Figure 3. Seismograph stations (a) and earthquakes (b) used in the inversion. In (a) yellow circles indicate the subset for Kaikoura earthquakes. In (b) symbols indicate depth of earthquakes, and red diamonds indicate Kaikoura earthquakes. The box outlines the inversion area, with smaller box showing the area of Figs. 4 and 5 and dashed lines for cross-sections of Fig. 7. [from Eberhart-Phillips et al., GJI,2021]
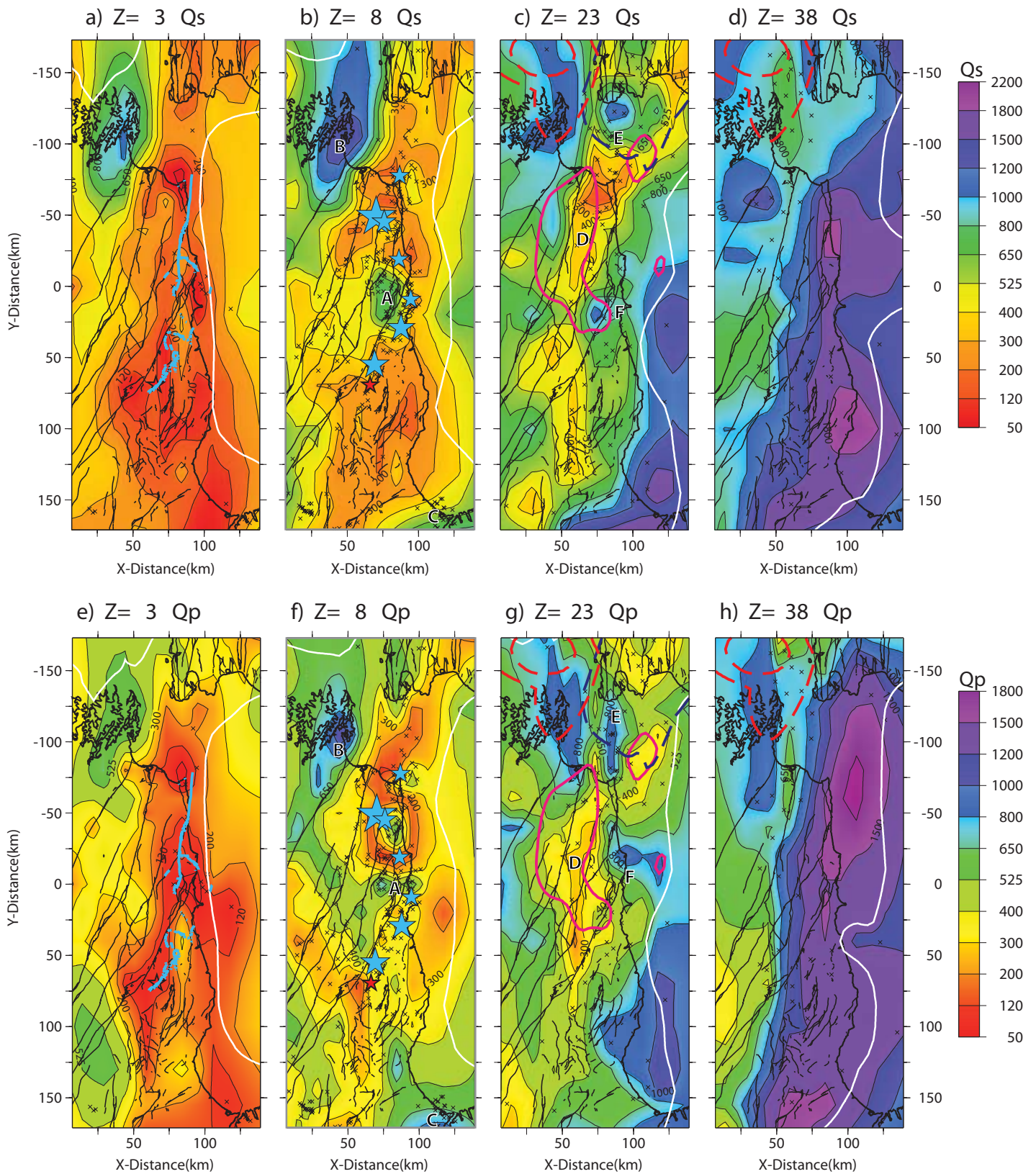
Figure 4. Map views of Qs and Qp results for depths z=3, 8, 23, 38 km, with active faults and coastline. White line, limit of adequate resolution, SF = 4; 'x', show inversion hypocentres near each depth. (a,e) For shallow depth, surface rupture (blue) is shown; (b,f) for 8-km depth mainshock hypocenter and subevents for strong ground motion (blue stars); (c,g) for 23-km depth, afterslip > 25 cm (magenta lines), slip deficit strong coupling (dashed blue line), Kapiti slow slip (dashed red lines- contours of 60 and 250 cumulative slip (mm)); (d,h) for 38-km depth, Kapiti slow slip (dashed red lines). Labelled features (and interpretati ons): A, high Q block (strong); B, high Q (schist); C, moderate Q (basalt); D, low Q (ducti le); E, high Q to north in Cook Strait (strong lower crust); F, high Q (inferred pluton). [from Eberhart-Phillips et al., GJI,2021]
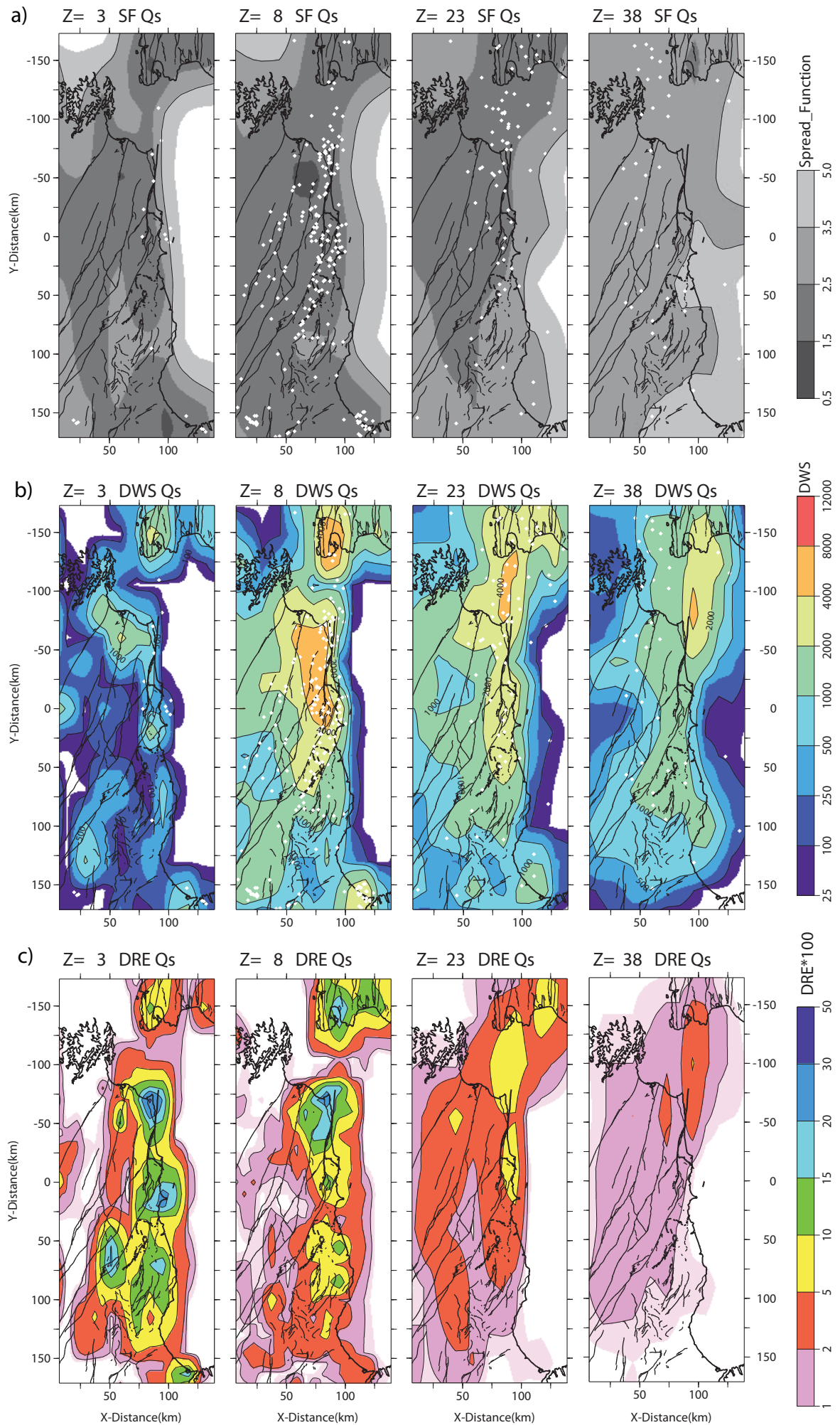
Fig. S2 Resolution for Qs, shown by a) spread function (SF), b) derivative weight sum (DWS) and diagonal resolution element (DRE). Inversion hypocenters, white diamonds in (a) and (b).[from Eberhart-Phillips et al., GJI,2021]

Fig. S3 Resolution for Qp, shown by a) spread function (SF), b) derivative weight sum (DWS) and diagonal resolution element (DRE). Inversion hypocenters, white diamonds in (a) and (b)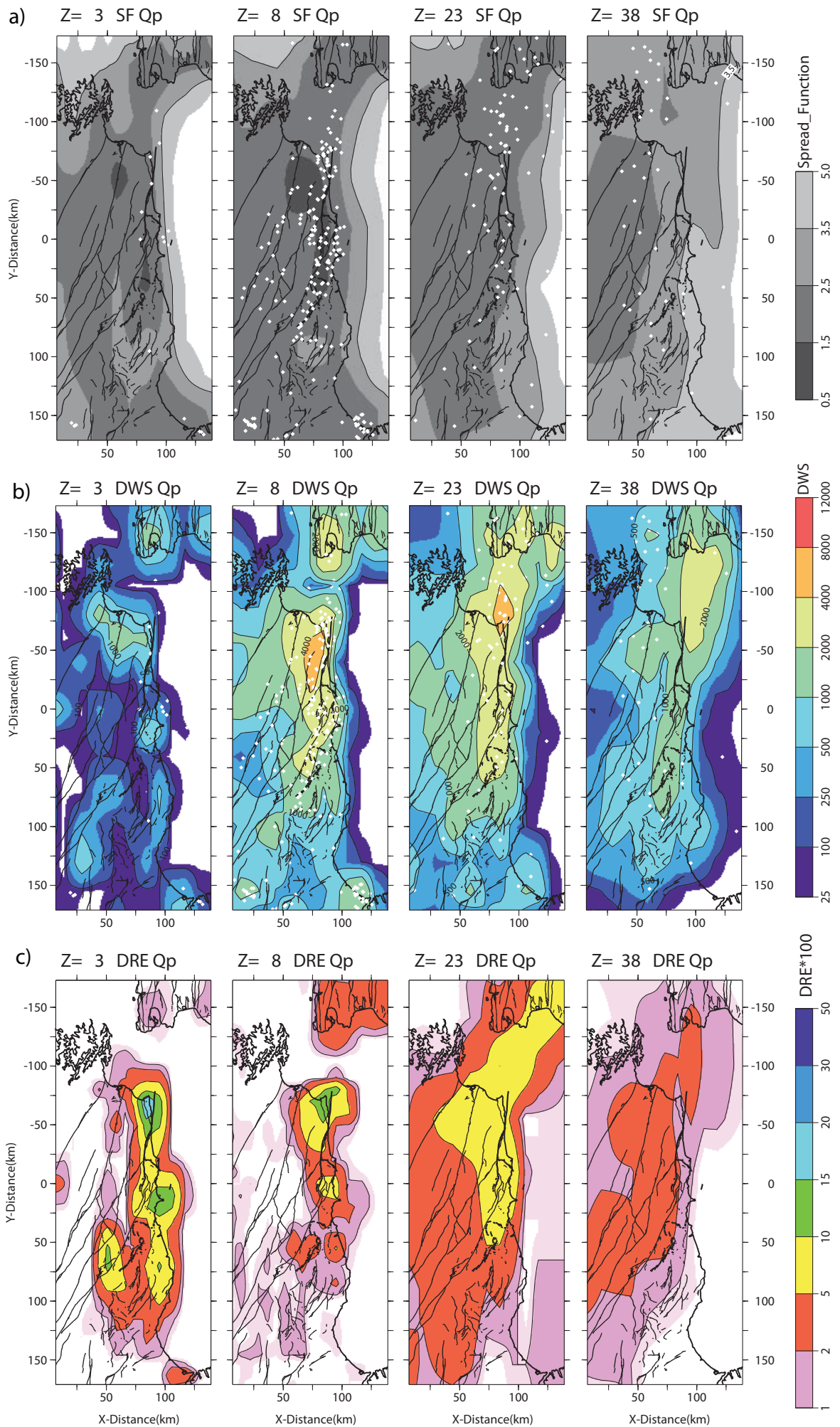. [from Eberhart-Phillips et al., GJI,2021]