**MODELING POTENTIAL GEOGRAPHICAL DISTRIBUTION OF SOUTH AMERICAN QUATERNARY MEGAMAMMALS: DID CLIMATE CHANGES DRIVE THEM TO EXTINCTION?**

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The extinction of the South American Quaternary Megafauna (SAQM) is usually related to climatic changes in late Pleistocene, although human action might have also influenced this process. Understanding the paleobiology and geographic distribution of SAQM is crucial to understand their responses to climate change in the Pleistocene/Holocene transition. The fossiliferous record is naturally incomplete, causing temporal and spatial gaps in geographic distribution of extinct species. Thus, Ecological Niche Modeling (ENM) is a great tool to fill these gaps. Here, ENM was used with the SAQM taxa *Equus neogeus*, *Hippidion principale*, *Notiomastodon platensis*, *Smilodon populator*, *Palaeolama major*, *Morenelaphus brachyceros*, *Macrauchenia patachonica*, *Xenorhinotherium bahiense* and *Valgipes bucklandi*,to estimate if climatic variations influenced their extinction. Maxent software build models with presence of SAQM and bioclimatic variables in Last Glacial Maximum (LGM, 22 kya) and middle Holocene (MD, 6 kya). The suitability areas decreased in post-LGM in all models. The decrease in the suitable areas indicates an effect of climatic variations on the dynamics of geographic distribution of the species. Additionally, to evaluate the similarity of environments suitable for SAQM, cluster analysis was performed from the Jaccard Index and, except for *X. bahiense*, SAQM was grouped with <60% similarity. The species with the highest similarity were *E. neogeus* and *M. patachonica*, with 90% similarity. Vegetation pattern changes, specially in higher suitability areas, possibly affected SAQM ecological niches, decreasing habitats and populations. Furthermore, advantageous adaptations during Pleistocene (large body mass and slow reproduction cycle) might have become limitations for SAQM in Holocene.

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