

Supplementary information:

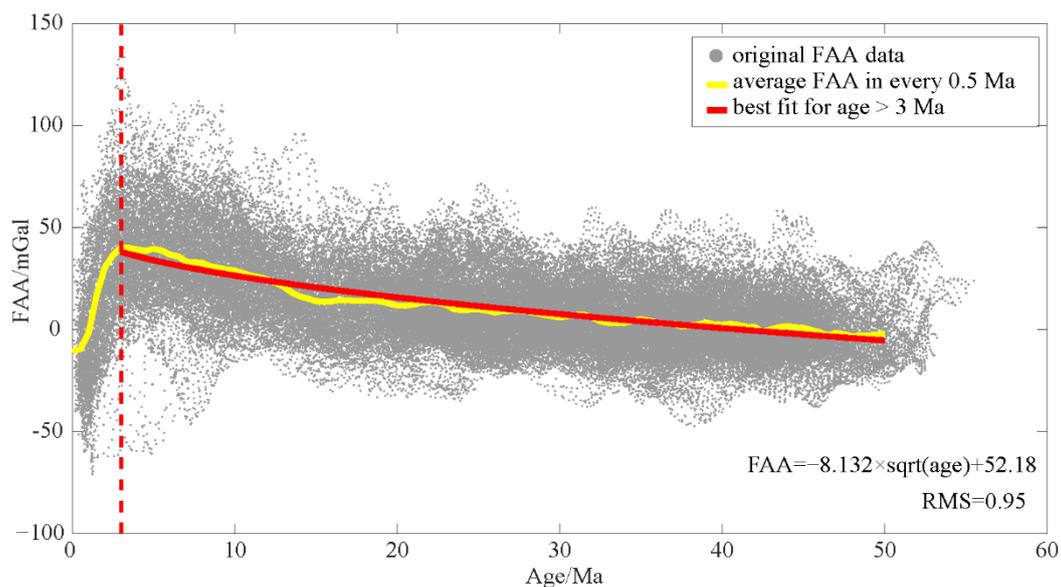


Fig. S1. Method of calculating residual free-air anomaly (RFAA). Gray dots are original FAA data points; the yellow line shows the age dependence of the FAA averaged in bins of 0.5 Ma; the red line is the best-fitting square root decrease in the FAA for crustal age greater than 3 Ma.

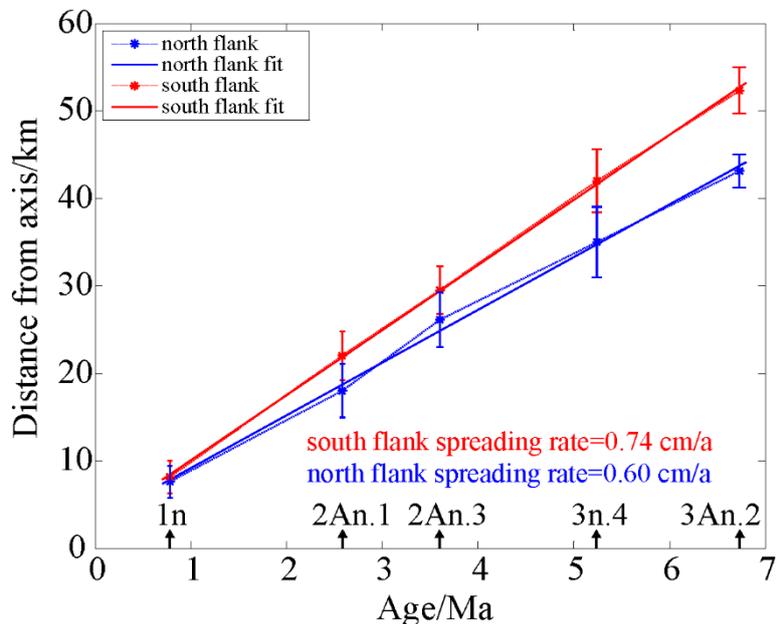


Fig. S2. Mean and standard deviations of spreading rates of the southern (red) and northern flanks (blue) of the entire study area. The arrows and letters indicate the magnetic anomaly reversals used in calculating spreading rates.

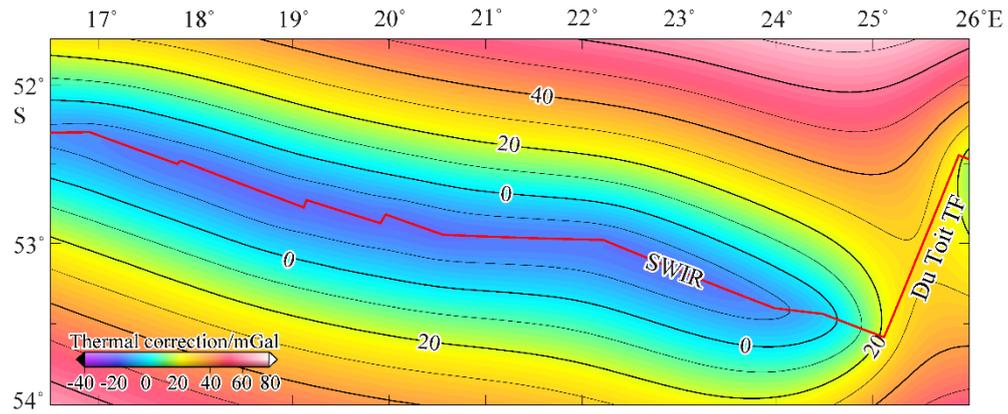


Fig. S3. Calculated gravity correction based on the 3D model of passive mantle upwelling driven by asymmetric seafloor spreading. The red line indicates the simplified plate boundary. Du Toit TF: Du Toit transform fault; SWIR: Southwest Indian Ridge.