



Simulating the dissociation of gas hydrates in Arctic sediments triggered by temperature increase

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Global warming will ultimately reach the ocean floor where it could induce the dissociation of gas hydrate reservoirs that are situated close to the stability limit. Previous studies indicate that this scenario has already begun in shelf and upper margin regions of the Arctic, i.e. in shallow high latitude systems that are particularly vulnerable to temperature changes. It is still not very well constrained how heat transfer from the water column into the sediment will interact with gas hydrates stability, neither on which time scales the gas hydrate will dissociate under realistic environmental conditions. Once the dissociation process has started further interactions correlated to the consumption of melting heat, gas liberation and biogeochemical reaction in the sediment are possible. This presentation will provide the dissociation scenarios and subsequent biogeochemical processes imitated to the natural environmental conditions. The results are simulated by a numerical reaction modeling combining heat and mass flow calculations.