Supplementary Information
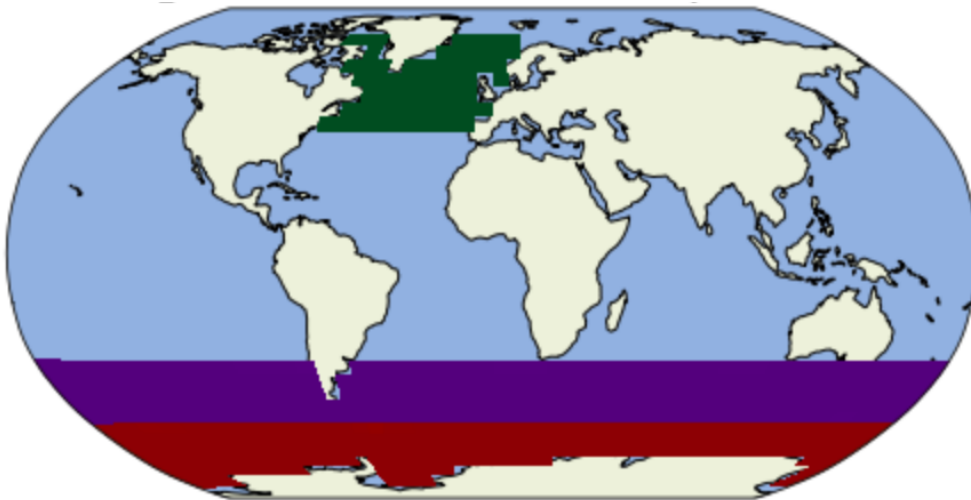
Figure SI.1: Locations of different circulation tracer surface restoration: Green - NADW, Purple - AAIW, Red - AABW.
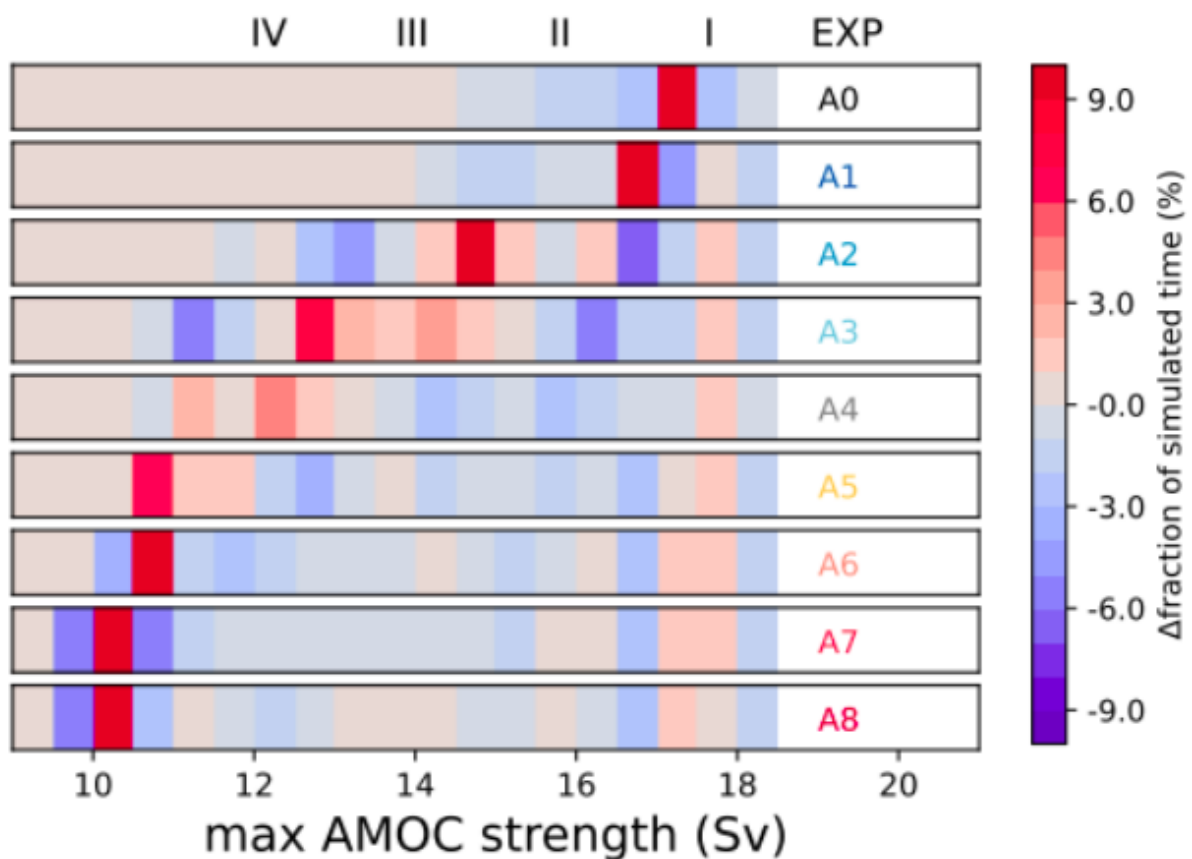
Figure SI.2: Similar to Fig 2, but showing the difference of AMOC strength occurrence before and after the Mid-Brunhes transition (positive values = more frequent occurrence after the transition). Each row shows the results of one simulation, the simulation ID is given on the right end of the column in colours that correspond to the lines in Fig 1. The bins are 0.5 Sv wide.
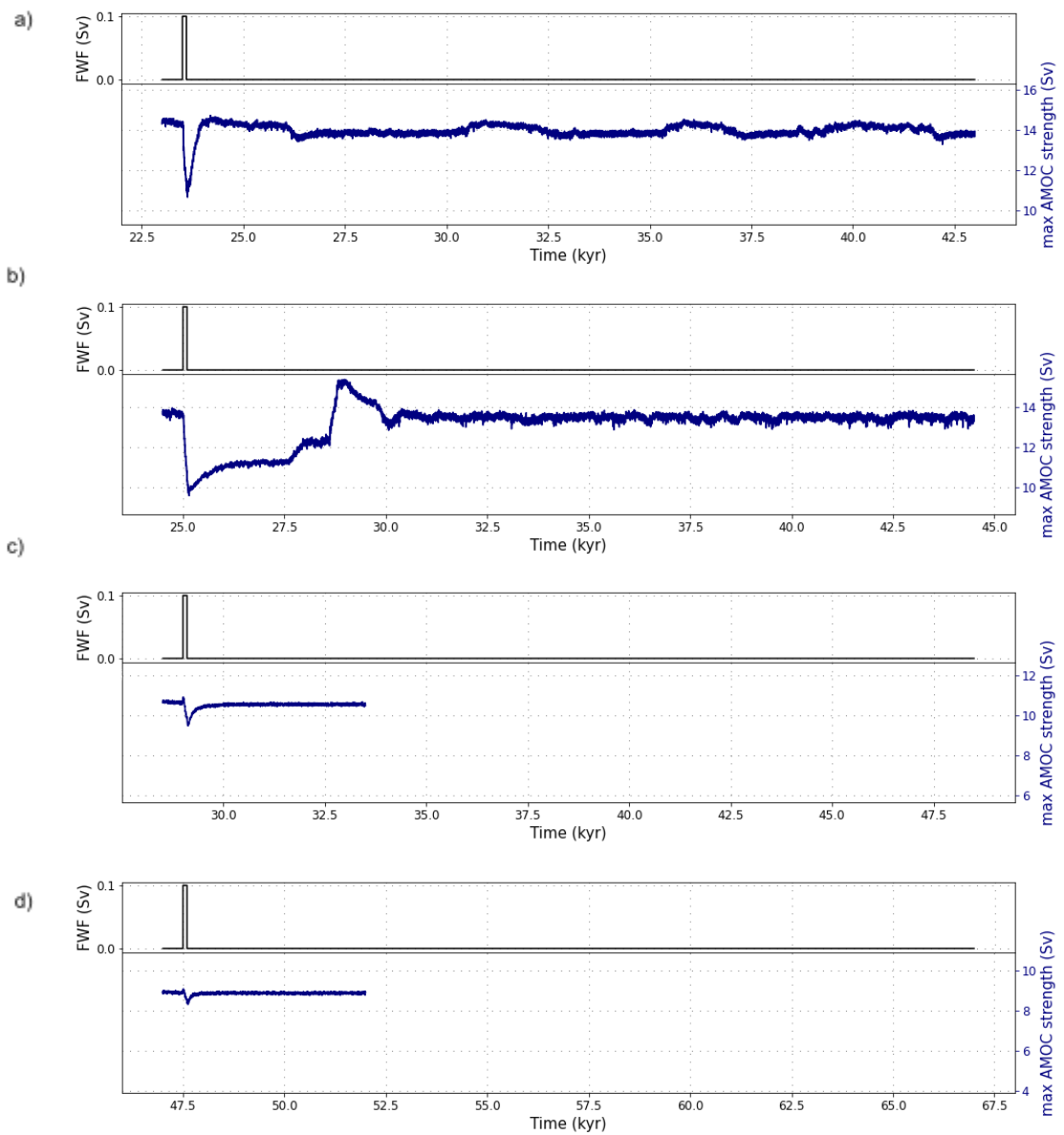
Figure SI.3: Circulation mode stability tests for four time slices from simulation B.slow: 23 kyr (a), 24.5 kyr (b), 28.5 kyr (c) and 47 kyr (d). FWF = externalFreshwater flux
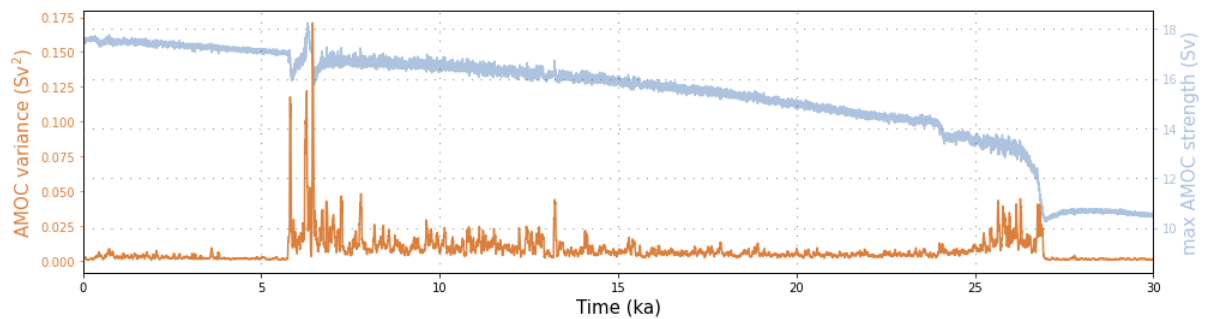
Figure SI.4: AMOC strength and AMOC variance over the first 30kyr of simulation B.slow
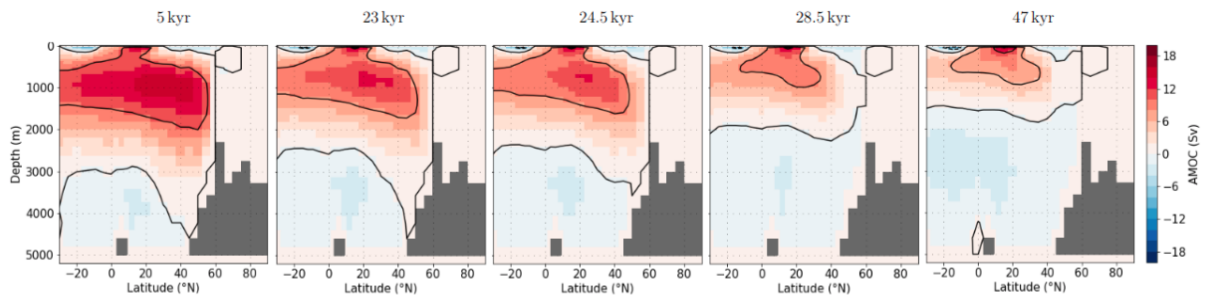
Figure SI.5: AMOC streamfunction at different time slices of simulation B.slow
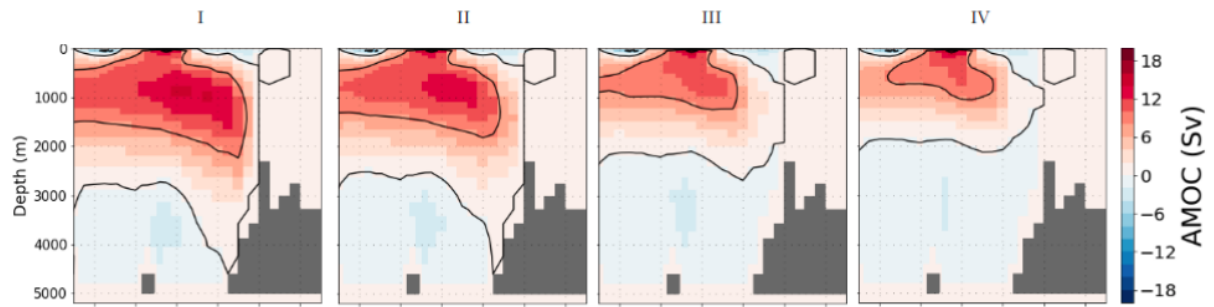
Figure SI.6: AMOC streamfunction for the four circulation states adopted across the last glacial cycle in simulation A3.
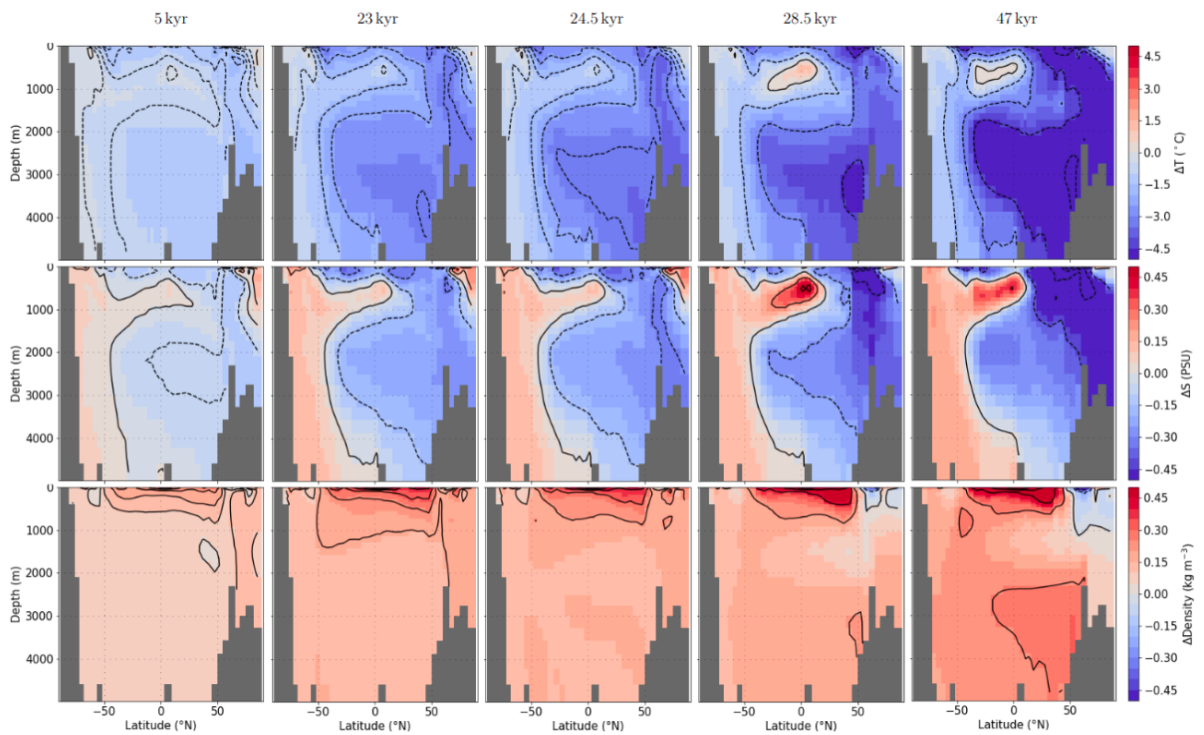
Figure SI.7: Atlantic zonal means of temperature, salinity, and density anomalies (relative to the start of the simulation at different time slices of simulation B.slow.
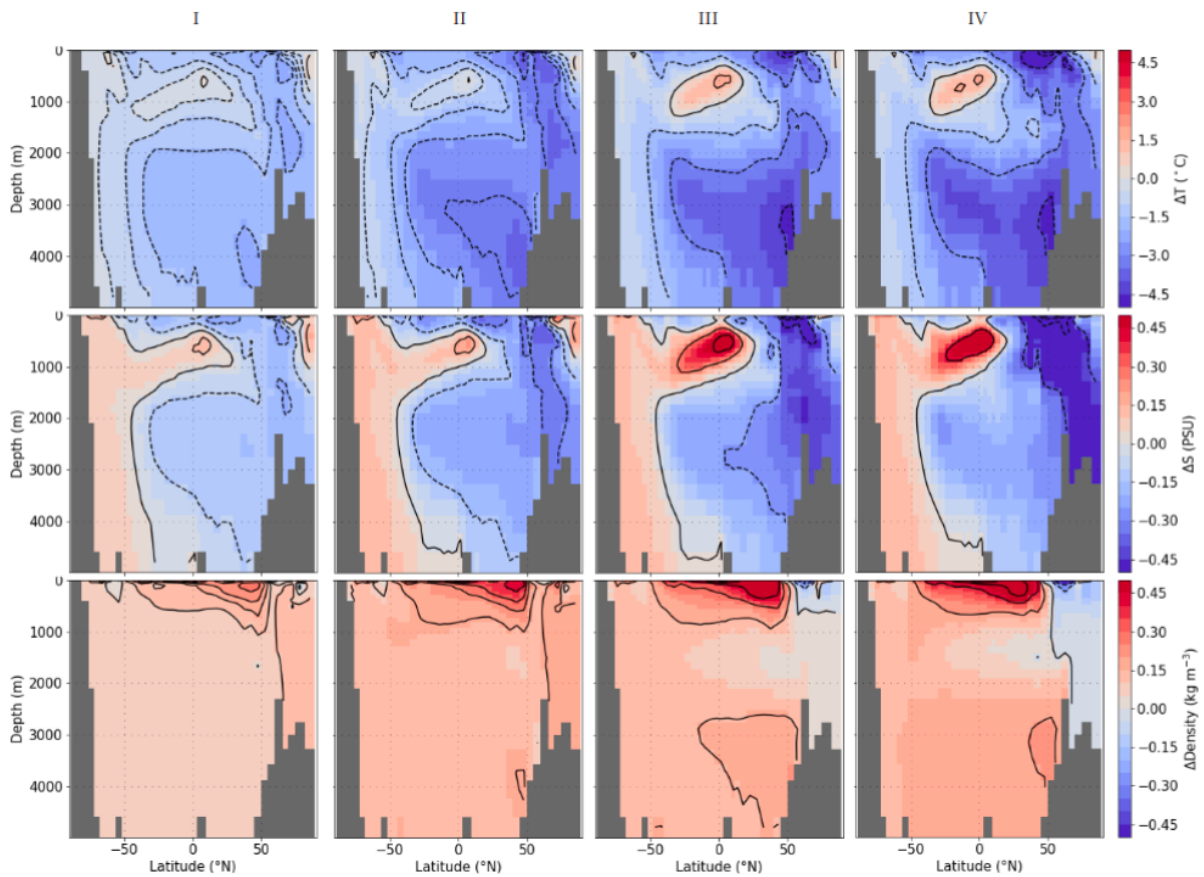
Figure SI.8: Atlantic zonal means of temperature, salinity, and density changes (relative to pre-industrial) in the Atlantic basin for the four circulation states adopted across the last glacial cycle in simulation A3.
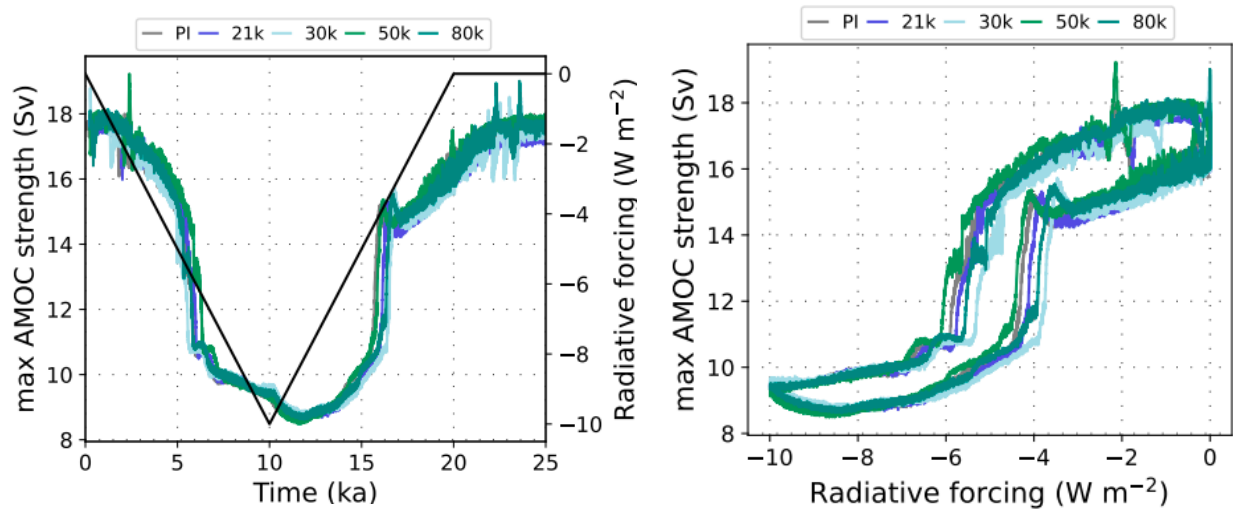
Figure SI.9: Response of the AMOC strength to changes in radiative forcing and hysteresis behaviour under different orbital configurations in simulations B.fast.PI, B.fast.21k, B.fast.30k, B.fast.50k, B.fast.80.