

The Scandinavian highlands and Miocene to Pliocene sea levels

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The summit level of the Scandinavian highlands is bounded by the sub-Cambrian peneplain to the east and by a weathered and block-faulted Mesozoic surface to the west. The development of paleovalleys and younger surfaces eroded into these surfaces has been studied in relation to Miocene and Pliocene deposits in the Norwegian Continental Shelf. A middle Miocene phase of compression is marked by anticlinal and synclinal structures in the Central Graben in the North Sea, in the Norwegian Sea, by the large scale uplift of the southern and northern Scandes Domes and the corresponding subsidence of the North Sea and Lofoten Basins.

In the North Sea, there is a break in deposition and a change in depocenters between the Skade Fm and the Eir fm at about 16 Ma. The sandy Middle Miocene Eir formation shales out to the east and south. Middle Miocene marine shales occur in most of the Norwegian sector. Planktonic foraminifera and *Bolboforma* are abundant throughout and indicate deposition in an open sea. Middle Miocene sandy erosional products from the southern Scandes make up thick deposits in Jutland and the adjacent offshore area. The sandy Utsira Formation consists of a lower unit (12.5-6 Ma) restricted to the depocenters and an upper unit (5-3.5 Ma) with a wider distribution. In the north the upper unit is developed as a sheet of glauconite sand (5 Ma) overlying an erosional unconformity. Our new interpretation relates the erosion to the sea level drop in the Late Miocene due to the Messinian salinity crisis and it should not be correlated with the Middle Miocene compression.

References:

<http://www.npd.no/no/Publikasjoner/NPD-bulletin/Bulletin-10/>, and references therein.