



## **Dissociation of gas hydrates in marine sediments triggered by temperature increase: a theoretical model**

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Global warming will ultimately reach the ocean floor where it could destabilize gas hydrate reservoirs that are situated close to the stability limit. Recent 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 an attempt to combine heat flow calculations with numerical reaction modeling of biogeochemical parameters to better understand the complex heat transfer and biogeochemical reactions that are potentially connected to gas hydrate destabilization within marine sediments.