The Uzon-Geysernaya volcanotectonic depression (Kamchatka) is related to the Eastern Kamchatka volcanic belt and includes two world-renown unique natural sites: the Valley of the Geysers and Uzon Caldera.

On base of new passive seismic technique the deep structure of the Uzon-Geysernaya volcanotectonic depression was investigated. We have chosen the method of microseismic sounding (Gorbatikov, 2005) in which surface Rayleigh waves of different frequencies play the role of sounding signals. The Rayleigh waves determine the main contribution to the vertical component of the Earth’s microseismic field. The geological structures presenting the velocity inhomogeneities interact with the incident Rayleigh waves (refraction, exchange, scattering) and distort the amplitude spectrum of the microseismic field in their vicinity. Spectral amplitudes of microseismic signals decrease at the Earth’s surface over high-velocity anomalies and increase over low-velocity anomalies.

Crystallized acid magma chamber under the caldera complex at depths of 6–10 km was identified and localized. The regions of concentration of basalt melts were distinguished and localized. We emphasize high consistency between the upper parts of the sections with the geological concepts about the peculiarities of the structure in the study region. The geometry of the revealed deep structures is in agreement with (1) the model of the supposed magma intrusion into the upper layers of the crust based on the data of the satellite interferometry (Lungren, Lu 2006) and (2) local microseismicity (Kugaenko, 2010).

Supported by Russian Foundation for Basic Research (Grant 10-05-00139).