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Soil variability and landscape history of the last 800.000 years revealed by the horsification of the landscape in North-Brabant, The Netherlands

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In the province of North-Brabant in the southern Netherlands a diverse geological substrate is present variable in chronology, sediment properties, and soil profiles. The human influence on soil quality and topography has a history of millennia while new developments related to the horsification of the landscape in this region allow an insight in the soil patterns with associated landscape evolution. The objective in this project is to show that records of soils and landscape in this area are able to demonstrate the evolutional history and disseminate the pedological and geological knowledge to a wider audience in demonstrating that soil records and associated landscape evolution reveal a regional identity that can be very useful to apply in landscape architectural projects, such as in the horsification of the landscape. Soil records show landscape evolution has progressed in three distinct phases: 1) The oldest deposits in the region are formed by river sediments that reflect a fluvial environment that was present 800.000 years ago in the Lower-Pleistocene. Old courses of the rivers Rhine and Meuse deposited gravelly white sands and clay layers that have a distinct effect on hydrological properties. 2) Eolian sands dating from the Late Glacial, deposited 12.000-14.000 years before present were deposited by western wind directions, obvious from large scale linear and parabolic dune ridges. These sandy deposits have endured soil acidification and podzolisation resulting in classic Umbric Podzol profiles testifying of a prolonged period of landscape evolution. 3) Tree removal in the Holocene by man created unprotected open sand plains that were eroded and deposited by wind processes in small scale ridges with steep slopes up till approximately 500 years ago. These drift sands have a widespread occurrence and can be recognized in thin micro-podzol profiles in association with a distinct morphology of steep sloped dunes. Multiple soil horizons reflect different time periods elapsed and specific ‘open landscape’ environments, as these thin podzolic horizons testify. Future research will involve cartographic mapping by soil coring, as well as OSL dating, next to an ecological field reconnaissance. In this poster we will show how the soil in this region beholds an entire landscape history, and how that information can be combined with nature development in landscape architectural plans.