



## **Soil archives of a Fluvisol: Subsurface analysis and soil history of the medieval city centre of Vlaardingen, the Netherlands - an integral approach**

Sjoerd Kluiving (1), Tim De Ridder (2), Marcel Van Dasselaar (3), Stan Roozen (5), Maarten Prins (4), and Jan Van Mourik (5)

(1) VU University Amsterdam, Dept. of Archaeology, Arts, Amsterdam, Netherlands (s.j.kluiving@vu.nl), (2) City of Vlaardingen, VLAK (Archaeology Dept., Hoflaan 43, 3134 AC Vlaardingen, The Netherlands, (3) Arnicon, Archeomedia 2908 LJ Capelle aan den IJssel, The Netherlands, (4) VU University Amsterdam, Faculty of Earth and Life Sciences, Department of Earth Sciences, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands, (5) Institute for Biodiversity and Ecosystem Dynamics (IBED), University of Amsterdam,

In Medieval times the city of Vlaardingen (the Netherlands) was strategically located on the confluence of three rivers, the Meuse, the Merwede and the Vlaarding. A church of early 8th century was already located here. In a short period of time Vlaardingen developed into an international trading place, the most important place in the former county of Holland. Starting from the 11th century the river Meuse threatened to flood the settlement. These floods have been registered in the archives of the fluvisol and were recognised in a multidisciplinary sedimentary analysis of these archives.

To secure the future of this vulnerable soil archive currently an extensive interdisciplinary research (76 mechanical drill holes, grain size analysis (GSA), thermo-gravimetric analysis (TGA), archaeological remains, soil analysis, dating methods, micromorphology, and microfauna) has started in 2011 to gain knowledge on the sedimentological and pedological subsurface of the mound as well as on the well-preserved nature of the archaeological evidence. Pedogenic features are recorded with soil descriptive, micromorphological and geochemical (XRF) analysis. The soil sequence of 5 meters thickness exhibits a complex mix of 'natural' as well as 'anthropogenic layering' and initial soil formation that enables to make a distinction for relatively stable periods between periods with active sedimentation. In this paper the results of this large-scale project are demonstrated in a number of cross-sections with interrelated geological, pedological and archaeological stratification. Distinction between natural and anthropogenic layering is made on the occurrence of chemical elements phosphorus and potassium.

A series of four stratigraphic / sedimentary units record the period before and after the flooding disaster. Given the many archaeological remnants and features present in the lower units, we assume that the medieval landscape was drowned while it was inhabited in the 12th century AD. After a final drowning phase in the 13th century, as a reaction to it, inhabitants started to raise the surface.