



Infrasound observation from a deep focus earthquake

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This study reports on the observation of infrasonic signals from a deep focus earthquake occurred at a great depth of ~ 566 km. To date, a number of studies have focused on earthquake-associated infrasonic signals that are generated from ground-to-air coupling by interaction of seismic surface waves with the Earth's surface. These studies have reported that the Earth's surfaces generating infrasound are usually divided into epicentral, local, and secondary source regions in terms of its spatial locations relative to the epicenter and receiver. On 28 June 2002, the deep focus strong earthquake with a moment magnitude of 7.3 occurred at China-Russia-North Korea border region (43.803N, 130.655E, 17:19:30 UTC, <http://earthquake.usgs.gov>). This deep focus earthquake occurred near the base of Wadati-Benioff zones where the oceanic Pacific plate begins its decent into the mantle. In spite of its deep focus, the earthquake has generated infrasound. The infrasound signals associated with this earthquake were observed at a regional infrasound array (CHNAR) in Korea. Distance from the array to the epicenter is ~ 682 km and ~ 886 km to the hypocenter. The waveforms of CHNAR show infrasonic signals with different arrival times and azimuths that are from the local, epicentral and secondary source regions. In this study, the distant source regions of the infrasonic signals were located based on the azimuth and arrival time determinations at the array. The source regions are then characterized by comparing with ground motions observed at available seismological data and topographic variations.