



## **Soil evolution dynamics and cultural response: Transformation of habitation patterns in NW Europe (3000-1000 yrs BP)**

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Long-term archaeological data gathering in the southern Netherlands delivers an interesting scale model that may be tested on the Pleistocene sand areas of the Northwest European Plain. On a micro-scale level it has become clear that Bronze Age and Iron Age farmers intensively used the landscape, resulting in relatively dense distribution patterns of settlements all over the sand plateaus. However, this agricultural use of the landscape – related to the ‘celtic field’ system – led to a process of soil degeneration during which initially brown moder podzols gradually transformed into degenerated humus podzols that could no longer be used as farmland.

Measured loam values of over 250 soil samples of 5 case studies in the southern Netherlands, are in general agreement with the described model that the plaggen cover is located on soils containing high loam% and that humus podzolsoils of former heath areas have low loam content. Local spatial as well as vertical variations in loam content of sand layers are warning against single parameter research. Other potential causes for the deviation of the model are: a) impact of fluctuating groundwater, b) grain size and transmissivity of the sediments, c) organic matter content, d) land management and e) palaeo-climate change. Also studies from nearby NW European Pleistocene sand areas will be presented that show deviations and similarities with the shifting habitation model in the past due to soil degradation.