

## Constraints on core-mantle boundary topography from P4KP-PcP differential travel times

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P4KP-PcP differential travel times are examined to infer core-mantle boundary (CMB) topography. So far we have 362 P4KP-PcP times with the reading error of 0.5 s. The travel times are corrected for the hydrostatic ellipticity in the Earth and mantle heterogeneity with a P-wave tomographic model. Spherical harmonic expansion up to degree 4 is adopted for a model parameterization. First, we estimate the P-wave velocity heterogeneity in the lowermost 150 km in the mantle to overcome the underestimate of the global P-wave mantle model. After that, we infer CMB topography by using the residues of the first processing. Since the trade-offs between the heterogeneity at the base of the mantle and the CMB topography is very strong, the preprocessing is quite important. The odd degree components of CMB topography are insensitive to P4KP-PcP times due to symmetrical ray geometry of P4KP. Thus we solve for only the even degree components. The resultant feature indicates that the maximum amplitude of the CMB topography does not exceed  $\pm 2$  km with its uncertainty less than 0.5 km. The depression areas beneath the North Atlantic and Australia may relate to slab graveyards at the base of the mantle. However, we also observe the depression beneath the central Pacific and South Africa where strong upwelling is expected. Two major elevations are observed beneath the South Pacific and Middle East. However, we have no substantial interpretation so far.