Geophysical Research Abstracts
Vol. 16, EGU2014-9497, 2014
EGU General Assembly 2014

An integrated approach to evaluate gas hydrate prospects in SW Barents Sea

Shyam Chand (1,2), Jochen Knies (1,2), Henning Jensen (1), Soma Baranwal (1,2), and Martin Klug (1)

(1) Geological Survey of Norway, Postboks 6315, Sluppen, 7491, Trondheim, Norway (shyam.chand@ngu.no), (2) Centre for Arctic Gas Hydrate, Environment and Climate (CAGE), Institute for Geology, University of Tromsø, Dramsveien 201, 9037, Tromsø, Norway

The SW Barents Sea subsurface has undergone large changes in geomorphology due to the impact of glaciations on its surface and subsurface. Glacial erosion during Plio-Pleistocene removed large thickness of sediments from the seabed and opened up the faults causing basin wide spillage of hydrocarbon fluids. Pockmarks are widely distributed in the SW Barents Sea. Regional fault complexes such as the Ringvassøy Loppa Fault Complex are reported to be open pathways for fluids with the observation of large acoustic gas flares in the water column. We analysed selected gravity cores from Veslemøy high based on subsurface seismic amplitude anomalies and structural controls of fluid flow towards the seafloor. The subsurface fluid flow at Veslemøy high is observed to be controlled by the evolution history of the region. This includes 1) the morphology and orientation of regional faults, structural highs and basins, 2) the presence of lithological boundaries linked to the palaeo morphology of the region, 3) glacial and post glacial sediment thickness. Estimates of extractable organic matter and foraminifera influenced by microseeps at different levels of the post glacial sediments are related to fluid flow governed by the subsurface architecture of the sedimentary units. The fluid flow model is compared to other provinces of Barents Sea to evaluate the gas hydrate prospects of SW Barents Sea.