



**Supplementary Figure 1. Visualizing the meaning of the RCD and TCD parameters.** (a) Inclination and (b) declination for synthetic target (black) and candidate (red) records that have an XC of 0.50. (c) Projection of the candidate vectors (red circles) with a model generated using linear models of the  $x$ ,  $y$ , and  $z$  components of the candidate record as a function of the  $x$ ,  $y$ , and  $z$  components of the target record (black). Blue stippled lines are used to illustrate the difference between the data and the model. (d) Projection of the candidate vectors (red circles) with blue stippled lines used to illustrate the difference between the candidate vectors and the mean of the candidate vectors. (e-h) As in a-d, but for a synthetic target and candidate record with an XC of 0.27.