



^{14}C record of the North Atlantic – North Pacific seesaw in MOC during early deglacial times

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The concept of the „Global ocean Salinity Conveyor Belt“ is largely based on modern ^{14}C ventilation ages of ocean deepwater (Broecker et al., 1984; Schlosser et al., 2001). Per analogy, recent evidence of past ^{14}C ventilation ages from four key sites in the northern North Pacific and North Atlantic (Icelandic Sea) now provide unique new insights into the fate of deglacial ocean Meridional Overturn Circulation (MOC) between 23 and 14 cal. ka, indicating twice opposite trends of change in deepwater formation during the Heinrich 1 (H1) stadial. Starting 17 cal. ka North Pacific deepwater ventilation ages decreased from more than 3000 to 1150 yr, the coeval age of North Pacific Intermediate Water from 4400/3800 yr to 2200 yr, suggesting a North Pacific site of deepwater formation. In contrast, coeval intermediate water ventilation ages in the Icelandic Sea, the source region of modern and LGM MOC, abruptly increased from 440 to >2000 yr, reflecting a brief northward reversal of the Denmark Strait Overflow, i.e., an estuarine circulation in the Nordic Sea. This scenario terminated with the onset of the Bølling-Allerød (14,7 cal. ka), when Atlantic MOC turned back to its “normal“ state. Both events implied a major flushing of the deep ocean and resulted in a large-scale transfer of “old“ oceanic CO_2 into the atmosphere and short-term reorganization of oceanic heat transport to high latitudes.