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Mixed carbonate-siliciclastic deposition on a wave-dominated ramp, Moscovian (Upper Carboniferous), Holm Land, North Greenland

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The lower Moscovian succession in southern Holm Land, eastern North Greenland consists of 300 m of cyclically interbedded shelf carbonates and siliciclastics. The sediments are exposed in a coastal cliff that provides an approximately 5.5 km wide cross section of this shelf succession some 15-20 km from the margin of the depositional basin. The outcrops allow detailed studies of sedimentary facies and lateral and stratigraphic composition of the cycles. Individual cycles are 3-35 m thick, laterally persistent and of overall tabular shape within the outcrop area, although they often show pronounced lateral thickness.

Most carbonates were deposited in euphotic to dysphotic, low energy mid-shelf to outer shelf environments below fair weather wave base. The siliciclastic portion of these cycles is dominated by upper shoreface to fluvial sandstone and siltstone. Deposition is suggested to have taken place on a wave-dominated ramp with moderate supply of siliciclastic material. The critical interface between the areas of siliciclastic and carbonate deposition appears to be fair weather wave base. This interface was also critical in shaping the depositional cycles as transgressive shelf carbonates in most cases are separated from the shoreface siliciclastic by a regressive surface of erosion. The top of most cycles coincides with a transgressive surface of erosion.