

T1.2-O7. USING IMS SEISMIC DATA TO MEASURE FINE FEATURES OF PKiKP WAVES

The PKiKP waves reflected from the inner core boundary (ICB) are of interest for deep Earth studies and for monitoring purposes of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO). The PKiKP reflections evidence clear mosaic pattern of the inner core surface. We present a new study of PKiKP waveforms obtained from the International Data Centre (IDC) and the prototype IDC (data are from a Limited Access Contract with CTBTO using virtual Data Exploitation Centre). Our dataset includes more than 500 measurements obtained in 1995-2001 (pIDC) and 2001-2011 (IDC). We study the influence of ICB fine structure on kinematic and dynamic characteristics of PKiKP. To improve PKiKP signal-to-noise ratio on IMS array data we used linear and phase-weighted stacking, which enabled uncomplicated measuring of arrival times, peak amplitudes and periods of the detected PKiKP waveforms. Most of measured PKiKP arrival times fit PREM. The empirical probability distribution function for the measured periods is best approximated by a multimodal function with three peaks at 0.6, 0.85 and 1.2 seconds. Correlation kriging analysis of measured periods shows distinct data clustering on the ICB. This supports the ICB mosaic originating from local variations in the inner-outer core transition.

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