Data Repository Item 2004058

Figure DR1. The square root of the derivative weight sum (DWS) when the differential times are constructed by using the event pairs with the interevent distance less than 10 km (A and B), and 20 km (C and D). (A) and (B) indicate the case for P waves, and (C) and (D) indicate the case for S waves, respectively. The contour features and levels are very similar for both cases. Both the mantle wedge and subducting slab are well covered by the differential ray paths. This indicates that the inversion using either distance cutoff will give similar results.

Figure DR2. Synthetic test of a velocity model with anomalies similar to the true model (Fig. 2). The synthetic dataset is constructed based on the models shown in (A) Vp, (B) Vs, and (C) Vp/Vs, with the same data distribution as the real dataset. Inverted models shown in (D) Vp, (E) Vs, and (F) Vp/Vs are obtained using the same inversion scheme as the real data, starting from the same 1D velocity model. This test shows that all the anomalies in the mantle wedge and subducting slab are well recovered in both position and amplitude.

Figure DR3. Synthetic test of a velocity model with a low-Vp/high Vs zone present within the subducting slab. For this synthetic test, the events outside the station coverage are removed. (A) The synthetic true Vp model, (B) the synthetic true Vs model, (C) the inverted Vp model, and (D) the inverted Vs model. This synthetic test shows that if a low-Vp, high-Vs zone exists within the subducting slab, the data are able to resolve it.

Figure DR4. Synthetic test of a velocity model without a low-Vp/high Vs zone present within the subducting slab. For this synthetic test, the events outside the station coverage are removed. The inversion scheme is otherwise the same as the real dataset. (A) The synthetic true Vp model, (B) the synthetic true Vs model, (C) the inverted Vp model, and (D) the inverted Vs model. This synthetic test shows that if a low-Vp, high-Vs zone is not present, the inversion does not generate such a zone as an artifact.

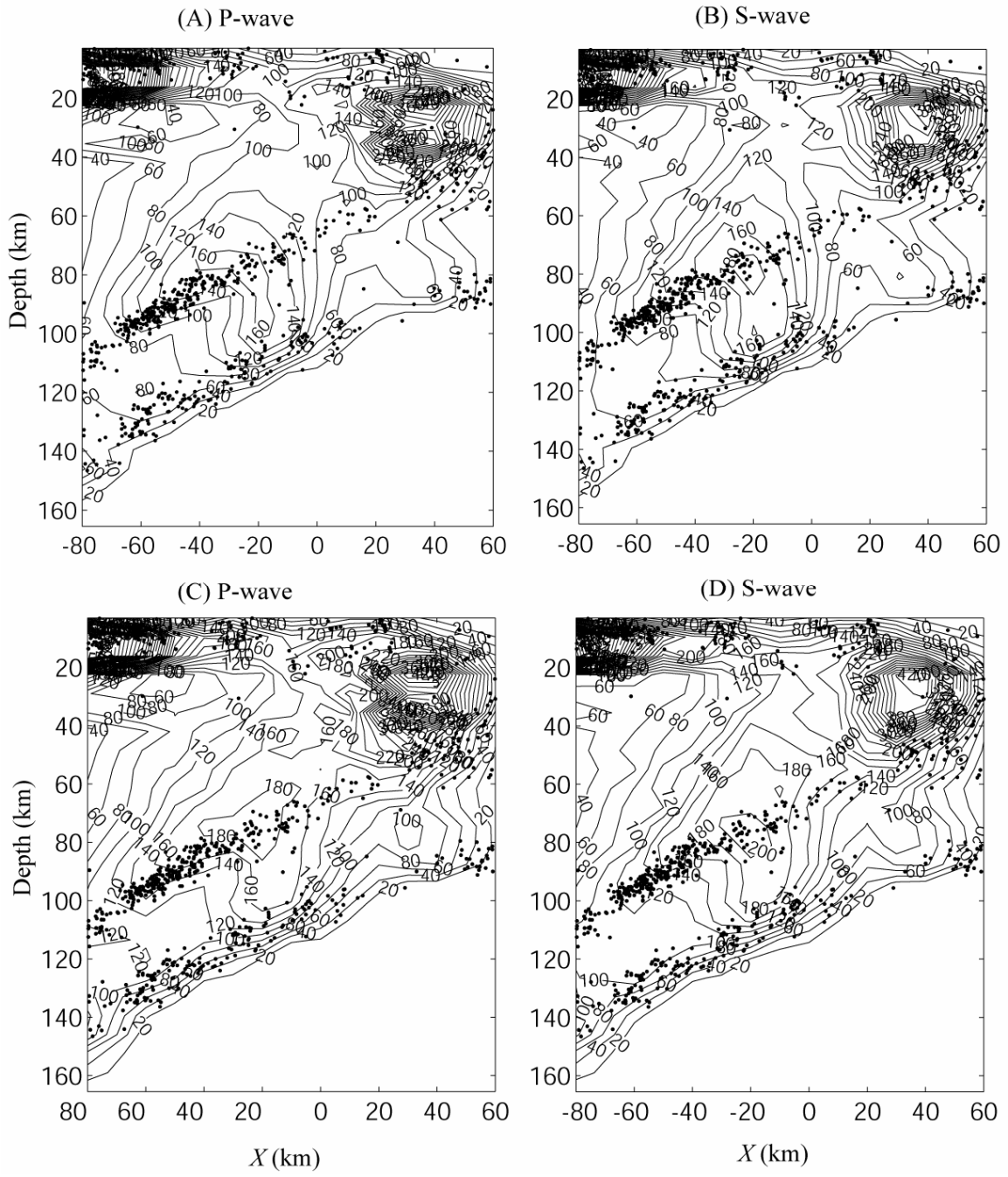

Figure DR1

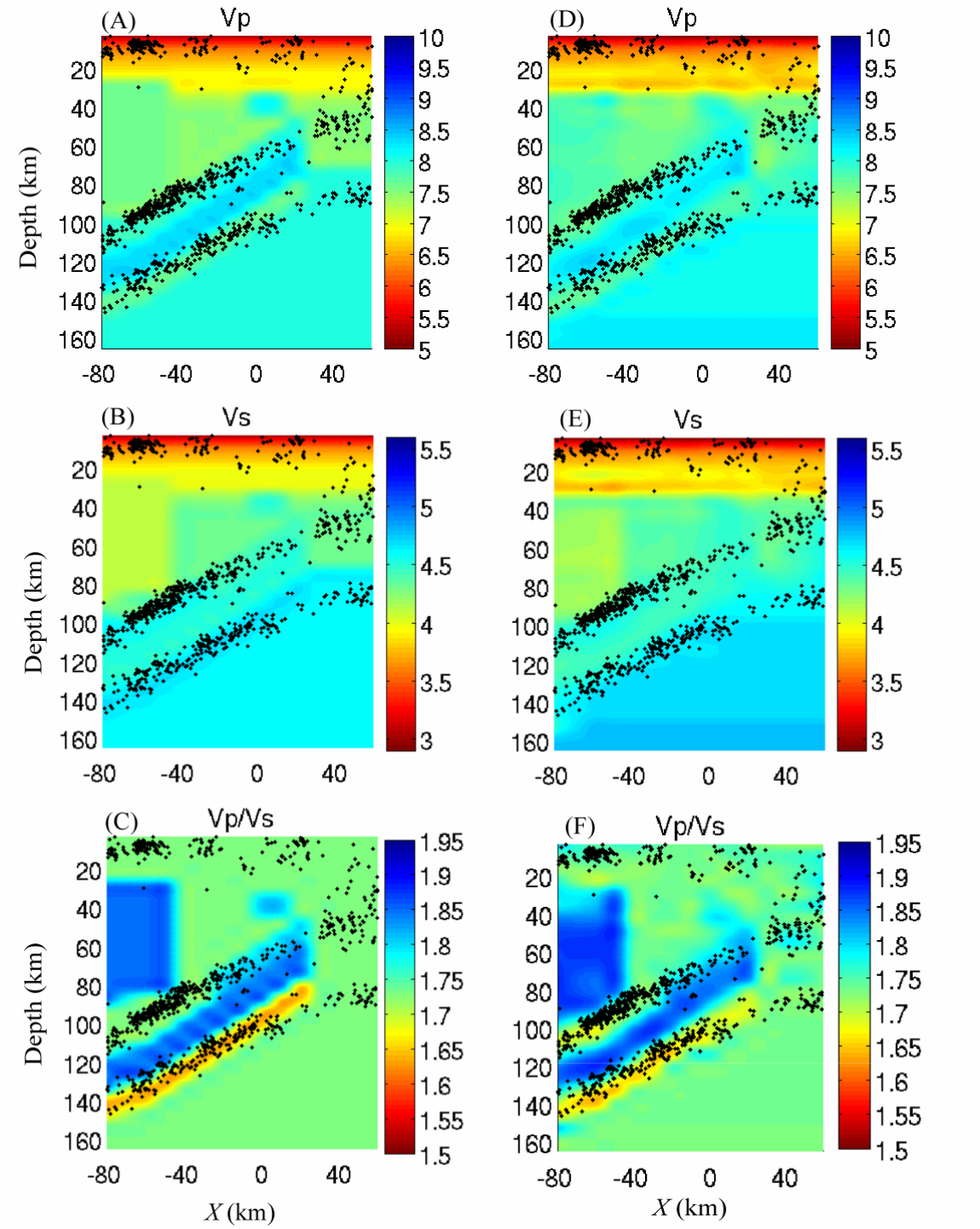
(A) Vp
(D) Vp
(B) Vs
(E) Vs
(C) Vp/Vs
(F) Vp/Vs
Depth (km)
X (km)
20
40
60
80
100
120
140
160
-80
-40
0
40
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
1.95
1.9
1.85
1.8
1.75
1.7
1.65
1.6
1.55
1.5

Figure DR2

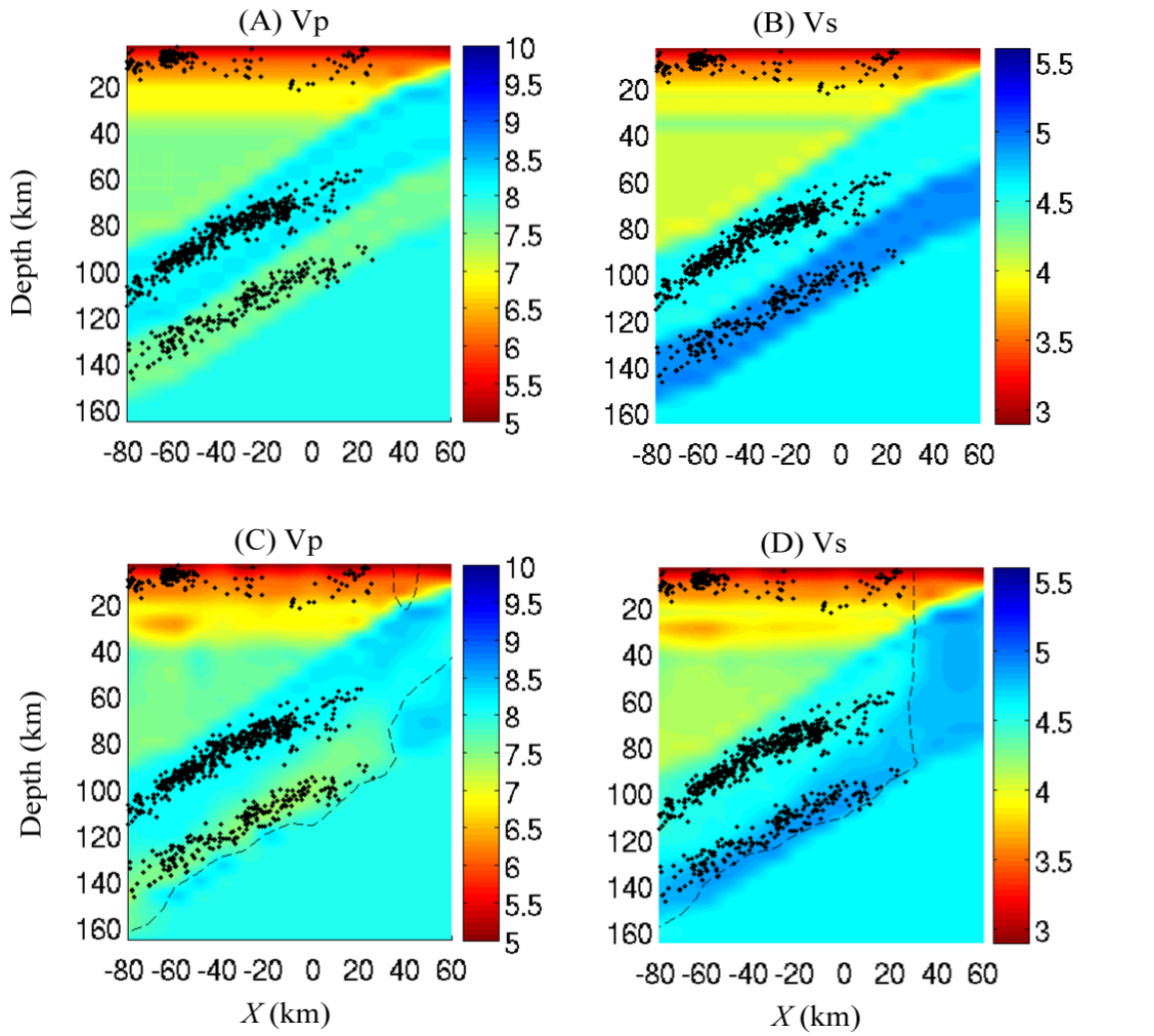
(A) Vp
(B) Vs
(C) Vp
(D) Vs
Depth (km)
Depth (km)
20
40
60
80
100
120
140
160
-80 -60 -40 -20 0 20 40 60
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
5.5
5
4.5
4
3.5
3
X (km)
X (km)

Figure DR3

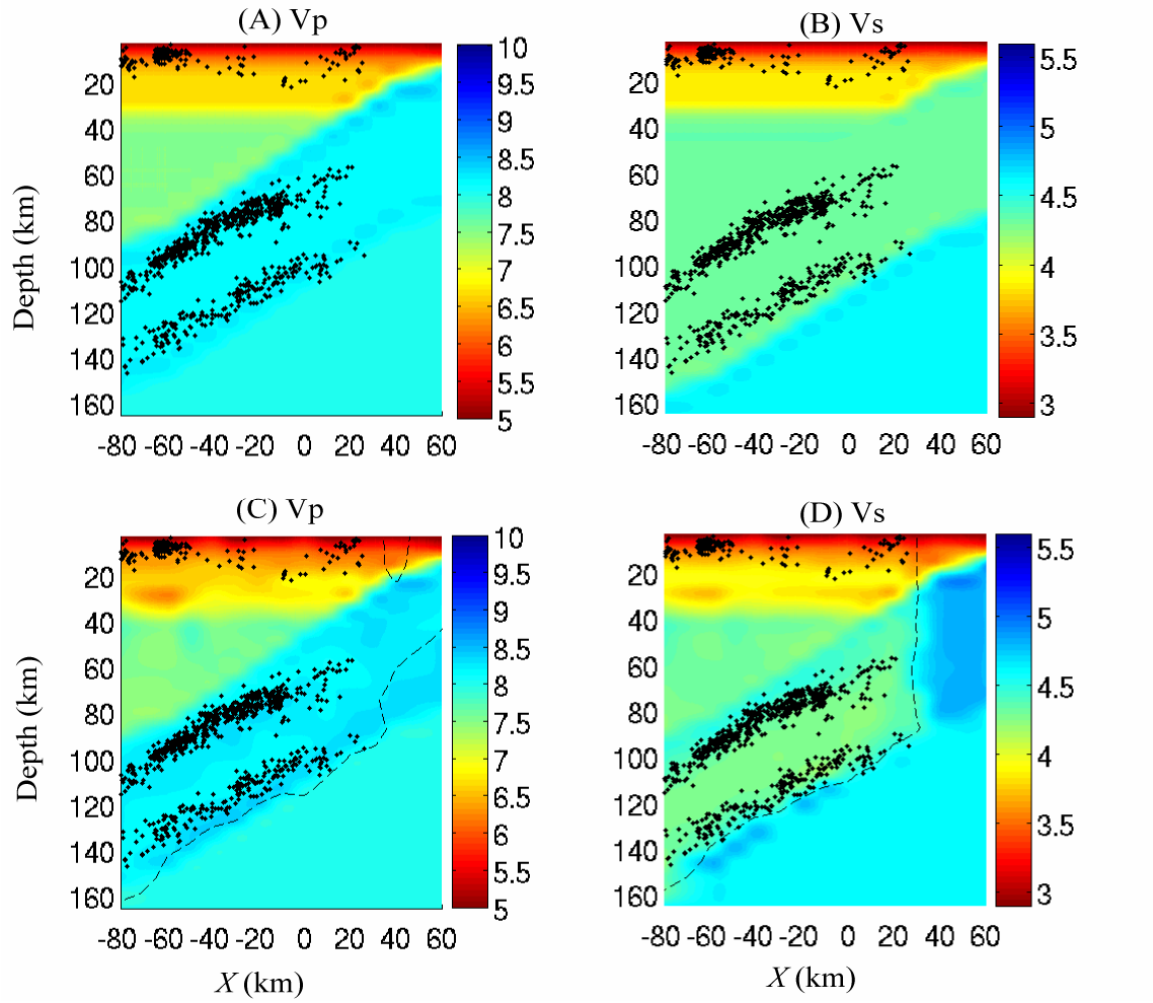
(A) Vp
(B) Vs
(C) Vp
(D) Vs
Depth (km)
Depth (km)
20
40
60
80
100
120
140
160
-80 -60 -40 -20 0 20 40 60
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
5.5
5
4.5
4
3.5
3
X (km)
X (km)

Figure DR4