



The deep structure of the underwater mud volcano Golubitsky and the mud volcano Gorely of the Kerch-Taman region

Dmitry Likhodeev, Dmitry Presnov, and Ruslan Zhostkov

Schmidt Institute of Physics of the Earth of the Russian Academy of Sciences, Russian Federation (dmitry@ifz.ru)

The results of complex geological and geophysical studies of mud volcanism in the Taman mud volcanic province are presented. Geophysical fieldwork was carried out in 2015 on two mud volcanoes Golubitsky and Gorely with the use of two different seismoacoustic methods. Mud volcano Golubitsky with explosive nature of the eruption, is located in the Azov Sea 300 meters from the shore. The use of the new method based on analysis of the amplitude characteristics of surface waves formed by ambient noise made it possible to construct a vertical geophysical section and obtain new knowledge about the structure of this mud volcano. The possibility of using the method in underwater conditions is shown. Within the framework of another geophysical experiment, the velocity structure of the summit part of the Gorely volcano was studied. The method of work is based on the measurement of the dispersion curve of the velocity of the surface Rayleigh wave, in our case it is carrying information about the layered structure of the medium up to several tens of meters of depth. The obtained results, based on the latest geological and geophysical data, give a general idea of mud volcanism in the Black Sea region, and also establish the connection of this unique natural phenomenon with geotectonic processes. This connection can be traced at all stages of the development of mud volcanism. The origin of mud volcanoes and their activity is largely controlled by regional tectonics, while mud volcanic activity itself, in turn, causes local tectonic processes that must be taken into account when erecting and operating complex engineering facilities.

The work is supported by a grant RF President grants council № SS-5545.2018.5