# Rapid Glacial Sedimentation and Overpressure in Oozes Causing Large Craters on the mid-Norwegian Margin

Benjamin Bellwald[a,b,c], Ben Manton[b], Nina Lebedeva-Ivanova[b], Dmitry Zastrozhnov[b], Reidun Myklebust[d], Sverre Planke[b,c], Carl F. Forsberg[a], Maarten Vanneste[a], and Jacques Locat[e]

[a]Norwegian Geological Institute (NGI), Oslo, Norway, benjamin.bellwald@ngi.no; [b]Volcanic Basin Energy Research (VBER), Oslo, Norway; [c]Department of Geosciences, University of Oslo, Oslo, Norway; [d]TGS, Oslo, Norway; [e]Université Laval, Québec, Canada

Along continental margins with rapid sedimentation, overpressure may build up in porous and compressible sediments. Large-scale release of such overpressure has major implications on fluid migration and slope stability. Here, we study if the widespread crater-mound-shaped structures in the subsurface along the mid-Norwegian continental margin are caused by overpressure which accumulated within high-compressibility oozes sealed by low-permeability glacial muds. We interpret 56,000 km ² of 3D and 150,000 km ² of 2D-cubed seismic data in the Norwegian Sea, combining horizon picking, well ties, and seismic geomorphological analyses of the crater-mound landforms. Along the mid-Norwegian margin, the base of the glacially-influenced sediments abruptly deepens to form 28 craters with typical depths of ~100 m, areal extents of up to 5130 km², and volumes of up to 820 km³. Mounds are observed in the vicinity of the craters at several stratigraphic levels above the craters. We present a new model for the formation of the craters and mounds where the mounds consist of remobilized oozes evacuated from the craters (Bellwald et al., 2024). In our model, repeated and overpressure-driven sediment failure is interpreted to cause the crater-mound structures, as opposed to erosive megaslides (Riis et al., 2005). Seismic geomorphological analyses suggest that ooze remobilization occurred as an abrupt energetic and extrusive process. The results also suggest rapidly-deposited, low-permeability and low-porosity glacial sediments seal overpressure which originated from fluids being expelled from the underlying, high-permeability and high-compressibility biosilicious oozes.

### References

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