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Experimental investigations of mud volcano Karabetova Gora and the results of mathematical modeling

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The paper presents the results of experimental investigations of mud volcano Karabetova Gora in Taman mud volcano province (Russia) using vibroseismic methods and results of the mathematical modeling. The full-scaled experiment of vibroseismic sounding and vibroseismic tomography of the mud volcano Gora Karabetova was carried out with the use of vibrator CV-10/180 and recording system REFTEK. The data processing of the profile recording wave field was done using method of reflected waves and the CDP to determine the structure of volcanic construction. The spectral-time analysis of features of a wave field formation of a vibrating source in a zone of a volcano, processes of attenuation and dispersion of waves in dilatance volcano zone is made. The mathematical model of a mud volcano with anticlinal structures and the vertical cylindrical channel, leaving on a free surface is constructed, numerical modeling of a full wave field from the surface pointed source in a problem vibroseismic sounding for the chosen model of a volcano is executed. The theoretical seismograms are calculated for various profiles of wave field recording on surfaces. The results of comparison and the analysis of theoretical seismogram and experimental seismogram of vibroseismic sounding are presented.