

## Bipolar-seesaw oscillations and deglaciation with MIROC AOGCM

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During the last termination of ice age cycle (deglaciation), Heinrich event 1 as well as B/A, Antarctic Cold Reversal (ACR) and Younger Dryas occurred as millennial scale climate changes. Here we ran several deglaciation experiments as well as sensitivity experiments using a coupled atmosphere and ocean GCM (MIROC4m AOGCM) developed in Japan and analyzed the stability of AMOC and climate. The model was also run for 10000 years under many different conditions with constant Greenhouse Gas levels with glacial ice sheet and with and without freshwater flux into North Atlantic region. The results show large oscillation of AMOC and high latitude temperature change similar to B/A and D-O cycles, comparable with ice core data and deep-sea data for some cases. We show that the D-O like oscillation and B/A type change occur under limited range of CO<sub>2</sub> and freshwater forcing. The conventional hysteresis curve of stability diagram of AMOC is also analyzed by changing gradually the freshwater flux in the North Atlantic. Implication on the mechanism of the millennial scale climate changes is discussed.

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