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Mud Volcanism and Hydrocarbon Systems of the Black Sea

About 100 mud volcanoes have been established in the Black Sea area both onshore and offshore.

In the gas of volcanoes methane, carbon dioxide, nitrogen, helium and argon have been determined, whereas in the mud volcanic waters oil, boron, bromide and arsenic have been detected. In the solid mud volcanic ejecta pyrites, cinnabar, sphalerite, wurtzite, molybdenite, galenite, realgar, orpiment, cuprites, malachite, fluorides, apatite, borax and other ore minerals have been revealed.

The roots of the Kerch mud volcanoes reach the depth of 8-10 km and lower. Collapsed synclines, generated as a result of rock evacuation during mud volcanic activity, in which thick series of iron deposits have been accumulated, are widely distributed in the Kerch region. The total reserves of iron are about 0,5 Bln. ton.

About 1000 methane seepages from the Black Sea bottom have been established. They are clearly fixed on echograms as smokes and torches and observed all over the territory of Ukrainian Black Sea shelf. Calculation shows that about 1 Bln. cub.m of methane per day enter from sea floor into the Black Sea waters. So the Black Sea is the gasiest sea of the world. Owing to methane seepages the Black Sea waters are saturated with methane beginning from the depth of 650m down to its bottom, containing 11µM or 80 Bln.cub.m. Available data indicate the Black Sea is the unique phenomenon on the Earth. Quite possible its bottom sediments contain more oil and gas than the other reach oil/gas-bearing region of the world.