Shallow Gas Hydrate Accumulations in the Gulf of Cadiz

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Near bottom gas hydrate accumulations in the Gulf of Cadiz are related to nowadays seepage activity in craters of deep water mud volcanoes.

More than 25 mud volcanoes were studied with seismic, side scan sonar, underwater TV and sampling in the Gulf of Cadiz during the Training Through Research cruises of R/V “Professor Logachev” (1999-2006). In general these mud volcanoes are less active than hydrate bearing structures in the Black Sea, Caspian, East Mediterranean and other regions. However, there are number of mud volcanoes where occurrence of shallow gas hydrate accumulations is very probable or even verified by coring.

Gas hydrates were sampled from five mud volcanoes: Ginsburg, Bonjardim, Captain Arutyunov, Semenovich and Soloviev. Several other volcanoes: Carlos Ribeiro, Olenin, Meknes demonstrate very high methane concentrations in the mud breccia deposits (up to 7000mkM/l). Pore water composition showed strong depletion in Cl-ion compare to bottom water and reference station. Potentially they also can contain gas hydrates in sediments.

It was revealed that gas hydrate accumulations correspond to local highs inside crater area. They characterised by very strong backscatter on side scan sonar record and strong bottom reflections on seismic and 5,5 kHz profiler. Very often such places associate with dense population of chemosynthetic fauna.

Key words: gas hydrate, mud volcano, gas seep.