ANOMALIES OF HIGH *S*-WAVE ATTENUATION AND RING-SHAPED SEISMICITY STRUCTURES IN THE ALTAY LITHOSPHERE: POSSIBLE PREPARATION FOR LARGE EARTHQUAKES

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Abstract. Heterogeneities of short-period *S*-wave attenuation field in the Altay lithosphere had been considered. A method based on an analysis of an amplitude ratio for *Sn*- and *Pn*-waves was used. Areas of high attenuation in the region of the western Altay were identified. Rupture zones of recent large earthquakes: Zaisan, 1990 and Chu, 2003 are connected with these areas. Big ring-shaped seismicity structure had been formed prior to the Chu earthquake since 1976. It was revealed that ring-shaped structures correspond also to the areas of high attenuation, which are not connected with large historical earthquakes. We believe that processes of nucleation for large earthquakes can proceed in these areas. Earlier we have obtained dependences of ring structure sizes and threshold magnitude values on the energy of main events for different earthquake mechanisms. Using these dependences we estimated magnitudes of possible large earthquakes. Rupture zones of some events can be located near projected gas-main line West Siberia – China; it is expedient to take into account this circumstance by its construction. We discuss a connection of the attenuation field anomalies and ring structures with high content of deep-seated fluids.

Keywords: lithosphere, attenuation, *S*-waves, ring-shaped seismicity structures, large earthquakes, deep-seated fluids.