Supplementary material for Global Reference Seismological Datasets: Multi-mode Surface Wave Dispersion

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(ii) Figures S2 to S13 : Scatter density plots of raw fundamental-mode phase-anomaly measurements, expanded from Figure 6.

(iii) Figures S14 to S25 : Scatter density plots of raw overtone phase-anomaly measurements, expanded from Figure 9.

REFERENCES

Bird, P., Kagan, Y., Jackson, D., Schoenberg, F., & Werner, M., 2009. Linear and nonlinear relations between relative plate velocity and seismicity, *Bulletin of the Seismological Society of America*, **99**(6), 3097–3113.



Figure S1. The underlying grids of quasi-equispaced K knot points used in this study. For inverting phase velocity maps, K = 1442 splines with an average knot spacing $\Delta_i^0 = 5.77^\circ$ is used (Section 6.1). In the homogenization process, K = 2562 splines with an average knot spacing $\Delta_i^0 = 4.33^\circ$ is used (Section 5.1). Plate boundaries (Bird et al. 2009) are shown in light blue.



Figure S2. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta\phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S3. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta\phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S4. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S5. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta\phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S6. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S7. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S8. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S9. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta\phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S10. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S11. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S12. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S13. Scatter density plots of raw fundamental-mode phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 6. Note the caption in Figure 5 for reference.



Figure S14. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S15. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S16. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S17. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S18. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S19. Scatter density plots of raw overtone phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S20. Scatter density plots of raw overtone phase-anomaly measurements ($\delta \phi$). This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S21. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S22. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S23. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S24. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.



Figure S25. Scatter density plots of raw overtone phase-anomaly measurements $(\delta \phi)$. This is an expanded version of the subplot in Figure 9. Note the caption in Figure 5 for reference.