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# A New Crustal Structure of the southernmost Mariana Trench

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A new crustal structure across the "challenger deep" and Mariana arc system is presented in the southernmost Mariana Trench based on active source wide-angle reflection/refraction seismic profiling. The model indicates that a maximum thickness of approximately 18.0 km beneath the current Mariana Arc, which characterized by a relatively thin middle crust (2–3 km) with velocities of 6.0–6.5 km/s and tapers beneath both flanks. The lower crust with high velocities of 6.7–7.3 km/s suggests denser crustal materials. In contrary, the crust beneath the trench exhibits low velocities (<6.8 km/s) caused by, possibly, the sediment transport accompanied with the subduction. Moreover,a distinctive low-velocity anomaly is imaged beneath the narrow Mariana Trough where a young intraarc rifting locates in. we suggest that the second intraarc rifting is affected by the magma supply decreasing, which is different from the first rifting caused by the underplating (Crawford et al., 1981).