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Characteristics of chernozems on the Island Poel (NE Germany)

C. Albrecht (1) and P. Kühn (2)

(1) Institute of Soil Science and Soil Conservation, Justus Liebig University, Germany (christian.albrecht@umwelt.uni-giessen.de), (2) Institute for Geography, Physical Geography, Eberhard Karls University, Tübingen, Germany (peter.kuehn@uni-tuebingen.de)

The abundance of chernozems is usually linked to middle European loess regions and the focus of research on chernozems concentrates on their classic distribution areas (Altermann et al., 2005; Eckmeyer, 2007; Gehrt, 1999; Gerlach et al., 2006; Gunreben, 1998; Höhnscheidt, 2002; Saile and Lorz, 2003).
Recent soil mapping on the island of Poel, situated in the southern Baltic Sea, shows the abundance of chernozems developed in W3 till of the latest weichselian ice retreat. In the upper layer dark mollic A horizons are developed overlying luvisols with different degrees of stagnic influence. The luvisols are not the result of a degradation of the chernozems since no humic clay coatings could be found in those Bt horizons. Although their presence is described by works of v. Bülow (1938), Böttcher (1959) and Diemann (1972), several questions concerning genesis, distribution, and soil classification remained unacknowledged until now.
Based on the investigation of twelve pedons the properties of three typical pedons are presented and their pedogenesis is discussed. The general horizon sequence Ap, Ah, (Eb/Ah), (2)E, 2Bt(g)b, C after FAO (2008) or Ap/Axh/(Axh+Al-Sw/)(II)fAl-Sw/IIBt-Sd/elCn (after Ad-hoc-AG Boden, 2005) of these chernozems demonstrates significant differences to the other better investigated distributions of chernozems in the northern german young moraine district.
In contrast to the degraded chernozems of the Island Fehmarn (Schimming and Blume, 1993) clay-humus coatings are absent in the Bt horizons lying below the mollic Ah horizons whereby the chernozems of the Uckermark are often influenced by colluvial processes (Fischer-Zujkov et al., 1999).
Thus the chernozems on the Island Poel can be considered as not degraded, because the clay illuviation took place before the formation of the mollic A horizons. Radiocarbon ages from humic acids of the mollic horizons suggest that the development of the chernozems stopped within the first half of the subatlantic period.