

PaleoMaps – Creating, Collecting and Compiling Geospatial Paleoenvironment Data for Culture-Environment-Interaction Modeling Applications

Christian Willmes 

Collaborative Research Centre 806 & Inst. of Geography, Univ. of Cologne, Germany

[Watch the Video](#) 

Keywords: Paleoenvironment, GIS Data, data modelling, data publication

In the frame of the [Collaborative Research Centre 806](#) (CRC 806), a [German Research Foundation](#) (DFG) funded interdisciplinary and inter-institutional research project, investigating human environment interaction (HEI) during the last 250,000 years, which was established in 2009 and is funded until 2021, considerable experience, competence and knowledge in integrating and managing data, information, and knowledge on HEI research was acquired and developed.

In this talk first the data management platform and repository [CRC806-Database](#) will be presented, that was developed for the CRC 806 as a central data archive, and data publication platform. It is shown, how the heterogeneous data that was produced and acquired by the project members, are organized in a web based platform.

This will be followed by the introduction of some example HEI modelling applications conducted within the CRC 806. These applications include for example [Species Distribution Modelling](#) (SDM), [Least Cost Paths](#) (LCP) and [Site Catchment Analyses](#) (SCA), Population Density Estimates, and more, which represents the state of the art in HEI modelling. One particular ingredient for almost any quantitative (and also for some qualitative) HEI modelling applications are computerized representations of well-defined paleoenvironments (Willmes et al. 2020).

Currently, this kind of data is published abundantly in the scientific record, but in very heterogeneous forms and formats. From implicit textual descriptions of huge regions to most detailed 3D models of small sites. From temporal categories of geological ages to exact and granular dates in time. By first investigating the state of the art in this field, data availability and accessibility, and looking at some exemplary geospatial paleoenvironment reconstructions in recent human-environment interaction modelling applications. The lack of a framework for sharing paleoenvironmental models or maps in the context of HEI modelling is addressed and discussed. This will be followed by a discussion and critique of state of the art approaches, leading to the definition and explanation of the [PaleoMaps](#) approach (Willmes et al. 2017), that seeks to address the before identified shortcomings of existing approaches.

Willmes, C. (2022). PaleoMaps – Creating, Collecting and Compiling Geospatial Paleoenvironment Data for Culture-Environment-Interaction Modeling Applications. In A. W. Kandel, M. N. Haidle, & C. Sommer (Eds.), *Human Origins – Digital Future: An International Conference about the Future of Archaeological and Paleoanthropological Databases* (pp. 34-35). Propylaeum, Heidelberg. DOI: <https://doi.org/10.11588/propylaeum.882.c13439>

ORCID®

Christian Willmes  <https://orcid.org/0000-0002-5566-6542>

REFERENCES

Willmes, C., Becker, D., Verheul, J., Yener, Y., Zickel, M., Bolten, A., et al. (2017). PaleoMaps: SDI for open paleoenvironmental GIS data. *International Journal of Spatial Data Infrastructures Research*, 12, 39-61. <https://doi.org/10.2902/1725-0463.2017.12.art3>

Willmes, C., Niedziółka, K., Serbe, B., Grimm, S.B., Groß, D., Miebach, A., et al. (2020). State of the Art in Paleoenvironment Mapping for Modeling Applications in Archeology – Summary, Conclusions, and Future Directions from the PaleoMaps Workshop. *Quaternary*, 3, 13. <https://doi.org/10.3390/quat3020013>