



## The diversity of mud volcanoes in the landscape of Azerbaijan

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As the natural phenomenon the mud volcanism (mud volcanoes) of Azerbaijan are known from the ancient times. The historical records describing them are since V century. More detail study of this natural phenomenon had started in the second half of XIX century. The term "mud volcano" (or "mud hill") had been given by academician H.W. Abich (1863), more exactly defining this natural phenomenon. All the previous definitions did not give such clear and capacious explanation of it.

In comparison with magmatic volcanoes, globally the mud ones are restricted in distribution; they mainly locate within the Alpine-Himalayan, Pacific and Central Asian mobile belts, in more than 30 countries (Columbia, Trinidad Island, Italy, Romania, Ukraine, Georgia, Azerbaijan, Turkmenistan, Iran, Pakistan, Indonesia, Burma, Malaysia, etc.). Besides it, the zones of mud volcanoes development are corresponded to zones of marine accretionary prisms' development. For example, the South-Caspian depression, Barbados Island, Cascadia (N.America), Costa-Rica, Panama, Japan trench. Onshore it is Indonesia, Japan, and Trinidad, Taiwan. The mud volcanism with non-accretionary conditions includes the areas of Black Sea, Alboran Sea, the Gulf of Mexico (Louisiana coast), Salton Sea. But new investigations reveal more new mud volcanoes and in places which were not considered earlier as the traditional places of mud volcanoes development (e.g. West Nile Rive delta).

Azerbaijan is the classic region of mud volcanoes development. From over 800 world mud volcanoes there are about 400 onshore and within the South-Caspian basin, which includes the territory of East Azerbaijan (the regions of Shemakha-Gobustan and Low-Kura River, Absheron peninsula), adjacent water area of South Caspian (Baku and Absheron archipelagoes) and SW Turkmenistan and represents an area of great downwarping with thick (over 25 km) sedimentary series.

Generally, in the modern relief the mud volcanoes represent more or less large uplifts on surface, often of plane-conical shape, rising for 5 to 400 m and more over the country (for example, mud volcano Toragay, 400 m height). The base diameter is from 100 m to 3-4 km and more. Like the magmatic ones, the mud volcanoes are crowned with crater of convex-plane or deeply-seated shape.

In Azerbaijan there are all types of mud volcanoes: active, extinct, buried, submarine, island, abundantly oil seeping. According to their morphology they are defined into cone-shaped, dome-shaped, ridge-shaped, plateau-shaped. The crater shapes are also various: conical, convex-plane, shield-shaped, deeply-seated, caldera-like. The most complete morphological classification was given in "Atlas of mud volcanoes of Azerbaijan" (Yakubov et al., 1971). Recently (Aliyev Ad. et al., 2003) it was proposed a quite new morphological classification of mud volcanoes of Azerbaijan. For the first time the mud volcanic manifestations had been defined. Volcanoes are ranged according to morphological signs, crater shape and type of activity.