Deep focal mechanisms analysis and revealing of possible large earthquake zones in Kurile-Okhotsk region

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Abstract. The relationship between shallow and deep seismicity were investigated. The 2006, 2007 large earthquakes of M 8.3, 8.1 which occurred off the south-east coast of Simushir, Kurile, was preceded by noticeable deep seismicity in the subducting slab. The methods and algorithms of focal mechanism analysis are developed for revealing of possible large earthquake zones in Kurile-Okhotsk region. Deep-focus earthquakes occurred at distant regions of the subducting slab with significant probability triggered the occurrence of large shallow earthquakes along the deep sea trench. The USGS and Harvard University kindly provide access to centroid-moment tensor data used in calculation of seismic strain release.

Keywords: earthquake, focal mechanisms, centroid moment tensors, CMT-catalogue, deep-focus foreshocks, Simushir, Kurile-Okhotsk region, Tohoku.