

Interactive comment on “Full-tensor gravity gradient eigenvector analysis for locating complex geological source positions” by Boxin Zuo et al.

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Reply: The purpose to introduce Φz in GTA is to distinguish the negative and positive anomaly in a data. As Fig.13 f. shows, $\tan\varphi$ will always be a positive value. To distinguish both of the negative and positive source in GTA, we added Φz in. We did not design GTA as an amplification filter of Φz . Because the numerical rang of $\tan\varphi$ is relatively very large. For example, in field data experiment, $\tan\varphi$ in the rang of $[0, 1.472e+03]$. While Φz in the range of $[-18, 21]$ which nearly 1% of $\tan\varphi$. The main contribution of Φz is identify the anomaly is positive of negative at a corresponding position. Yes, $\tan\varphi$ is used to local the centers of sources. But the edge information is also extracted from $\tan\varphi$. $\tan\varphi$ display a peak value at the source center, and it will also display as a relative small value which in the position nearby the source centers. So we utilize these small $\tan\varphi$ values to delineate the contours of sources. Yes, $\Phi z z$

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provides more detail information of source than Φz . But in this research, for the goal of distinguishing the negative and positive source, Φz can provide enough information. Thanks for your valuable suggestion, in further research, we want add $\Phi z z$ in and utilizes it to extract more detail source information.

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