

Supplementary Figure 1. Piercing point grid produced by the CCP stacking program, same as in Figure 3 of the main text. This grid is for cross-sections for a 15x15 km grid (Figures S2 and S3). The letter/arrow combinations correspond to Supplementary Figures S2 (E-W cross-sections) and S3 (N-S cross-sections).

Supplementary Figure 2. A-I) Results of CCP stacking program. This set of E-W cross-sections is for the 15x15 km grid in Supplementary Figure 1. Parameters for these cross-sections include  $a=2.5$ , sharing coefficient of 1.25, weighting filter of 0.25, and depth increments of 1.0 km. The number of receiver functions stacked to create these cross-sections is 799.

Supplementary Figure 3. A-I) Results of CCP stacking program. These cross-sections are N-S cross-sections, and the parameters are the same as in Supplementary Figure 2.

Supplementary Figure 4. Results of CCP stacking program for various weighting parameters,  $v=0.1, 0.5, \text{ and } 0.75$ . We show only the N/S and E/W cross-sections for the center of the array, corresponding to letter F in Figures 2, 3, and 4 in the main text. E/W cross-sections are on top and labelled as 3F with the different weighting parameters labelled, and the N/S cross-sections are on bottom, labelled as 4F.











