

EGU22-9664, updated on 18 Aug 2022

<https://doi.org/10.5194/egusphere-egu22-9664>

EGU General Assembly 2022

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Homo heterogenus: Variability in Pleistocene Homo environments.

Tegan Foister, Miikka Tallavaara, Mikael Fortelius, and Oscar E. Wilson

University of Helsinki, Helsinki, Finland (tegan.foister@helsinki.fi)

The Early Pleistocene dispersal of *Homo* out of Africa is a highly studied and debated topic. One of the controversies centres on the question of what type of environments hominin species expanded out of Africa into. We conducted a literature review of 163 papers published since 2000 studying the environmental settings of the first Out of Africa expansion. We found that the literature is polarised between two types of hypotheses. On one hand there are papers which describe *Homo* in the Early Pleistocene as inflexible (compared to *Homo sapiens*) and incapable of persisting in non-savannah environments, e.g. the 'savannahstan' hypothesis. On the other hand there are papers which describe *Homo* as flexible and able to persist in various environment types, e.g. the variability selection hypothesis. By investigating these hypotheses we are able to move closer to answering the question - as *Homo* dispersed out of Africa, did they diversify to exploit new environments, or remain within the ranges of their African niche? We analysed the reconstructions of early *Homo* environments included in these papers. We found that the qualitative language used to describe hominin environments is problematic and impedes the formation of clear conclusions about the environments occupied by early *Homo* species. However, by forcibly quantifying the descriptions used in 69 (of the original 163) papers we found that the research does not strongly support the savannahstan hypothesis. Instead the environments inhabited by *Homo* are consistently reconstructed as a mix of environment types (grassland, forest, savannah etc.), with a slight skew towards open habitats. Based on these results, we tentatively suggest that *Homo* exhibited a preference for heterogeneous "edge" environments during the Pleistocene and as they dispersed out of Africa. However, in order to further investigate the potential preference of *Homo* for heterogeneous environments and to build confidence in reconstructions of early human environments in general, quantified reconstructions of the vegetation composition and distribution at early *Homo* sites are needed.