

The geological evolution of the Norwegian shelf during the Quaternary

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Over large areas of the Norwegian continental shelf more than 1000 m of Quaternary sediments exist. The depositional history of these sediments is an important context for understanding the geotechnical properties of the sedimentary units in the sub-surface. We summarise the large-scale history of the North Sea (52-62°N) and the mid-Norwegian shelf (62-68°N). The central and southern North Sea basin (52-59°N) was infilled by mainly fluvial and distal-marine sediments, whereas the northern North Sea Basin (59-62°N) was infilled mainly by glacial processes (e.g. glacigenic debris flows). The large coverage of 3D seismic data has allowed for a much better understanding of the sedimentary environment and examples of this will be shown.

The mid-Norwegian shelf was built out by glacigenic processes during the Quaternary, and the shelf edge has been moved up to 150 km towards the west. The basin was filled in by a series of prograding wedges mainly of glacial origin. On top of these units, flatlying till units were deposited during the last few glaciations, commonly separated from the underlying units by one or several unconformities. The lithology of these layers is generally fine-grained, mainly clay and silt, but with sporadic clasts up to boulder size. Several large slides have occurred from the shelf break and down the continental slope.