Orbital timing of the Indian, East Asian and African boreal monsoons and the concept of a 'global monsoon'.

Thibaut Caley*[1], Bruno Malaize , Marie Revel , Emmanuelle Ducassou , Karine Wainer , Mohamed Ibrahim , Dina Shoeaib , Sébastien Migeon , and Vincent Marieu

[1]EPOC – UMR CNRS 5805 – France

Résumé

Our understanding of monsoon circulation timing's at the orbital scale is currently a matter of debate. Here, we compare previous and recently published results of Indian, East Asian, West African and East African monsoon variability. We note different timings between the East African, West African, Indian and East-Asian monsoon systems for the most recent 45 ka, where the age models are constrained by AMS dating. On this basis, we construct different orbital forcing "reference curves" and apply them to the 200 ka time period for the different monsoon systems. Our results indicate that the 'global monsoon' concept at the orbital scale is a misnomer. We find real regional differences in the timing of the monsoon response to orbital forcing and differences in the weight of precession and obliquity in the monsoon records. This work highlights the necessity of studies aimed at understanding the underlying physics of these regional response patterns. This is crucial to a better understanding of monsoon dynamics and improved climate model simulations and comparisons with proxy data.

*Intervenant