



Equilibrium simulations of Marine Isotope Stage 3 interstadial climate

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Marine Isotope Stage 3 (MIS3) was a period between approximately 60 ka to 30 ka BP that is characterised by abrupt climate transitions between cold, stadial and mild, interstadial climate conditions. The fluctuations are known as Dansgaard–Oeschger (D-O) events featured by a rapid warming from stadial to interstadial in a matter of a few decades, followed by a gradual cooling to stadial. We present fully coupled climate simulations of a pre-industrial control run and a MIS3 experiment at 38 ka, both integrated for 2000 years using the Norwegian Earth System Model (NorESM). With the recent model developments in the Bjerknes Centre for Climate Research (Norway), a new and efficient NorESM version (BCCR fast version) with 2 degrees atmosphere and 1 degree ocean is configured for paleo-modelling. BCCR fast version is capable of simulating Arctic sea ice and North Atlantic inflow well. We will present the large scale climate features in the MIS3 interstadial relative to today, such as the Atlantic Meridional Overturning Circulation, surface air temperature, etc. We also focus on the climate conditions in the Arctic and discuss the ocean circulations and sea ice conditions. In addition, sensitivity experiments with freshwater input into different regions (e.g., along the Norwegian coast, in the Nordic Seas, in the Labrador Sea, and in the region between 50 and 70 N) are performed; we will show the response of Arctic sea ice and Greenland temperature change from the freshwater perturbations and their implications for D-O events.