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# Reconstructing vegetation changes in the Ethiopian Highlands: 18000 years of Afromontane vegetation dynamics recorded in high altitude wetlands.

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Within eastern Africa, Ethiopia stands out for its steep topography, resulting in an altitudinal zonation of climate and vegetation. To understand future vegetation changes, we need information on past vegetation covers and vegetation responses to environmental and climatic changes. Pollen studies are available for low and high elevations in Ethiopia, but they are low in number and limited in spatial coverage. In addition, explicit research to altitudinal patterns of environmental changes are missing. However, archaeological evidence from SW Ethiopia suggests vertical migration of humans in response to humidity fluctuations, highlighting the need for research to spatial dynamics of human activities and vegetation in Ethiopia. On the other hand, sedimentological evidence suggests a millennia long agricultural history in Ethiopia's highlands and several authors identify this region as a center of plant domestication.

It is clear that a thorough understanding of the past vegetation cover and its alteration by humans and climate is missing for Ethiopia. These research gaps impede identification of the timing and location of the onset of agriculture in the ancient Ethiopian landscape, resulting in poor understanding of e.g. contemporary degraded landforms. In our study, we aim to reconstruct and quantify the vegetation history along an altitudinal gradient in the Southern Ethiopian Rift Valley and to identify the role of man and climate on this evolution. Therefore, several lakes and swamps are selected as study sites along an altitudinal gradient (1100-3000 m a.s.l.) in the Gamo Highlands near the city of Arba Minch, along the Southern Ethiopian Rift Valley. Here, we will present the results of pollen, charcoal and NPP analyses from two wetland sites situated at 2300 and 3000 m a.s.l. The records show an increase of Afromontane forest taxa around 13 ka BP, at the expense of Montane ericaceous taxa. At 8 ka BP, a shift in the composition of the Afromontane forest is observed, together with a change in the fungal assemblage and decrease of grasses. Around 6 ka BP, Wooded grassland taxa increase simultaneously with *Delitschia* fungal spores. Montane forest taxa increase again at 2.5 ka BP, together with a shift in fungal spores, followed by an increase in charcoal accumulation during the last millennium. Most of the observed transitions can be linked to other vegetation records from Ethiopia, and reflect responses to climatic changes such as the African Humid Period. However, the exact timing and nature of the vegetation changes differs substantially between records, and asks for a denser sampling of palaeoecological records across Ethiopia. In this study, we will link the reconstructed vegetation changes with

anthropogenic and natural driving forces, and come up with a reconstruction of the long-term landscape development in the study area in SW Ethiopia.