Procedure for vertical separation analysis

We followed methods described by Thompson et al. (2002) and Amos et al. (2010), with specific steps as follow:

1. Derive extended topographic profile from LiDAR topographic dataset (Teton National Park, 2014), at the same location as the associated scarp height measurement, to include at least 100 m each of hanging wall and footwall surfaces.
2. Examine LiDAR-derived hillshade image and topographic profile to determine the portions of the profile that represent the specific landform cut by the fault. This step is important, as many of the surfaces, especially moraine crests, are composite. We excluded zones of antithetic faulting in this analysis.
3. Isolate the relevant topographic profile sections of hanging wall and footwall in the Excel spreadsheet.
4. Determine linear regression line to fit extracted topographic profiles of hanging wall and footwall isolated in previous step.
5. Determine the vertical separation between the extended hanging wall and footwall topographic regression lines, at the position on the fault scarp equivalent to 1/2 of scarp height. McCalpin (2009) states that normal faults typically underlie the scarp at 1/3 to 1/2 of the fault scarp height. For consistency, 1/2 of scarp height is used here.
6. All vertical separation measurements are included in SOM 1, and are noted in several portions of the article text.

Additional reference cited

McCalpin, J.P. (ed.), 2009, Paleoseismology, 2nd Edition: International Geophysics Series, Vol. 95, Elsevier Publishing, 647 p.