

Time variation of carbon isotopic composition of methane in borehole fluid from the Costa Rica convergent margin

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A time series study using OsmoSampler in the hole drilled at the convergent margin off Costa Rica demonstrates that carbon isotopic compositions of methane in borehole fluids are stable value less than -90 permil PDB, suggesting that most of the methane was generated by microbial carbonate reduction. Several positive spikes up to +3.5 permil, however, have been detected in the carbon isotopic composition of methane in accordance with the monitored pressure variation in the hole, indicating that non-steady state pressure variations would lead to influence of methane from the other source.