



About the forcing, intensity and duration of MIS-5e and MIS-11 compared to other interglacials and the future

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MIS-5e and MIS-11 appear in many proxy records as the two warmest interglacials of the last million years although their astronomical configurations are very different. To investigate how they are different from other interglacials and between themselves, we have simulated the climate of the nine interglacials of the past 800,000 years using the model LOVECLIM(1,2). Both snapshot and transient simulations are performed. They allow to investigate the relative contributions of insolation and CO₂ to the intensity and duration of each interglacial as well as the differences and similarities between the interglacials. The transient simulations which cover a large range of precession, obliquity and eccentricity allow to investigate the response of different climate variables and different regions to the three astronomical parameters.

Our presentation will focus on the characteristics of the climate forcing and response of MIS-5e and MIS-11 in comparison with other interglacials. Their duration, intensity and internal variability at global and regional scales will be shown and the causes will be discussed. Unique features in astronomical forcing as well as in regional climate response are found in MIS-5e and MIS-11, which might help to understand why they appear to be among the warmest interglacials. The model results confirm the long duration of MIS-11 as found in many proxy records, which originates from a particular astronomical configuration and is also related to its long-lasting high CO₂ concentration. The differences between the seasonal behaviour of the past interglacials highlight the importance of seasonal climate reconstruction and therefore the necessity to obtain seasonal proxies.

The simulated climate of MIS-5e and MIS-11 will also be compared with the climate of today and of the future to investigate the differences and similarities between the past warm conditions and the projected future warming.

Reference

1. Yin Q.Z. and Berger A., 2012. Individual contribution of insolation and CO₂ to the interglacial climates of the past 800,000 years. *Climate Dynamics* 38:709-724.
2. Yin Q.Z. and Berger A., 2015. Interglacial analogues of the Holocene and its natural near future. *Quaternary Science Reviews*, 120, 28-46.