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Palyno-ecological reconstruction of the impact of historical land use on soils and landforms in Luxembourg.

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Palynological references of histosols (locations Pratz, Brouch) reflect the Subatlantic anthropogenic deforestation and land reclamation.
Earliest palynological evidence of deforestation originates from Roman Time. After a short period of recovering, the deforestation continued in the Middle Ages.
Deforestation affected landscape hydrology. In deforested higher parts of the landscape, soil water infiltration increases and causes soil wetting in depressions and valleys.
At some sites, soil wetting initiates peat accumulation and the development of histosols, containing valuable palyno-ecological soil archives.
At other sites, soil material can be transported down slope or down stream, accumulate on the valley bottom, resulting in the development of regosols also containing valuable soil archives.
The chronological position of material accumulations in depressions without outlet (mardel), established by palynological analysis and radiocarbon dating, allows estimating the rate of surface lowering in the related feeding areas, if the accumulated volume and acreage of the feeding area can be assessed. Employing this to the infill of a mardel in Gutland reveals that the average rate of surface lowering at that particular site has been fluctuating considerably in the course of the Subatlantic. Pollen records and historical events suggest such fluctuations to be more related to human activities than to natural environmental changes.
The chronological position of material accumulations on valley bottoms, established by palynological analysis and radiocarbon dating, allows estimating the rate of surface rise on the valley bottom in the related feeding area's.