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Abstract:

Pedo-sedimentary dynamics of Sangiran dome hominid bearing layers (L/M Pleistocene, Java central, Indonesia):

a palaeopedological approach of 'Pithecanthropus' (Javanese *Homo erectus*) environments

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Abstract

Fossil soils and pedosediments displayed in Quaternary fossil-bearing series are an important proxy to describe the evolution of climates and environments. We studied those paleosols in the Sangiran dome, a rich hominid-bearing site of central Java (Indonesia), in order to characterize the environments and landscapes colonized by hominids.

The thick sedimentary series of the Sangiran dome are known to reflect the geological evolution of Central Java since the beginning of the Quaternary until the Middle Pleistocene. *Homo erectus* fossils are found in the c. 1.5 M.a. Pucangan series up to the c.0.8 M.y. Kabuh layers.

This study combines field survey, micromorphological approach and use of palynological data. The characterisation of successive pedoclimatic contexts and toposequences help to reconstruct the local palaeogeography and inform about climates (mainly influenced by south-eastern Asia monsoon cycles) that predominated during periods of palaeosoil development.

The basis of Upper Pucangan series displays the earliest fully continental deposits, corresponding to the development of an open landscape that succeeds to wide coastal swamps and rain forest. Upper in the stratigraphy, environments depicting a contrasted seasonal climate with a long dry season alternate with periods of more humid palustrine conditions.

A further tectonic uplift of the hill ranges bordering the Solo depression (in which is located the Sangiran dome) resulted into severe erosion of the regional soil cover. Transported by ephemeral streams, series of pedorelics and pedological concretions accumulated in the topographic depressions.

Recurrent aridity proxies occur in the studied paleosoils found in the overlying Kabuh series (which yield the most numerous hominid fossils), reflecting a long dry season and an open vegetation landscape.

Key Words : Soil micromorphology, Stratigraphy, *Homo erectus*, Paleosols, Monsoon, Sedimentology. Pleistocene, Java, palynology