

**MODELING LATE PLEISTOCENE OCEAN GLOBAL THERMOHALINE CONVEYOR**

Bernd J. Haupt (Sonderforschungsbereich 313, Universität Kiel, Kiel, Germany)

Dan Seidov (Earth System Science Center, Pennsylvania State University, University Park, PA, USA)

The global ocean thermohaline conveyor at present, at the last glacial maximum, and at a subsequent meltwater event (MWE) is simulated using a combination of a global ocean circulation model and a Lagrangian trajectory tracing technique. The modeled glacial conveyor is somewhat weaker than today, as many previous studies imply. However, the major changes of the deep global ocean conveyor occurred only at the MWE. These changes include a reversal of the Indian–Atlantic branch of the deep conveyor due to a cessation of North Atlantic Deep Water (NADW) production caused by capping of convection by a localized meltwater impact. This response of the meridional overturning supports the idea of hampering the global conveyor operation during Heinrich events. Yet the model results do not support the idea that a global conveyor now or ever directly connected the high–latitudinal North Atlantic and North Pacific. The two oceans are only weakly connected via a series of basin–scale horizontal gyres. The simulated trajectories indicate disconnection of the Atlantic and southern oceans during the MWE because the NADW was not produced at that time. Our results contradict a view of these remote basins as being directly connected by global–scale abyssal and deep–water flow, now or in the past. The trajectories indicate that the deep water that escapes from the Antarctic Circumpolar Current northward into the Pacific Ocean does not penetrate as far northward as might be thought on the basis of the global conveyor paradigm. However, the NADW still controls the global deep–ocean circulation, and there is a system of coherent deep ocean currents that partly justifies the conveyor paradigm and the accompanying terminology. Dramatic change of the northward heat transport during the MWE indicates that this state could not be a stable long–living state of the ocean circulation. It calls for a substantial high–latitudinal cooling right after the meltwater episodes. This implies that instead of a long–term meltwater state, one may expect a transitional behavior with strong oscillations between ice–covered and meltwater covered ocean in the northern North Atlantic.