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КАТАЛОГ ИЗВЕРЖЕНИЙ ГРЯЗЕВЫХ ВУЛКАНОВ АЗЕРБАЙДЖАНА

(2008 – 2019 гг.)

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CATALOGUE OF MUD VOLCANOES ERUPTIONS OF AZERBAIJAN

(2008 – 2019)



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Catalogue of mud volcanoes eruptions of Azerbaijan (2008-2019).

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The book provides information about the mud volcanism and the products of volcanoes in Azerbaijan. 45 recorded eruptions on 28 mud volcanoes that occurred over for the past eleven years in Azerbaijan and the adjacent waters of the Caspian Sea were characterized. Some characteristic features of the mud volcanic eruption are considered. The eruptive stage of the activity of mud volcanoes is quantitatively estimated.

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3. MUD VOLCANO ACTIVITY IN NUMBERS

About 2-5, sometimes even more mud volcano eruptions occurred in Azerbaijan almost every year. So, only in year 2001 there occurred 16 eruptions of mud volcanoes, two of them offshore (Buzovna Pilpilesi, Chigil-deniz). Frequently erupting volcanoes are Lockbatan, Shikhzarli, Keireki, Khare-Zire Island, Gushchu and etc. Each eruption of a mud volcano brings new information for geoscientists - mud volcanologists, the "news" about the processes taking place in the Earth's crust.

Analysis of mud volcano eruptions which have been occurring onshore and offshore over last two centuries allows comprehend some typical features of mud volcano occurrence, in general, and in some regions of mud volcanoes development within Azerbaijan area in particular. So, 432 eruptions of 93 mud volcano have been recorded during this time frame that makes 26 % of 353 volcanoes known in Azerbaijan. There are records about other mud volcano eruptions occurred in 1924, but having no definite location and name (Table 5).

Table 5

Mud volcano eruptions recorded within petroleum regions in Azerbaijan
(during 1810-2019)

Volcano	Years of eruptions	Volcano	Years of eruptions
pre-Caspian-Guba region		Lower Kur region	
Zarat-deniz	1953	Kalamaddin	1872
		Akhtarmaardy	1990, 2916
Absheron region (eponymous peninsula)		Akhtarma-Pashaly	1948, 1962, 1969, 1982 (twice), 1986, 2013, 2018
Kechaldag	2000	Kichik Haramy	1912
Uchtepe	1967, 1986, 1992, 1998, 2002, 2004, 2005	Hamamdag	1938, 1947, 1967, 1984, 1996
Beyukdag	1921, 1922	Agzibir	1964, 1978, 2002
Zykh Pilpilesi	1993 (twice)	Bendovan	1932, 1989
Keireki	1824, 1830, 1865, 1882,1885, 1902, 1915, 1952, 1953, 1957, 1964, 1966, 1968, 1989, 1991, 2001, 2002, 2004, 2017	Kursangi	1965
		Durovdag	1953
		Duzdag	1941
Bozdag-Hokmaly	1926, 1965, 2001	Oil salse	1882
Bozdag-Gobu	1827, 1894, 1937, 1953, 1957, 1974, 1986, 1987, 1999	Neftchala Pilpilesi	1947 (twice)

Bozdag-Guzdek	1839, 1867, 1902, 1969, 1986, 1988, 1995, 2003, 2009, 2018	Baku archepalogo		
Saryncha	1936, 1976	Zenbil Island	1961, 1995, 2019	
Gyzyltepe	1914 (twice)	Khare-Zire Island	1810, 1857, 1859, 1886, 1940, 1947, 1959, 1960, 1962, 1974, 1993, 1997, 2006	
Akhtarma-Puta	1923, 1933, 1950			
Lockbatan	1829, 1864, 1884, 1887, 1890, 1900, 1904, 1915, 1918, 1923, 1926, 1933, 1935, 1938, 1941, 1954, 1959, 1964, 1972, 1977, 1980, 1990, 2001, 2919, 2912, 2017			Gil Island
Otmanbozdag	1854, 1904, 1922, 1951, 1965, 1985, 1994, 2004, 2017, 2018	Garasu Island	1876 (twice), 1923, 1977, 1993	
Absheron region (eponymous archipelago)		Balygly shoal	1868, 1913	
Absheron shoal	1888	Chigil Island	1967	
Buzovna - Pilpilesi	1892, 1915, 1923, 1950, 1953 (twice), 2001	Sabail shoal	1907, 1915, 1970	
		Sengy-Mugan Island	1903, 1923, 1932, 1933, 2002	
Palchig Pilpile-si	1935, 1950	Dashly Island	1920, 1945	
		Mugan-daniz shoal	1942, 1957	
Neft Dashlary	1904, 1949, 1951, 1957	Chigil-daniz shoal	1861,1927 (twice), 1928, 1939, 1950, 1959, 2001	
Shoal “1906”	1906			
Shoal “1908”	1908			
Shoal “1933”	1933	Yanan-Tava shoal	1813, 1825, 1843, 1868	
Shoal “1960”	1960			
Bahar-daniz shoal	1876, 1912, 1917, 1921, 1925, 1941, 1958, 1963, 1984			
Kapaz	1980			

Shamakhy-Qobustan region				
Demirchi	1958, 1969, 1971, 2008	Agnohur	1927, 1940, 1948, 1976, 1986, 2010	
Zeyva (Basgal)	1926	Cheildag (north.)	1970	
Kurdamich	1971	Cheildag (west.)	1970, 2018	
Gyzmeidan	1987, 2001	Cheildag (east.)	1870, 1957, 1968, 2004	
Gasymkend	1993	Davalidag (south-east.)	1975	
Jeirly	1951, 1983, 2001	Dashmardan	1866, 1954, 1976, 1986, 2011	
Hajyly	1970	Shekikhan (vest.)	1988, 1989 (twice), 2001, 2004, 2006, 2010, 2017, 2018	
Melikchobanly	1926, 1967, 1977, 2019	Shekikhan (east.)	1989, 2006, 2018	
Gushchu	1913, 1917, 1924, 1941,1952, 1954, 1958, 1960,1965, 1968, 1986, 1992, 2008, 2018, 2019	Gotur	1989, 2001, 2004, 2005	
Kolany	1845, 1962, 1969	Toragay	1841, 1901,1924, 1932, 1947, 1950, 1984, 1985, 1987, 1988, 2018 (twice)	
Kichik Maraza	1848, 1970, 1986	Beyuk Kyan-izadag	1950, 1996	
Bozaakhtarma	1902, 1969, 1970, 1987, 2017	Durandag	1960, 1968, 1986, 2001, 2004, 2016	
Shihzarli	1844, 1848, 1868, 1872, 1902, 1927, 1929, 1939, 1944, 1946, 1949, 1955, 1969, 1974, 1980, 1986, 1987, 1991, 1992, 1997, 2004, 2011, 2013, 2017, 2018	Agtirme	1913, 1971 (twice), 1985, 1988, 1989, 1998, 2000	
Jengi	1851, 1873		Solakhay	1949, 1989 (twice), 2001
			Garakyura	1928, 1951
Garyja	1970, 1987, 2003, 2007, 2011, 2017, 2019	Garabujag (Hajiveliyeri)	1954, 1963, 2001	
Shorsulu	1986	Oyoug	1988 (twice), 2019	

Sheytanud	1975	Ayranteken	1964, 1969, 1977, 1988, 1990, 2004, 2008
Chapilmysh	1929, 1933, 1973, 1984, 1989, 2001, 2010		
Ayazakhtarma	1926, 1969, 1973 (twice), 1985, 1989, 2001, 2005, 2006, 2007, 2011, 2018	Goturdag	1926, 1959, 1966, 1970, 1977, 1987
Nardaran-akhtarma (west)	1948, 1970, 1972, 1982, 1984, 1986, 1996, 2001, 2015	Dilyangyaz	1902, 1912, 1951
		Dashgil	1882, 1886, 1908, 1926, 1958, 2001
Suleiman-akhtarma (east.)	2004, 2014, 2017	Bahar	1853, 1859, 1885, 1886, 1911, 1926, 1967, 1992
		Alyat Pilpilesi (Bala Bahar)	1909, 1953, 1962

During this time 23 mud volcanoes were erupted only once, 39 mud volcanoes – 5 times, 24 mud volcanoes – from 5 to 10 times and only 7 mud volcanoes erupted more than 10 times. Most active mud volcanoes are Lockbatan and Kaireki within Absheron peninsula; Shikhzarli, Gushchu, Ayazakhtarma and Toragay within Shamakhy-Gobustan region and Khare-Zire within Baku archipelago (Fig. 10).

Long-term studies of mud volcanoes in Azerbaijan allows to identify as a whole that those volcanoes have been erupting frequently where mud griffons does not occur within the crater fields (Lockbatan, Keireki) or the latter ones occur very rarely (Shikhzarli, Gushchu).

Here is the dynamics trend of the most active mud volcano eruptions in Azerbaijan, the world “record-holder” by a number of eruptions – mud volcano Lockbatan located in the south-west area of Absheron peninsula can be mentioned as an example. First eruption was recorded in 1829. The following ones were in 1864, 1887, 1890, 1900, 1904, 1615, 1918, 1923, 1926, 1933, 1935, 1938, 1941, 1954, 1959, 1964, 1972, 1977, 1980, 1990, 2001, 2010, 2012 and 2017.

Almost all Lockbatan mud volcano eruptions was associated with huge amount of outburst breccias, inflamed gas emerging like blazing column of fire rocketed up to 300-400m high, flowing mud breccias with lobes extended down the cone slope over 200-250 m long. Duration of mud volcano eruption varies widely. Some eruptions continued for 10-15 minutes, others continued much longer, in some cases up to 3-4 hours continually. For example, during 1977 eruption there were observed 6 stages of mud volcano activity. Some strong mud volcano eruptions occurred in 1887, 1933, 1954, 1959, 1972, 1977, 2001 and 2012. Fig. 15 displays volumetric breccias masses outburst by Lockbatan mud volcano and areas covered with mud breccias at various times.