



Recent activity of Håkon Mosby and Isis mud volcanoes as inferred from geothermal and geochemical observations

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Håkon Mosby mud volcano (HMMV), on the Barents Sea slope, has been the subject of various research expeditions, but its dynamics is still poorly understood. Steep temperature increases in surface sediments in the central area of HMMV reveal an exceptionally high level of heat flow. Drastic lateral gradients indicate highly focused activity and suggest a narrow feeder channel. Gas hydrates have been observed in near-surface sediments, but do not always explain significant depletions of chloride in pore waters. Quasi-parallel chloride profiles in three different cores suggest the presence of several large mudflows.

Isis mud volcano (Isis MV), in the eastern Mediterranean, is about three times larger than HMMV. Investigations of Isis MV have been carried out as part of the Euro-margins/Mediflux project. Sediment temperatures at the center of the mud volcano indicate a high level of activity. Rapidly decreasing temperature gradients away from the center support the hypothesis of an axisymmetric dynamic functioning of Isis MV. At the center, pore water profiles show a rapid decrease of chlorinity within the uppermost meter of the sediments, whereas the chlorinity of cores taken at short distances away is equal to bottom water values. In contrast to HMMV, chloride depletions are clearly related to the nature of the rising fluids, because Isis MV is outside the stability field for gas hydrates.

HMMV and Isis MV are exceptionally active mud volcanoes on the European margin and eastern Mediterranean basin. Both show observational evidence for recent mud eruption events.