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An explorative multiproxy approach to characterize the ecospace of Homo erectus at Sangiran (Java, Indonesia)

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Homo erectus inhabited the islands of the Sunda Shelf in the late Early Pleistocene. This is illustrated by an extensive record of hominid specimens stemming from a variety of sites in Java. The hominid locality Sangiran plays a crucial role in studying related environments, because the geological record at the Sangiran dome covers a stratigraphic sequence, unlike any other hominid site in Java. Although the detailed chronology of the localities in Java is still under dispute, it covers the period between the late Early and early Middle Pleistocene. Fossil evidence includes the hominin specimens proper, diverse and evolving vertebrate faunas as well as pollen profiles.
We applied a multiproxy approach to analyse and reconstruct features of the Homo erectus ecospace. Preliminary results of our explorative study are introduced in this paper.
Based on the pollen record, we reconstructed temperature and precipitation for the major stratigraphic units. Although resulting values are averaging over wide chronological intervals, they illustrate general climatic trends in the late Early and early Middle Pleistocene in accordance with previous studies and the MIS record. The mammalian specimens we selected for this preliminary study possess a more restricted stratigraphic provenience. Our analyses are based on a dental sample of Duboisia santeng from the Koenigswald collection (n=14). The occurrence of the taxon is restricted to 3 layers in the stratigraphy. We reconstructed body mass and inferred diet from mesowear and isotope studies. There is no significant shift in body masses of Duboisia santeng. This result is in accordance with studies from other localities in Java. However, slight shifts in the mesowear signals (mixed feeder with increasingly browsing signal) are confirmed by studies of carbon isotopes. The analysis of oxygen isotopes provides evidence for seasonality which is compared with the signals from the vegetation.