



Ocean convection and buoyancy fluxes: conditional instability of the glacial deep ocean.

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Ocean convection enhances buoyancy losses from the water into the atmosphere, as relatively warm water is brought up to the surface while cold and dense water moves downward. The feedbacks between the modified buoyancy fluxes and the thermohaline circulation reveal a possible time dependent behavior of the system, where flushing events are separated by non convective intervals. In those intervals, convectively available potential energy is accumulated in the ocean, eventually released during the flushes. This mechanism could have been particularly important in the glacial ocean, that was filled with salty, cold water from the South: The salinity stratification would have allowed for accumulation of heat in the deep-sea that could have been suddenly released into the upper ocean during a flush, ultimately affecting the atmospheric temperatures.