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Impact of Medieval road construction on landscape transformation during the last 700 years in N Poland

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The track “Via Marchionis” was established in the early 13th century and initially led from today’s territory of Germany (city of Brandenburg) through the capital of Neumark (Myślibórz, 1298 AD) to The Castle of the Teutonic Order in Malbork (Poland, 1286 AD). It was one of the first main West-East connections in northern central Europe and functioned as a road until today. In the following centuries, this track became the key migration route during the Middle Ages in the territory of Pomerania. In particular, frequent wars in this region during the last millennium exerted great impact on the exchange of human population. Here, we present the first high-resolution reconstruction of the impact of the construction of the trade route “Via Marchionis” on landscape evolution since more than 700 years based on a varved lake sediment record from Lake Czechowskie, located in a distance of only a few hundred meters from the Via Marchionis. We established a high-resolution palaeoenvironmental reconstruction based on a pollen record at unprecedented 5-year resolution combined with sub-annual resolving μ-XRF element data of sediments and precise varve dating. As a result, five phases of significantly lower human pressure interrupted by phases of intensified human impact were distinguished. A comparison of these data with historical sources revealed a clear relation of vegetation changes and wars and deployment through armed forces in this region. The strongest declines in anthropogenic pressure on the landscape occurred during periods of war and the subsequent decades of regeneration. Our results suggest that moving of armed forces devastated the region and caused changes in sovereignty and population density, which in turn resulted in changes in regional vegetation and erosion processes in the lake’s catchment. Therefore, we conclude that the construction of Via Marchionis was an indirect factor that constantly influenced changes of the Pomerania landscape since the 14th century. This study is a contribution to the Virtual Institute of Integrated Climate and Landscape Evolution Analysis–ICLEA– of the Helmholtz Association (VH-VI-415) and NCN UMO-2015/17/B/ST10/03430.