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# The Greenland continental margin: Indications for gas hydrates

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Although the Greenland continental margin makes up a large part of the marine Artic, few studies have so far focused on the gas hydrate potential of this vast area. Various studies around Greenland have, however, revealed a series of acoustic features which indicate the possible presence of gas hydrates. On the Northeast Greenland shelf a pronounced bottom-simulating reflector (BSR) indicates gas hydrate accumulations associated with shallow salt diapirs. Offshore West Greenland, in the Davis Strait area, a very strong seabed reflector has been identified to possibly result from gas hydrates occurring at or close to the seabed. On the Northwest Greenland margin, in the deep Baffin Bay basin, widespread zones of seismic dimming may also relate to fluid-flow and presence of gas hydrates. Other features like seepages, mounds/diapirs and pockmarks, which may be associated with the occurrence of (mobile) fluids or gas in relation with gas hydrates are widespread seen along the Greenland continental margin, and mud diapirs are also found onshore West Greenland.

Gas hydrates cored offshore Greenland has not yet been reported, though 9 m long piston cores recovered at 800 m water depth off Disko Island contained fastly expanding large quantities of methane gas. Similarly large quantities of expanding methane gas have been observed in cores retrieved from West Greenland fjord systems. The methane, most likely generated within the organic rich (TOC: 1.9-2.3 %) sediment, might be expected to occur partly as gas hydrate, given the sub-seabed physical conditions (P=8 MPa; T=3 °C). However, no unambiguous evidence of a massive gas hydrate layer leaving a disturbed sediment structure was observed. Neither did we find zones with significantly less saline pore water resulting from the decomposition of a gas hydrate. Thus we conclude, that if present, it probably existed as finely disseminated gas hydrate difficult to identify by post cruise laboratory examinations.