



Mud volcanoes on the planet Earth Review of monograph “Atlas of the world mud volcanoes”

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Brief analysis of the book of Azerbaijan scientists “Atlas of the world mud volcanoes”, Authors Ad.A. Aliyev, I.S. Guliyev, F.H. Dadashev, R.R. Rahmanov (Baku, Nafta-Press, 2015, 323 p. ISBN 978-9952-437-60-7), and reflection about the problems of the mud volcanism research.

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The most likely culprits were mud volcanoes. These are formed when a vent in the Earth's surface releases gases. Mud flows from the seafloor and forms a cone-shaped mound around the vent. Compared to normal volcanoes, mud volcanoes are much cooler. In 2013 a team of scientists from around the world decided to take a closer look. They set sail aboard the Canadian icebreaker CCGS Sir Wilfrid Laurier (SWL). The worms were primarily found on the flat tops of the mud volcanoes, not on the slopes. The size of these colonies ranged from 10cm across, with only a few dozen worms, to extensive thickets of worms filling most of the ROV camera's field of view. In 2000, researchers found tubeworms that took 170-250 years to grow 2m long. The mud produced by mud volcanoes is mostly formed as hot water, which has been heated deep below the Earth's surface, begins to mix and blend with subterranean mineral deposits, thus creating the mud slurry exudate. This material is then forced upwards through a geological fault or fissure due to local subterranean pressure imbalances. Mud volcanoes are associated with subduction zones and about 1100 have been identified on or near land. The temperature of any given active mud volcano generally remains fairly steady and is much lower than the typical temperatures found in igneous volcano... "Global methane emission through mud volcanoes and its past and present impact on the Earth's climate". International Journal of Earth Sciences. 92 (5): 806-816. Scientists may have discovered evidence of the deepest microbial life ever found on the planet, detecting the presence of organic matter in rock fragments spewed up by mud volcanoes near the deepest place on Earth, the Mariana Trench. Scientists may have discovered evidence of the deepest microbial life ever found on the planet, detecting the presence of organic matter in rock fragments spewed up by mud volcanoes near the deepest place on Earth, the Mariana Trench. The mud volcanoes sampled all emitted methane gas consistently at 3% volume. The average pH for the mud volcanic soil was 7.98. The average Cation Exchange Capacity (CEC) was found to be 2.16 kg/mol, and the average Percentage Water Content was 34.5%. Mud volcanism, or sedimentary volcanism, represents one of the most intriguing phenomena of the Earth's crust, with important implications in energy resource exploration, seismicity, geo-hazard and atmospheric budget of greenhouse gases. Since the first review papers were issued at the beginning of 2000s, a large amount of new geological, geophysical and geochemical data has been acquired, which clarified ambiguous concepts and significantly improved our knowledge of mud volcanism.