Supplement of E&G Quaternary Sci. J., 71, 249–265, 2022
https://doi.org/10.5194/egqsj-71-249-2022-supplement

Open Access E&G Quaternary Science Journal

Supplement of

The lithostratigraphic formations of the coastal Holocene in NE Germany – a synthesis

Reinhard Lampe

Correspondence to: Reinhard Lampe (lampe@uni-greifswald.de)

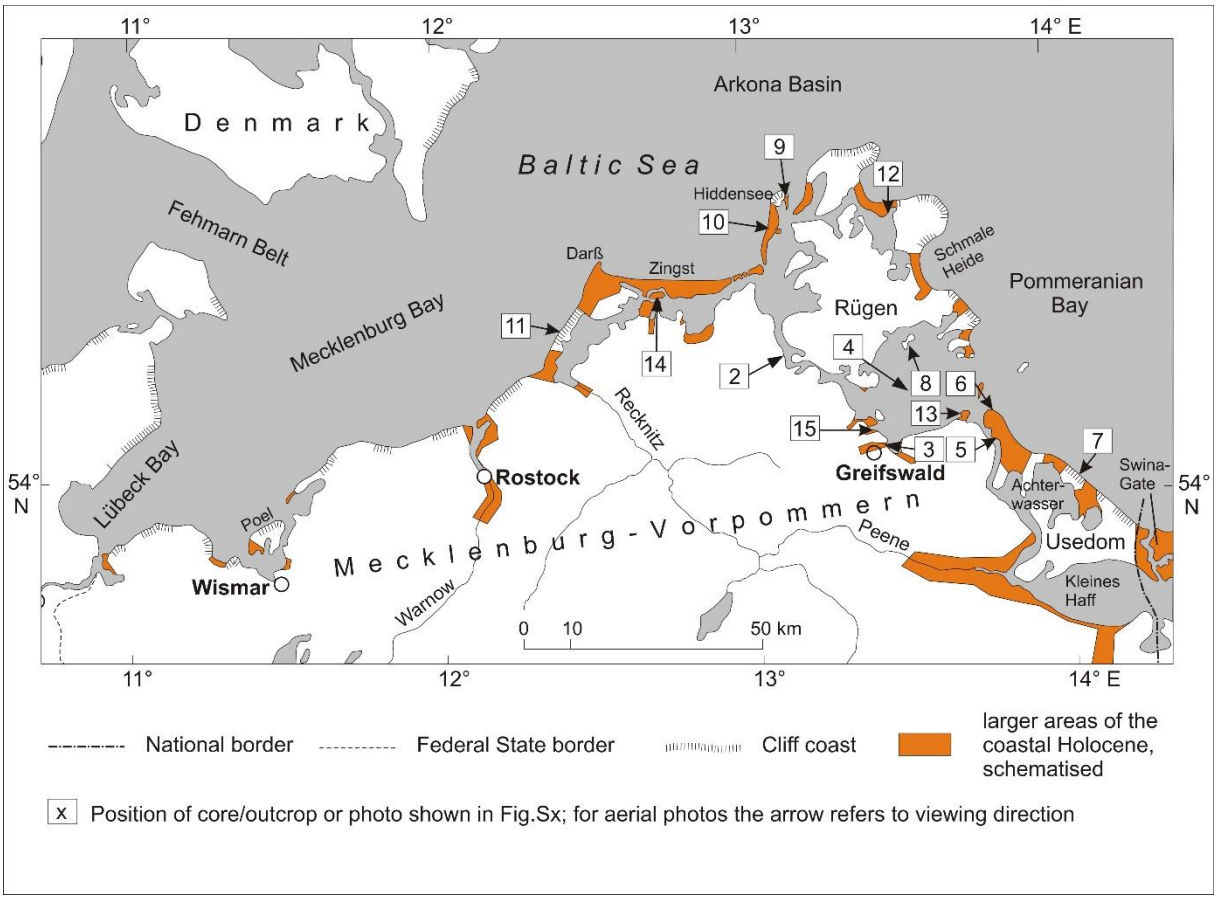

Fig. S1: Study area with the positions, where the photos shown in the supplement were taken.

Fig. S2: Outcrop in a construction pit at about -5 m NHN, Stralsund (for the position see Fig. S1). Above till and a shallow fossil soil follows a wood peat, representing the basal peat, and mud with shells of marine molluscs of the Greifswalder Bodden Formation. Presumably, the peat is appropriate for dating the former sea-level position (sea-level index point), as it was hardly compacted. However, the topmost peat layer may have been eroded so that a hiatus exists between the peat and the overlying mud (photo: R. Lampe 2002).

Fig. S3: View into the construction pit of the storm flood barrier Greifswald, Ryck River mouth (for the position see Fig. S1). Above till a wood peat (1) crops out, which is overlain by fluvial mud (2), containing freshwater mollusc shells. Separated by a small sand layer (erosional transgression contact), the fluvial mud is covered by lagoonal mud, containing shells of marine molluscs (3). The section with strongly concentrated shells marks the phase of the Littorina Transgression in which minimal clastic intake into the lagoons took place. The uppermost 0.4 m of the profile represent the recent sandy sediment layer (4). Only the lagoonal mud represents the Greifswalder Bodden Formation, the covering sand layer belongs to the Karlshagen Formation (photo: R. Lampe, 2012).

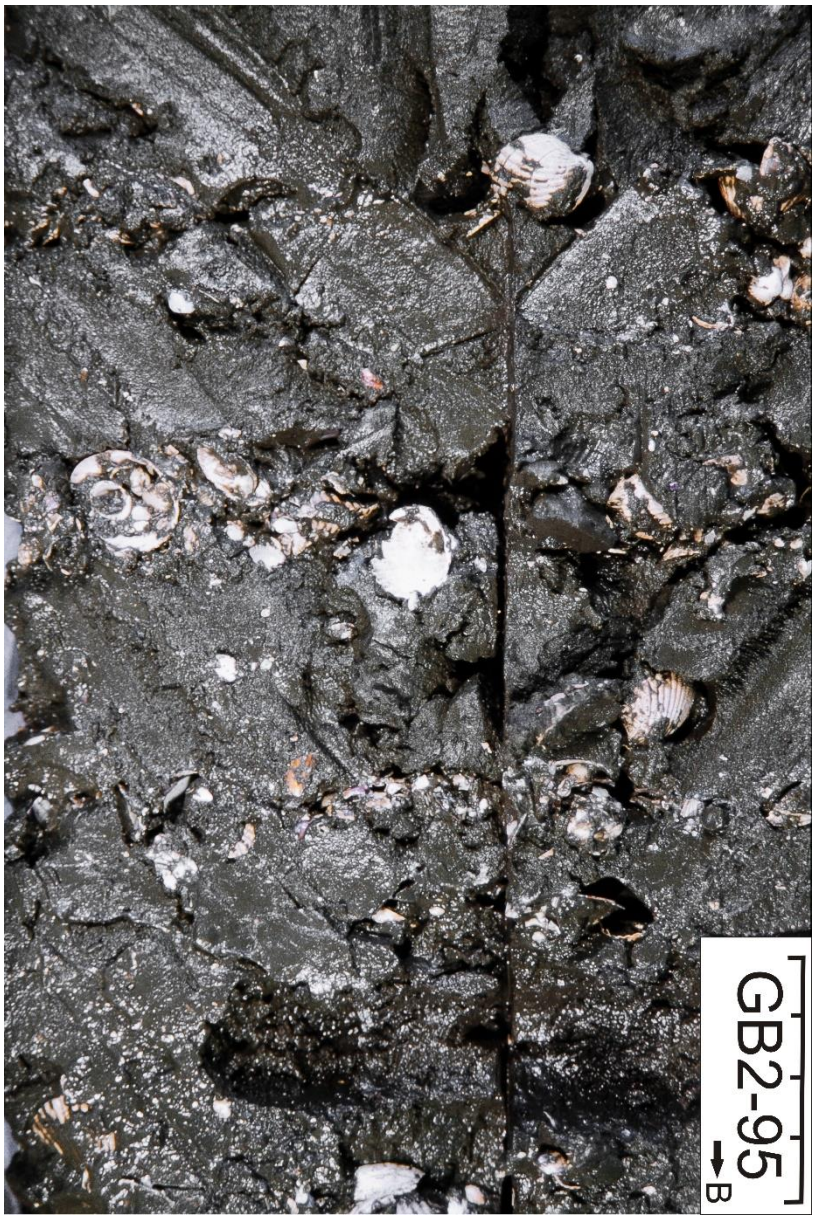

Fig. S4: Detail photo of sediment core GB2-95, Greifswalder Bodden (scale refers to cm, for the position see Fig. S1), showing silty mud with storm surge layers (tempestites), enriched with shells, mostly from *Cerastoderma glaucum* and *Scrobicularia plana*. The mud is the typical sediment of the Greifswalder Bodden Formation (photo: R. Lampe, 1995)

Fig. S5: Areal view from southwest across the Peenemünde-Zinnowitz strandplain on Usedom with Karlshagen in the background on the left (for the position see Fig. S1). In the image centre recurved spits are recognisable which illustrate the primary elongation direction of the Usedom barrier from right to left (SE to NW). The forest in the background covers nearly shore parallel beach and dune ridges, which represent the progradation phase of the barrier. The sandy base of the barrier and the beach ridges belong to the Karlshagen Formation, the dunes to the Prerow Formation. In the foreground the former sandflat of the back-barrier is situated, which is presently covered by drained shallow peatland of the Redentin Formation (photo: R. Lampe, 2007).

Fig. S6: Aerial view from north to the northern tip of Usedom (Peenemünder Haken, for the position see Fig. S1). In a wide sandflat, which is nourished by alongshore transported sand from the south, islands emerge with overwash channels in between. Over time, the islands become stabilised by *Phragmites* reeds and grow together, subsequently progradation starts. In the background, older, forest covered beach ridges are visible. The sandy sediments of the barrier and its foreshore, the sandflat and the islands belong to the Karlshagen Formation, the peat of the *Phragmites* stands pertains to the Redentin Formation (photo: R. Lampe, 2007).

Fig. S7: All beach sediments, whether sandy, gravelly, or blocky, belong to the Karlshagen Formation. The image shows lag sediment in the swash zone, built from the underlying till by depletion of finer particles, while the upper beach consists of sand. Shore of Usedom, near Ueckeritz (for the position see Fig. S1; photo: R. Lampe, 2006).

Fig. S8: Aerial view of Vilm Island from south, in the background Rügen (for the position see Fig. S1). The shallow sandy foreshore with its many sand bars resting on Pleistocene till and sand belongs to the Karlshagen Formation. The narrow neck between the two more elevated uplands of the island consists of marine sand of the Karlshagen Formation and is covered by dunes of the Prerow Formation (photo: R. Lampe, 2007).

Fig. S9: Aerial view of the Bessin spits/Hiddensee from north (for the position see Fig. S1). The subaerial spits and their subaquatic base, including the surrounding foreshore and sandflats, belong to the Karlshagen Formation. The dunes, covered with shrubs and bushes, pertain to the Prerow Formation. The peat of the brown coloured reed belts belong to the Redentin Formation (photo: R. Lampe, 2007).

Fig. S10: Migrating dunes on Hiddensee, Dünenheide (for the position see Fig. S1). Due to vegetation destruction in the past, sand from the coastal foredunes started to migrate over marine sand of the Karlshagen Formation towards inland. The aeolian sand belongs to the Prerow Formation (photo: R. Lampe, 2005).

Fig. S11: The cliff of Ahrenshoop (for the position see Fig. S1) consists of till (1) covered by Lateglacial sand (2). On its top a podsol developed in the Holocene whose Bhs horizon (3) forms a resistant layer. Landward directed winds transport the sand from the cliff to its upper edge, where the sand is deposited, forming a dune (4) up to few metres high. Cliff-top dunes, such as these, belong to the Prerow Formation (photo: R. Lampe, 1992).

Fig. S12: Aerial view of the Großer Jasmunder Bodden from north (for the position see Fig. S1). Coastal terrestrialisation mires along the shore are recognisable from the brown coloured reed stands. The vegetation is dominated by *Phragmites,* which accumulates shallow peat layers, belonging to the Redentin Formation (photo: R. Lampe, 2007).

Fig. S13: Outcrop of a degraded peat, forming a *black layer*, which is designated as Karrendorf Subformation. Shore of Struck Island, Greifswalder Bodden (for the position see Fig. S1; photo: R. Lampe, 1998).

Fig. S14: Aerial view of the island Großer Kirr from south (for the position see Fig. S1). The island is built of glaciolimnic and marine sand, which is covered by a coastal flood mire partly used as pasture (centre and left). The numerous winding channels between shallow pans form the typical natural drainage system of the mire. Artificial drainage is recognisable by straight ditches. The saltmarsh peat of the mire belongs to the Redentin Formation (photo: R. Lampe 2007).

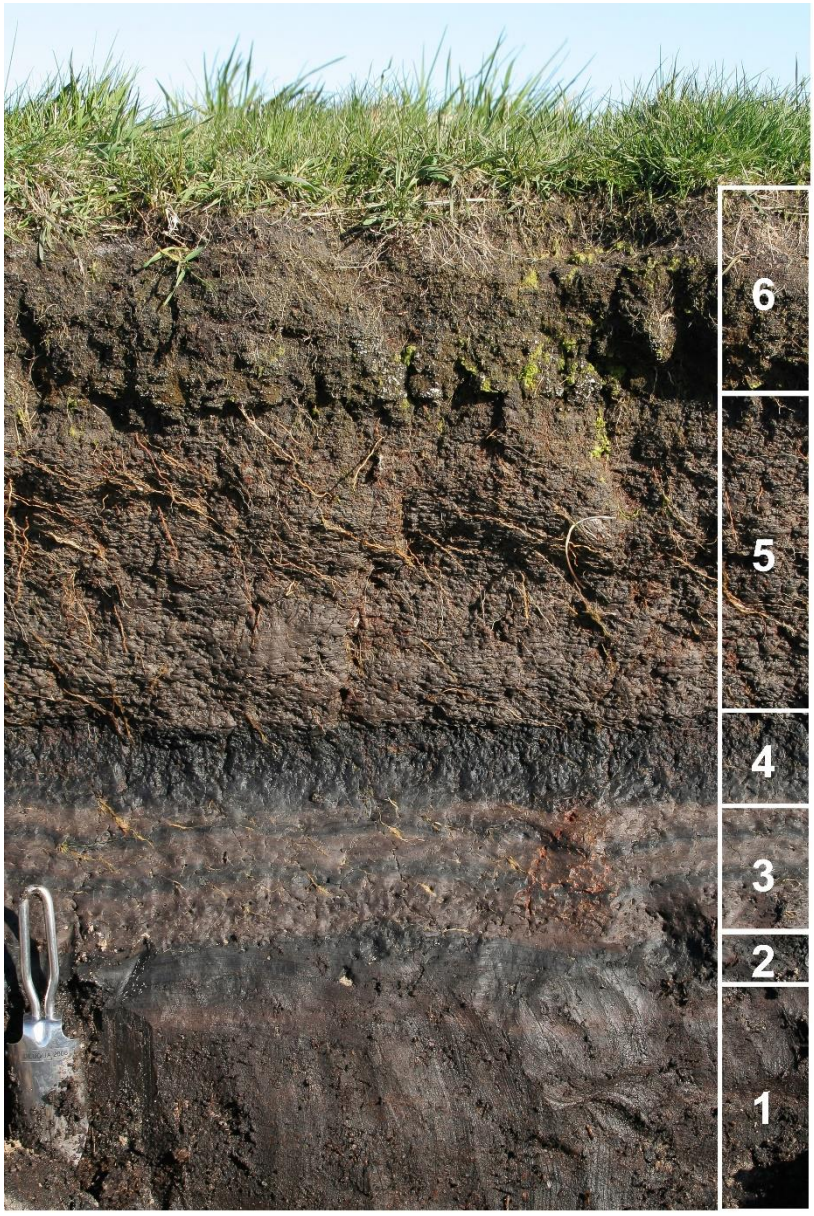

Fig. S15: Strata sequence of the coastal mire Kooser Wiesen near Greifswald (for the position see Fig. S1). Above *Phragmites* peat (1) from the Sub-Boreal a black layer of degraded peat (2) is recognisable. Its ^{14}C-age of 4.08±0.14 ka b2k predates the subsequent degradation. Upward a flooding silt with some black stripes (3), dated to 1.84±0.06 ka b2k, follows. The subsequent more conspicuous black layer (4) is designated as the Karrendorf Subformation. It shows that a peat grew on the underlying flooding silt, which degraded later due to desiccation. A ^{14}C-date of 1.35±0.55 ka b2k and an age of ~0.8 ka estimated from pollen data point to the period in which the peat accumulated. According to palynological evidence, a second flooding silt layer (5, saltmarsh peat sensu Jeschke and Lange, 1992) deposited above the Karrendorf Subformation during the LIA (Lampe and Janke, 2004). Saltmarsh peat of significantly higher organic content (6) forms the uppermost 13 cm of the profile. All layers belong to the Redentin Formation (photo: R. Lampe, 2009).