

Minor and trace elements composition of deepwater fluids at sites of oil and gas discharge in Lake Baikal, Russia

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In this study, we investigate minor and trace elements composition of deepwater fluids at sites of oil and gas discharge in Lake Baikal. The composition has been determined using a ICP-MS at samples of pore water in the sediments of mud volcanoes Malenky and K2 and of the oil seep Gorevoy Utes. Pore water of this sediments are notably enriched in some minor and trace elements relative to Baikal water and background pore water (Figure 1). According to our results, it is likely, deepwater fluids at this different sites originate from a common source. Meteoric waters may percolate deep into the crust along large faults flanking the rift basin, become heated due to the high geothermal gradient, that changes their chemistry, and then discharge through fault systems. Thus, the composition of submarine fluid water is produced by mixing of meteoric waters and leaching from the host rocks, and bears some contribution from deep water. Deep fluids can seep through the permeable faulted crust and thus provide enrichment in minor and trace elements.

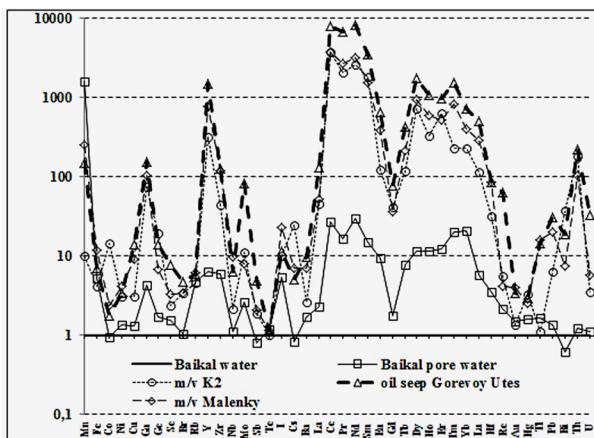


Figure 1: The average composition minor and trace element of deepwater fluids at sites of oil and gas discharge in Lake Baikal of normalized by composition of Baikal water.

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