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Simulation of the Late Saalian (140 kyr BP) climate in Eurasia : conditions for the existence of an "unusually" large ice sheet

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Reconstructions of the peak Saalian North European ice sheet at about 140 kyr BP, based on field evidence, suggest a much larger extent of this ice sheet than during more recent glacial stages. It is a challenge to understand under what kind of climatic conditions the ice sheet could reach so far to the South and East, and which could have been the climatic forcings and feedbacks (orbital configuration, oceanic temperatures, vegetation feedbacks, etc.) creating these conditions. We use the LMDZ4 atmospheric general circulation model asynchronously coupled to the GRISSLY ice sheet model in order to test different forcing scenarios potentially leading to the buildup of the Late Saalian Eurasian ice sheet. In particular, the role of moisture delivery and conditions leading to weak summer melt on the southern limit of the ice sheet are investigated.