

# The Magmatic Patterns Formed by the Interaction of the Hainan Mantle Plume and Lei-Qiong Crust Revealed through Seismic Ambient Noise Imaging

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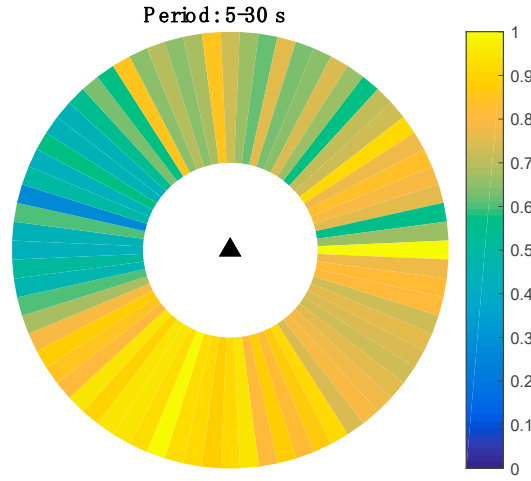
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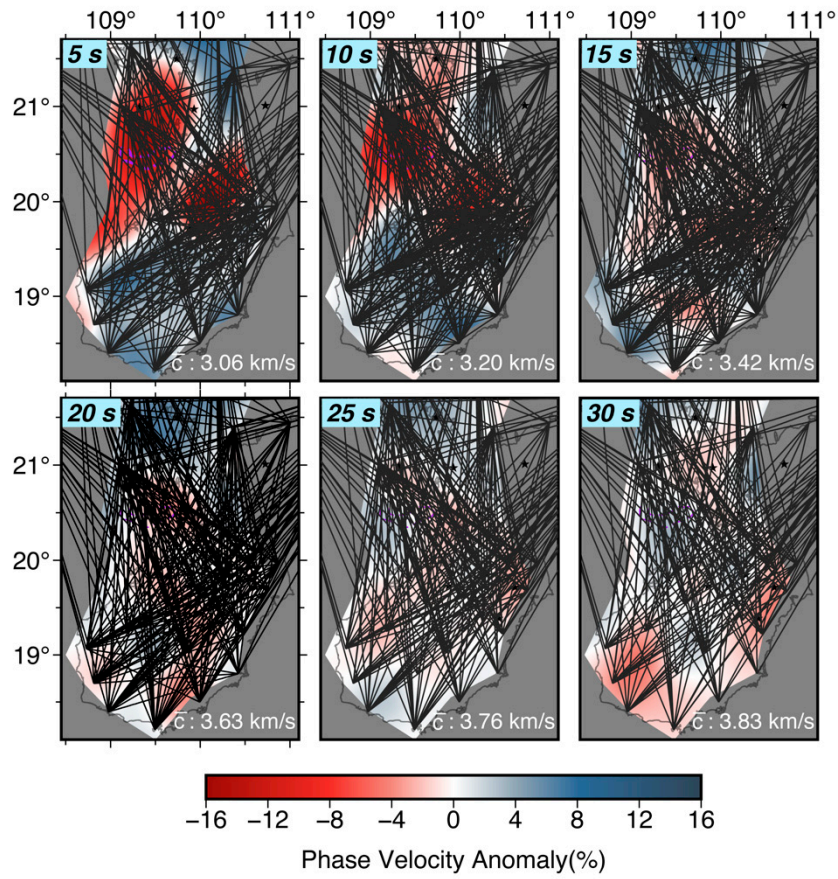
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The Supplementary Materials presented herein comprise three figures. Figure S1 displays the normalized azimuthal distribution of noise energy in the Lei-Qiong region. Figure S2 showcases the ray distribution of the station pairs. Figure S3 presents the transects of the derived shear wave velocity perturbation model.



**Figure S1.** Normalized azimuthal distribution of noise energy in the 5-30 s period band in the Lei-Qiong region.



**Figure S2.** The ray coverage along the great circle path in the presenting periods.

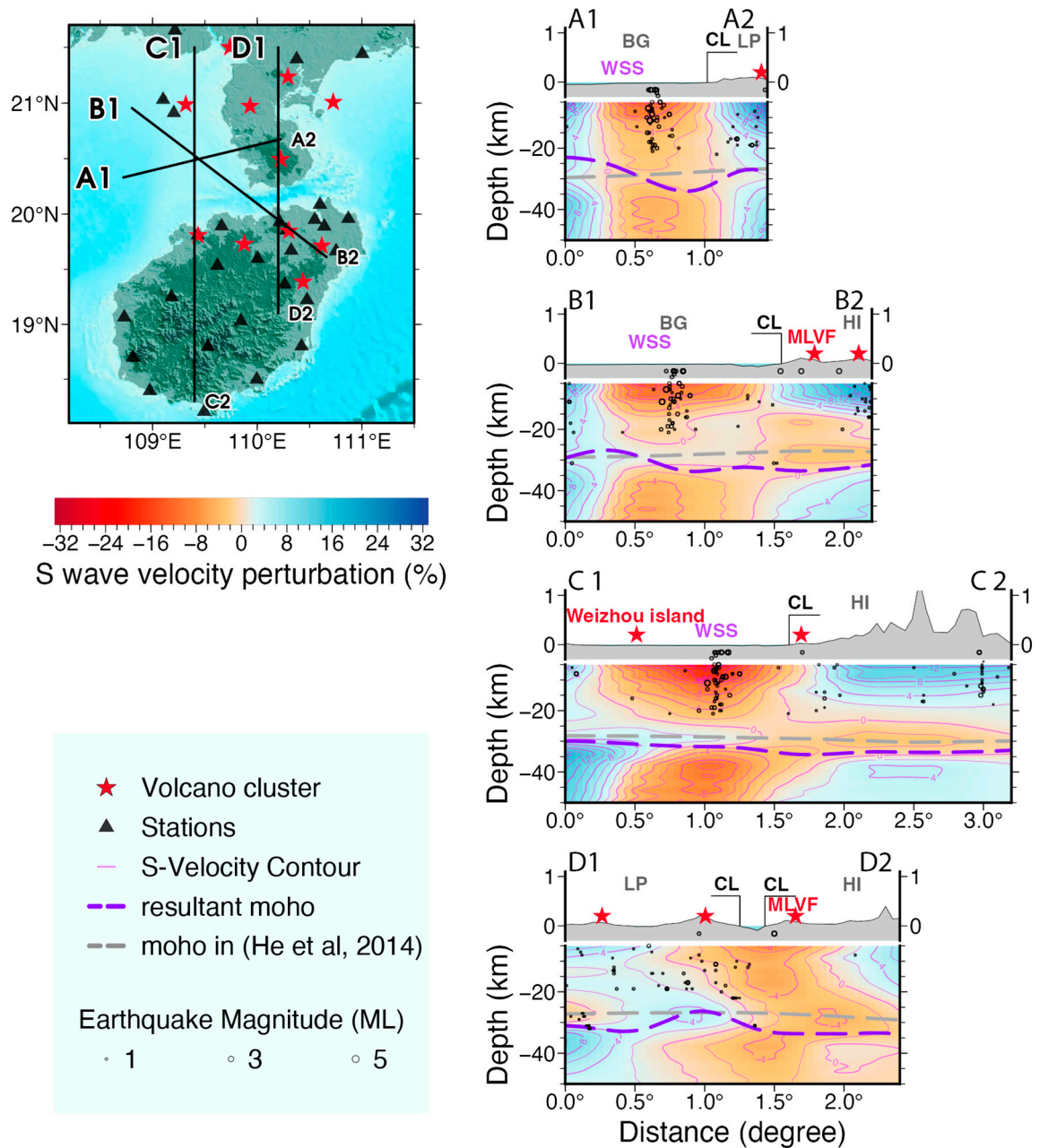


Figure S3. Cross-sections of the derived S-wave velocity perturbation model. Surface topography along the profile is plotted at the top of each profile, with major geological structures marked and labeled with the following abbreviations: CL: coastline, HI: Hainan Island, LP: Leizhou Peninsula, BG: Beibu Gulf, QS: Qiongzhou Strait, WSS: Wushi Sag, MLVF: Maanling-Leihuling Volcanic Field. Note that the vertical axis of the topography sections is exaggerated. Centers of volcanic clusters (stars) and earthquakes (black circles) within 33 km from the profile are projected and plotted. The solid purple lines represent contours of a 4% velocity perturbation. The Moho depth from He et al. [1] is shown by the gray dashed line, while the Moho from this study is shown by the purple dashed line.

1. He, R.; Shang, X.; Yu, C.; Zhang, H.; Van der Hilst, R.D. A unified map of Moho depth and  $V_p/V_s$  ratio of continental China by receiver function analysis. *Geophysical Journal International* **2014**, *199*, 1910-1918, doi:10.1093/gji/ggu365.