



Is salt tectonics influenced mud volcanism in the Gulf of Cadiz?

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Sampling of mud volcanoes located in south-west part of the Gulf of Cadiz revealed two types of breccias very different from each other. Type I is represented by very common mud volcanic deposits broadly distributed in the Gulf of Cadiz. They consist of very poorly sorted matrix-supported mixture of lithified and semi-lithified rock clasts in silty clay. The clasts are represented by large variety of lithology, predominantly mudstones, marls, siltstones and different kinds of carbonates. The rock age varies mainly from Upper Cretaceous to Miocene. The clasts usually range in size from first mm to first cm and have sub angular or sub rounded shape indicating their transportation inside feeder channel. Clayey matrix represents very viscous and sticky material; therefore it is very difficult to separate (wash out) clasts from matrix. Type II consists of large angular clasts of very strong cemented coarse to fine sandstones and fragments of basalts. These clasts are much larger in size (from first cm to tens of cm) and usually found in uppermost part of sedimentary cores. TV observations on tops of some mud volcanoes (Mercator, Al Idrissi) confirmed that large blocks and slabs of such rocks lay directly on sea bottom slightly covered by hemipelagic sediments. Age of these rocks does not known, but they are very similar by composition to Upper Miocene-Pliocene formation of Rharb basin onshore of Morocco. Evidently these blocks are not associated directly with mud volcanic process, then how they appear on the top of domelike structures? It should be some mechanism pushing these rocks from the depth to sea bottom (mud or salt diapirs for example)? At least in two locations (Mercator and Fuiza mud volcanoes) in association with type II breccia large crystals of gypsum were found. Pore water analyses from same structures demonstrate remarkable increase in salinity of the water with depth. Such characteristics are very

typical for cap rock formation covering salt domes. These evidences convince us that salt tectonic play important roll in this region and, probably, stimulated mud volcanic activity. Model of possible relationships between salt domes and mud volcanoes will be presented.