The Dark Age of the Lowlands in an Interdisciplinary Light
People, landscape and climate between AD 300 and 1000

Introduction

The late-Roman period (AD 270-450) and Early Middle Ages (AD 450-1050) in the Netherlands witnessed major changes in landscape, economy, demography and possibly also climate. Archaeological evidence throughout north-western Europe, including the Netherlands, indicates changing settlement patterns and severe demographic decline in the late-Roman and post-Roman periods. To fully understand the processes behind these changes, it is necessary to combine datasets of archaeology, geomorphology, past climate and vegetation.

Method

Our research programme focuses on analysing and reconstructing the complex and dynamic interplay between cultural, landscape and vegetation changes during Roman and early-medieval periods. These reconstructions take place within three complementary PhD-projects, in the realms of archaeology (Project A), physical geography (Project B) and palaeoecology (Project C). Project A focuses on occupation patterns (e.g. historical route networks, long-distance trade relations, settlement patterns) and land use in the river areas and Pleistocene landscapes. Project B studies natural geomorphological landscape dynamics in the Netherlands, and project C focuses on vegetation developments and climatic changes during these periods. The interaction between these three projects is not only achieved by comparing synthesised datasets, but also by studying common and complementary research questions.

Results

For both the delta plain and the coastal area an innovative GIS was built including all deposits of Late Holocene age. Using this GIS, new detailed palaeoecological maps of the delta plain area were made and combined with surface elevation reconstructions. When these maps were combined with settlement data, they showed that settlements preferentially persisted on the higher elevated areas in the landscape. Additionally, a palaeogeographical GIS was used to visualise storm surge sea regressions in the Dutch coastal area during different time steps. Again these detailed landscape reconstructions were combined with settlement patterns (Project A), this comparison demonstrated that anthropogenic induced flooding occurred at a dramatic scale. By comparing different sections along the coast it is shown that areas with wide peat areas and few beach barriers faced the most dramatic consequences of these flooding events.

The palynological records reflect the late-Roman period as a reforestation phase. This reforestation is most pronounced in the southern part of the Netherlands. Not only is this reforestation the result of a decrease in population, less intensive farming practices seem to be an additional factor. Using all available palynological data and isotopic landscape maps vegetation reconstructions are made for three time slices showing the shifting vegetation patterns (van Beek et al., 2015; Bouman et al., 2013).

Calculating persistent routes

Human influence on coastal plain development

Influence landscape on settlement distribution

Quantifying cultural and landscape influence on changing route networks

References

Bakker & van Smeerdijk, 1982

Janssen, 1972

Kalis

Castel, 1991

van der Molen & Hoekstra, 1988

van Geel et al., 2008

Teunissen, 1990

van Geel, 1982

Estimated NAP/AP ratio during Dark Ages

Estimated increase of AP during DA