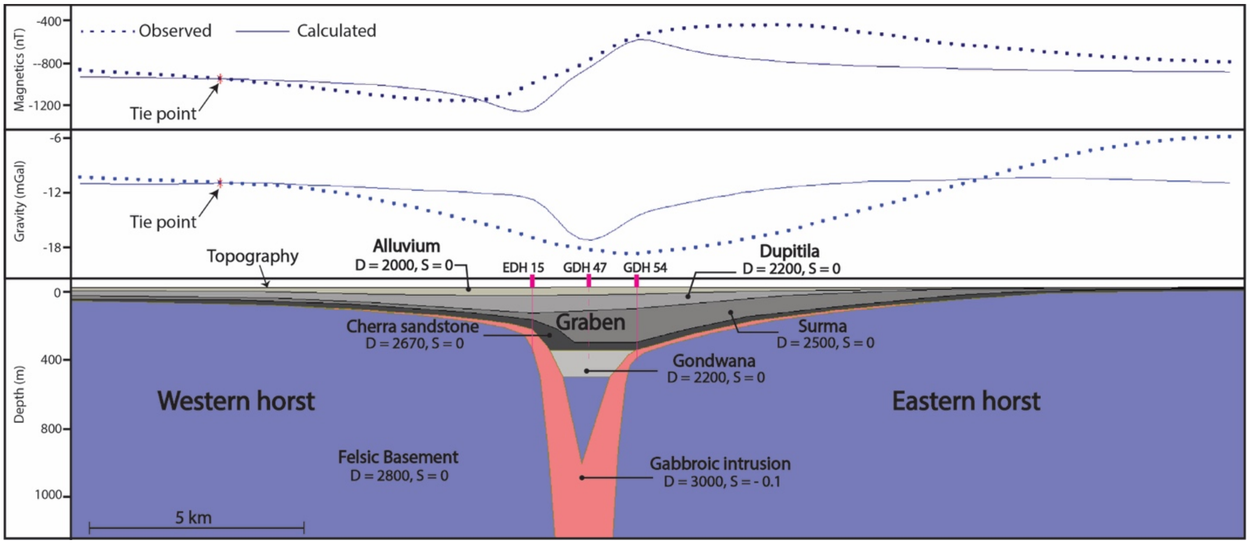
a. The topography of the area is assumed perfectly flat (see models in Fig. 5 and 7). Does this reflect the real situation? If not, to comparing Fig 5 and Fig. 7, it gives an impression that the eastern horst appears to have higher altitude than the western horst. Please explain to what extent the topographic irregularities will change the computed model (Fig.5).

Author's response: We thank the reviewer for raising the concern regarding topographic representation in the model. While constructing the model, we carefully incorporated topographic variations, although we did not explicitly display the topographic data in the original manuscript. However, the data source was cited in the Section 3 (Data and Methodology). We initially chose not to display the topography because the region is relatively flat, with limited variation, particularly along our modeling profile, where the elevation change is approximately 1 meter. To address this, we have now included a topography map in the supplementary materials (Figure S1). The map shows that elevation generally decreases from north to south, with elevations around 75 meters above mean sea level in the north and approximately 25 meters in the south.



Supplementary Figure 1: The elevation data from Smith and Sandwell (1997) in northwestern Bangladesh (a) and around our 2-D modeling profile (b).

Moreover, in Figure 5, the topography was not visible due to the way the model was sliced for presentation. In the revised manuscript, we have included an extended version of the model where topographic variation is more apparent and indicated. Additionally, we now clarify in the caption of Figure 8 that the top yellow layer represents the topographic surface.



b. Although a perfect fitting is not expected, the degree of curve matching between the observed and modeled profile appears to be very crude (Fig. 5). All the underlying units are assumed to have a magnetic susceptibility of zero (S=0 SI), except the mafic intrusion, which is S=0.1 SI. You stated that the shallow basement has a diorite, tonolite and granodiorite composition, and is intersected by pegmatite and mafic/ultramafic dykes. The area also has a complex structural setting. Therefore, due to such varying composition, degrees of faulting or fracturing and weathering of the basement, and possibly the overlying formations, there is likely to be a notable heterogeneity in magnetic and density properties. However, it remains unclear the magnetic susceptibility is assumed zero for all the units; how this assumption reasonably reflects the actual conditions on the ground?

Author's response: We would like to express our gratitude to the reviewer for highlighting this important constraint in our study. We acknowledge the mismatch between the observed and calculated anomaly in our forward model, which was intentional. This approach was chosen for several reasons, as outlined below

1. Our goal was to adopt the simplest model that reasonably captures the observed anomaly. From a curve-matching perspective, even a basic 2-D forward model can yield multiple valid solutions. Introducing complex structures without strong geological justification would only increase the ambiguity, leading to an overwhelming number of possible interpretations. Therefore, we aimed to reflect the essential features of the observed anomaly using a geologically grounded and minimally complex model.

2. It is also important to emphasize that our model is two-dimensional, not three-dimensional. Given the complex geology of the study area, there are significant variations in structure in all three spatial directions that cannot be fully captured in a 2-D model. For instance, in the eastern horst region, the observed gravity values are notably higher than the calculated ones toward the end of the profile. We believe this discrepancy arises from

the extensive lateral extent and relative shallowness of the eastern horst, as indicated by regional gravity mapping. While our current modeling profile captures part of this feature, the full three-dimensional influence of its geometry cannot be adequately represented in a 2-D framework.

3. The spatial extent of our modeling profile is relatively limited compared to the broader coverage of the potential field survey. As a result, the observed gravity and magnetic anomalies exhibit lower-frequency, regional-scale trends, while our calculated anomalies reflect higher-frequency, localized responses. This mismatch arises from differences in station spacing and model resolution, leading our model to capture fine-scale structural responses that are not as prominent in the broader, lower-frequency observational data.

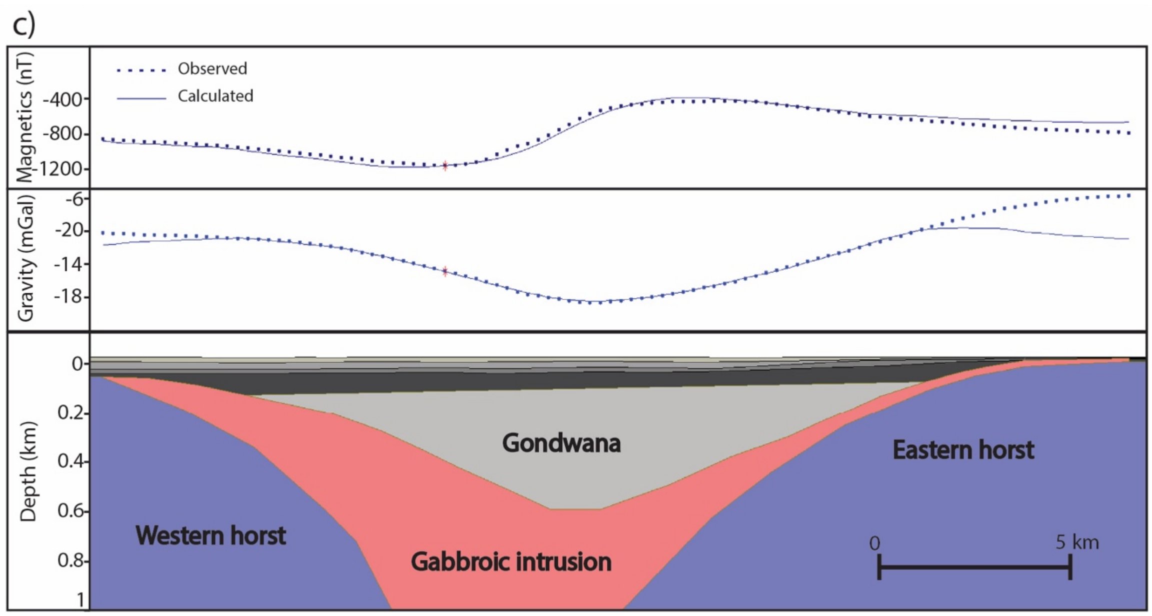
Therefore, to minimize ambiguity, highlight the essential features of the observed anomalies, avoid introducing complex structures without strong geological justification, and better align with the broader, low-frequency nature of the observed potential field anomalies, we chose to adopt a simplified model.

To address the reviewer's concern regarding the degree of curve fitting, we have made two key updates to the manuscript. First, we have included a detailed explanation of why we chose a simplified geometry for our forward model, as discussed earlier in this response (between lines 450 and 461 in the revised manuscript). Second, we explored several alternative model geometries (described in our response to the next comment), and these tests demonstrate that the model presented in the manuscript offers the most concise and geologically reasonable representation (between lines 463 and 484 in the revised manuscript). Additionally, following the reviewer's suggestion, we assigned magnetic susceptibilities to layers other than the gabbroic intrusion; however, this adjustment did not improve the mismatch between the observed and calculated anomalies.

c. As a result of the above assumption and excessive generalization, the overall fit of the gravity and magnetic profiles is poor. Therefore, I suggest further efforts to bridge the gaps and better align the model to represent the subsurface structures. Additionally, the authors' claim that constructing a reliable regional model is unfeasible without adequate seismic data seems unjustified. It is important to note that in areas with vertical and sub-vertical structures, seismic methods are less effective compared to their values in sedimentary terrains, where the lithologies tend to exhibit horizontal or sub-horizontal layering.

Author's response: We acknowledge the mismatch between the observed and calculated anomalies in our 2-D forward model. However, as outlined in the previous comment, we intentionally adopted this approach for several well-justified reasons. In response to the reviewer's concern, we have also tested alternative models, which further support that the presented version offers the most concise and geologically reasonable solution.

Following is a part of the figure (Figure 6) we have added to the manuscript that shows a perfect fit between the observed and calculated anomaly. However, to achieve that, we had to completely abandon the constraints from well-logs and regional structural context based on gravity and magnetic data.



d. The amplitudes and gradients of gravity and magnetic anomalies observed on the so-called western and eastern horsts appear to be quite distinct. The authors attributed this difference to variation in basement depth. Moreover, the trend of the anomalies across the graben raises significant concerns. In the computed model, both anomalies are relatively narrow, and their gradients are gentle. In contrast, the observed anomalies are broader and exhibit slightly higher amplitudes. Therefore, I am skeptical about the model's accuracy, regarding the width of the graben. Developing a more refined model is crucial, as it is one of the primary outputs of this work.

Author's response: This concern is completely valid, and we thank the reviewer for highlighting this. In our 2-D forward model, the observed anomaly shows broader, lower-frequency amplitudes and gradients, whereas the calculated anomaly is narrower and higher-frequency. We acknowledged this mismatch in our response to Comment 3b and reiterate it here for completeness.

The mismatch stems mainly from sampling density. Our forward model is calculated on 250 m spacing, whereas the gravity data were acquired every 1–1.5 km and the magnetic data every 5 km. This finer model spacing produces higher-frequency, narrower anomalies, while the coarser field sampling smooths the signal into broader, lower-frequency features.

We have included this discussion in the updated manuscripts between lines 459 and 461.

e. Even though boreholes EDH15 and EDH54 do not align exactly with the model profile, they can still provide valuable insights into the vertical extent of the lithologies. I understand that the results from these logs are used to constrain the model. In this case, it would have been more effective to show the boreholes intersecting each layer to better illustrate how they are utilized in defining the 2D model presented.

Author's response: In the previously submitted manuscript, we included the locations of both boreholes along the profile. In response to the reviewer's suggestion, we have now added vertical lines from the surface borehole locations in the revised manuscript, allowing readers to more easily correlate the model lithology with the well-log data.

Comment 4. From the mineral exploration perspective, it is crucial to understand which lineaments / structures are more important in controlling the distribution of magnetic minerals, i.e., the SE-NW, SW-NE or their intersections (see Fig. 6b & 6d). Since this is also important in answering the research objective, the authors' perspective must to be reflected in the spatial data analysis part of the manuscript.

Author's response: In our interpretation and discussion, we identified two sets of lineaments with distinct orientations across the study area. In response to the reviewer's request to clarify which type holds greater potential for mineral exploration, we have expanded the first paragraph of Section 5.2, Economic Mineral Potential, to address this point.

''Our integrated spatial analysis and 2-D modeling reveal that the Rangpur Saddle contains at least two prominent horst and graben structures. The 2-D model results (Figure 5), supported by drilling log data, confirm the presence of gabbroic bodies along normal faults within these structures. This suggests that the most prominent oval-shaped dipolar magnetic signature has strong potential to host iron-bearing rocks such as gabbro. When the other similar patterns are mapped onto the gravity data, they consistently correspond to the boundaries between high and low gravity zones, marking the transitions between horsts and grabens. We interpret these gabbroic intrusions as products of magmatic emplacement along extensional faults, consistent with processes associated with the early stages of continental rifting. Furthermore, analysis of lineament orientations (Figure 7d) indicates that, except in the western horst region, most of the interpreted magmatic emplacement appears to be controlled by NW–SE oriented lineaments.''

Comment 5. A semi-circular anomalies are outlined on the residual RTP magnetic map with alternating high and low values. These features are attributed to gabbroic intrusive bodies (Fig. 4). Although the density of gabbroic massive is significantly higher (3 g/cc) than that of the overlying sedimentary units (<2.5 g/cc), these features are not shown on the gravity anomaly map. At least, one of gabbroic bodies should have been traced with this density contrast. So, how do you explain why these feature, which should have been traced on the gravity survey map couldn't be delineated? Doesn't this raise concerns about the origin and the locations (?) of these apparently circular magnetic anomalies?

Author's response: We appreciate the reviewer's thoughtful question, which addresses a key point that may arise in the minds of many readers. In our magnetic data, we observe distinct oval-shaped dipolar anomalies, which, based on the modeling and interpretation presented in our study, indicate the presence of gabbroic intrusions containing magnetically susceptible minerals.

The reviewer raises a valid concern: if these gabbroic bodies are present, one might expect a corresponding increase in the gravity signal due to their higher density relative to the overlying rocks. However, this expected gravity anomaly is not observed in our data. We believe this discrepancy arises from two interconnected factors:

1. Gravity and magnetic methods are most sensitive to lateral variations in subsurface properties. In our study area, the subsurface structures are predominantly flat-lying. At depth, the gabbroic intrusions lie laterally adjacent to felsic basement rocks. While the density contrast between these two lithologies is relatively modest (~0.1 g/cm^3), their magnetic susceptibilities differ significantly. This contrast yields a pronounced magnetic response but only a subtle gravity anomaly, which may be indistinguishable from background variations.

2. The spatial resolution of our gravity survey (~3 km station spacing) is relatively coarse compared to the scale of the gabbroic intrusions. As a result, any high-frequency gravity signal associated with these smaller or more localized bodies is likely undersampled and thus not adequately captured in the final gravity dataset.

This discussion is added to the revised manuscript between lines 340 and 356.

Comment 6. The authors recommended further studies, but overlooked to provide, at least, a preliminary idea of the specific objective to be addressed, the target chosen for detail surveys, the survey platform (whether airborne/helicopterborne or ground-based), what geophysical methods might be used (again, only these or also include others, like TEM, MT, Seismic,..?), and finally the survey grid size (profile and station intervals).

Author's response: In response to the reviewer's comment, we have expanded the last paragraph of the discussion section to the following:

'Future research in this region will focus on constructing detailed three-dimensional (3D) models of the subsurface to enhance our understanding of the geological framework. This will involve compiling a comprehensive dataset repository that integrates historical seismic reflection data, including those acquired by private entities. Given the shallow nature of the basement, which lies between approximately 128 and 1000 meters depth, high-resolution

gravity and magnetic data will be critical for resolving fine-scale structural features. To achieve the necessary spatial resolution, precision ground-based gravity and magnetic surveys are recommended. Specifically, we propose a targeted geophysical survey in areas exhibiting oval-shaped dipolar magnetic anomalies, using station spacing of 500 meters or less. Such high-density measurements will improve our ability to detect and delineate narrow mafic intrusions at shallow depths. In addition, developing a regional tomographic model using either local earthquake data or ambient seismic noise will provide complementary constraints on subsurface structures and further refine interpretations of the geological setting.

The study area is characterized by complex tectonic structures shaped by a diverse tectonic history. While the current study has focused on the Rangpur Saddle, future research will expand to cover the entire northwestern part of Bangladesh, including the Himalayan Foredeep and the Eocene Hinge region, which represents a Paleocontinental shelf. Such expanded coverage will provide deeper insights into the tectonic evolution and geological complexity of the area.'

Reviewer 2

This paper discusses basement structures and mineral potential derived from the analysis of gravity, magnetic, geology, and some seismic data from NW Bangladesh and also infers the tectonic paleo-stress regime. The idea of the paper is very good, but there are problems in some of the use of magnetic and gravity data. The paper is generally well-written and well-structured.

Author's response: We appreciate the reviewer's thoughtful feedback and recognition of the manuscript's structure and scientific merit. The concerns regarding the use of magnetic and gravity data have been carefully addressed through revisions that clarify our methodology and interpretations. We hope these changes effectively resolve the issues raised and enhance the overall quality of the work.

Comment 1: The main issue is with the processing of reduced to pole (RTP) maps (Figures 3b and 4a) and their subsequent interpretation. The intent of using the RTP data is to remove skewness in anomalies caused by varying inclination/declination of the magnetic field and also magnetization. In this case, it is to associate anomaly features with the faults with possible mineralization. Since the skewness caused by strong localized reversely remanent anomalies is not removed and the dipolar nature of the anomalies is present, one can only approximately associate the anomalies with faults seen in geology or inferred from gravity. This residual dipolar nature is what is referred to by the authors as "characterized by alternating magnetic highs and lows" and is misleading for their interpretation. The current writing suggests that the alignment of the line between the positive and negative parts of the dipolar anomaly with the observed and inferred faults argues for the magmatism along faults and mineralization. This is not correct in this case and should be clearly indicated that the localized anomalies show the approximate location of the sources of the strong localized anomalies.

The authors should discuss the remanence of the localized strong anomaly features, e.g. dipolar positive to the north and negative to the south features and the opposite of what is expected at the inducing inclination of ~39° for this region. Authors should also argue for "inferred magnetic sources are expected to lie close to the crossover from negative to the positive lobe of the dipolar anomalies" and then show/interpret that they could be formed along the faults observed in geological and gravity data.

Author's response: The reviewer has raised an excellent point about using RTP as a correction to the magnetic grid to remove the skewness caused by varying inclination and declination of the magnetic field.

In practice, RTP is a frequency-domain filter that recalculates a magnetic grid as if both the inducing field and the source magnetization were vertical, i.e., as they would be at the magnetic pole. By forcing this "pole" geometry, RTP removes the lateral skew and dipolar shape that normal field inclination and declination (plus any remanent magnetization) impose, centering the anomaly peak directly above its causative body. For a dome-shaped, uniformly magnetized body, such as a seamount, the raw (uncorrected) total magnetic intensity (TMI) map shows a classic dipolar pattern rather than a single peak. At mid-latitudes, the positive lobe is displaced a short distance in the direction of the Earth's magnetic field vector (generally pole-ward), while the negative lobe lies an equal distance on the opposite side, so the body itself sits roughly on the zero-contour between the two. The anomaly is therefore skewed and elongated along the strike of the ambient field, giving only an approximate idea of where the source lies. RTP filtering helps by numerically "rotating" the data into the geometry that would exist if both the inducing field and the source magnetization were vertical, i.e., as at the magnetic poles.

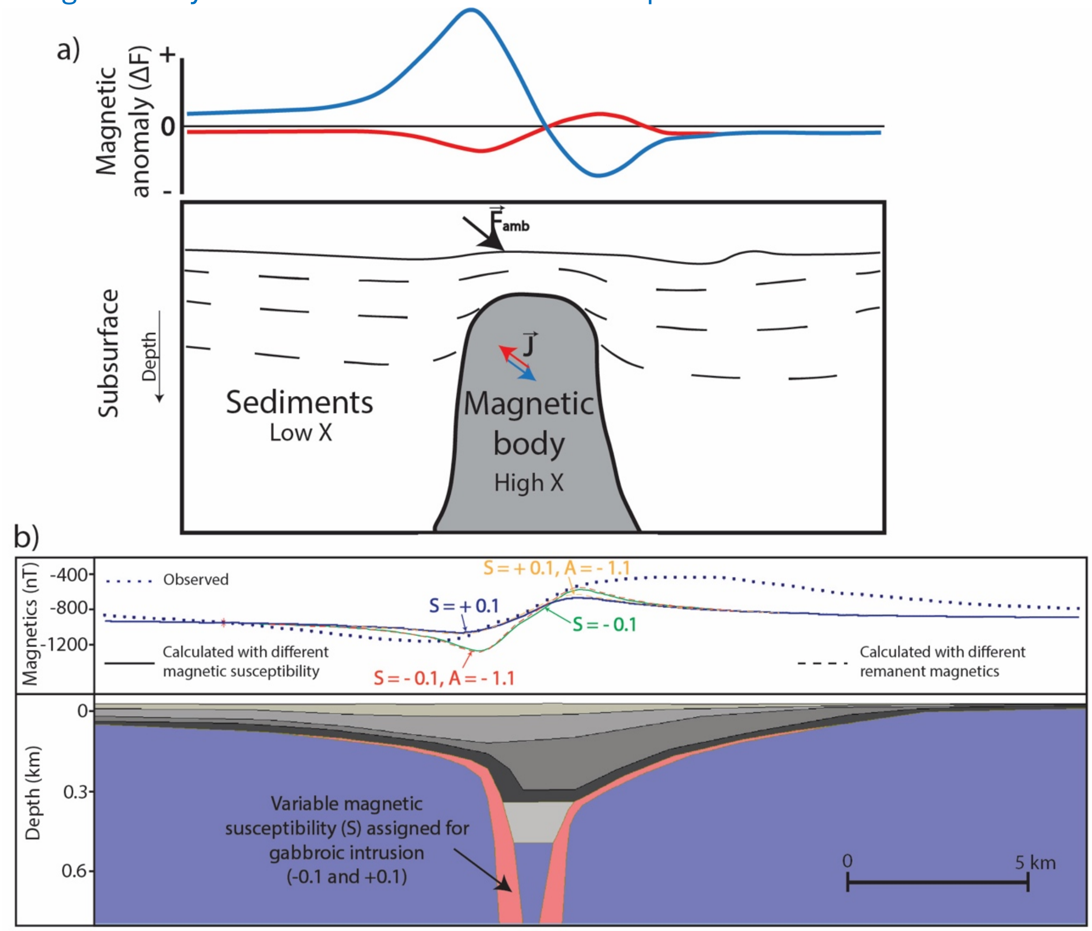
By calculating RTP correction with Oasis Montaj software, we can offset and diminish the dipolar look of near-equatorial anomalies, but that rarely eliminates it completely. The standard Fourier-domain RTP operator contains a ' 1/sin(i) ' term. When the inclination 'i' approaches 0°, the denominator explodes and the filter amplifies noise and N-S-oriented wavenumbers, creating the very strong dipole streaks. In this case, Geosoft's filter becomes unstable, producing strongly dominating trends that would obstruct real features. The built-in remedy is to specify a larger amplitude-correction inclination, so the operator never sees an exact zero in sin(i). Our interpretation in this paper assumes that the magnetic body sits roughly between the contour lines of the positive and negative anomalies.

In the updated manuscript we have provided a detailed account on the RTP calculation and how it could not completely remove the skewness in the magnetic field calculation. We have also included a discussion on how remanent magnetization affects the observed total magnetic intensity.

Between the lines 234 and 246, we have provided the following details.
'Total magnetic intensity anomalies arise from the combined effect of induced and remanent magnetization in rocks. Induced magnetization is caused by the Earth's ambient field acting on magnetic minerals, so it is aligned parallel to the present field, whereas remanent magnetization is a permanent magnetization inherent to the rocks (acquired in the past) that often points in a different direction (reflecting the Earth's field at the time of rock formation). The total magnetization is the vector sum of the induced and remanent contributions. As a result, the direction and relative magnitude of each component strongly influence the observed anomaly. If the induced and remanent magnetization vectors are aligned, they reinforce each other to produce a stronger (high-amplitude) anomaly; if they are opposed or significantly misaligned, they partially cancel or reorient the net magnetization, which can weaken the anomaly or even yield one of opposite polarity compared to what an induced-only model would predict. This interplay complicates data interpretation, since assuming all magnetization is induced (parallel to today's field) can lead to errors in locating or characterizing sources.'

Below is a part of **Figure 6**, which we have newly added to the manuscript that discusses the effect of remanent magnetization both in theory and practice. In 'a' we see how the polarization direction of the remanent magnetization affects the total magnetic intensity reading of a dome-shaped magnetic body. This is a conceptual illustration of how induced and remanent magnetization contribute to total-field magnetic anomalies. In the top panel synthetic total-field anomaly (ΔF) profiles are calculated for a concealed high-susceptibility intrusion beneath low-susceptibility sediments. The blue curve represents the response when magnetization is purely induced parallel to the present-day ambient field $\mathbf{F_{amb}}$, producing a simple positive–negative (dipolar) signature. The red curve shows how the anomaly shape and amplitude are modified when an oblique remanent magnetization component **J** is added to the induced vector.

In panel 'b', we examine how incorporating both remanent magnetization (A) and magnetic susceptibility (S) in the forward model affects the total magnetic intensity and its polarity. When we assign a positive susceptibility contrast (S = +0.1 SI), the calculated anomaly captures the general shape of the observed data more accurately in terms of slope, but the amplitude (highs and lows) is notably lower than the observed values. In contrast, using a negative susceptibility yields calculated amplitudes that closely match the observed highs and lows; however, the overall shape shows a poorer fit, with significant mismatches in the slopes. Because of the better match for the amplitudes, we prefer the negative susceptibility for the magnetic body in our forward model. We also implemented an additional component of remanent magnetization (A) to the magnetic body, fixed at -1.1 A/m, and tested combinations such as S = –0.1 SI with A = –0.1 A/m and S = +0.1 SI with A = –1.1 A/m. These combinations yielded a similar response, primarily increasing the amplitude of the anomaly without changing the overall trend. In conclusion, while the additional remanent magnetization component amplifies the anomaly magnitude, it does not significantly affect the trend or alter the interpretation of the model.

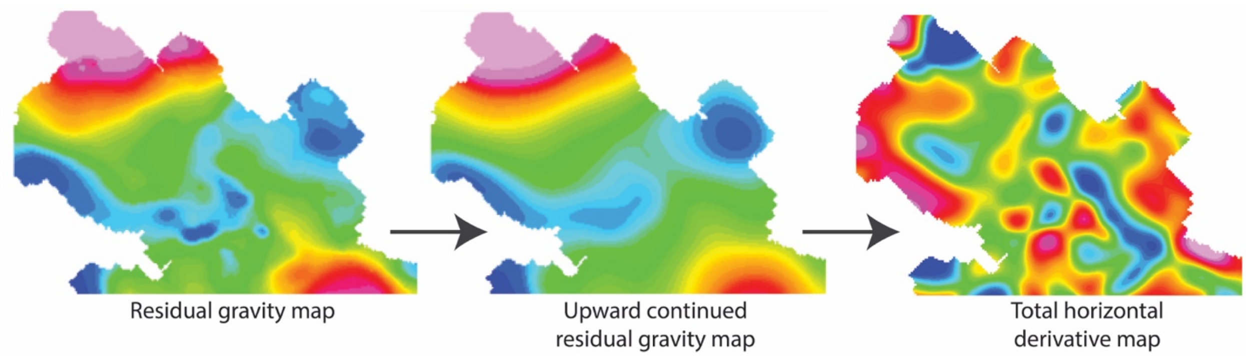


Comment 2: The second problem is the total horizontal derivative of residual gravity map (Figure 6c). The speckled appearance and positive/negative banding on the map is caused by inadequate gravity station spacing. The resulting linear appearing features on the total horizontal derivative map are really not correct and should not be interpreted as is done in Figure 6d. If you would like to use the total horizontal gradient, first upward continue the residual gravity map in Figure 4b (top panel) to a point where the speckling and banding doesn't appear in the derivative map and then use it for interpretation. I also think that even though Figure 6c says the total horizontal derivative is of the residual gravity map, it could be of one of the derivative maps. Figure 6c has a distinct appearance of the second derivative product of a sparse gravity station spacing and so please check it is what you say it is.

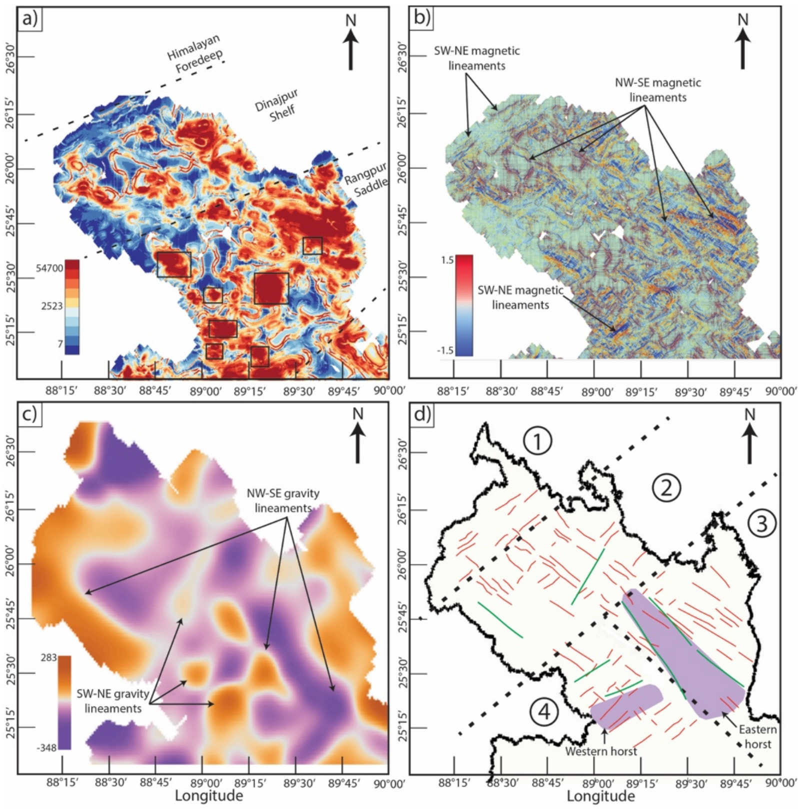
Author's response: We thank the reviewer for pointing out an important ambiguity in our manuscript. Figure 6c presents a total horizontal gradient map derived from the residual gravity anomaly. However, the figure caption did not specify which residual anomaly was used in this calculation—an oversight we have now corrected.

Additionally, the positive/negative banding observed in Figure 6c, which informed part of our interpretation, may have resulted from insufficient gravity station spacing. In response to the reviewer's suggestion, we applied upward continuation to the residual gravity data to a level where such banding was no longer present in the derivative map. This process effectively suppressed high-frequency features likely introduced by irregular station spacing.

Following this, we recalculated the horizontal gradient, as shown in the figure below, which revealed two prominent linear features more clearly and confidently, now free of spurious speckling and banding artifacts. The updated Figure 6 now reflects this change in the total horizontal gravity calculation.



Below is figure 7 in the updated manuscript,


a)
Himalayan Foredeep
Dinajpur Shelf
Rangpur Saddle
54700
2523
7
b)
SW-NE magnetic lineaments
NW-SE magnetic lineaments
1.5
-1.5
SW-NE magnetic lineaments
c)
NW-SE gravity lineaments
283
-348
SW-NE gravity lineaments
d)
Western horst
Eastern horst
N
26°30'
26°15'
26°00'
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