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Deglacial Ventilation History in North Pacific Intermediate Water: Anti-phased with Atlantic Overturning Circulation

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Strong evidence exists in support of major and synchronous surface ocean deglacial paleoclimatic changes between the trans northern Pacific region and the North Atlantic. Proposals of major changes in north Pacific intermediate waters during the last deglacial climate oscillations have remained controversial in the absence of sufficient carbonate containing sediment sequences close to the source of North Pacific Intermediate Waters (NPIW), and key in understanding Pacific overturning circulation.....[1] Here for the first time we present evidence for such changes from sediment sequences from the NW Pacific close to the source regions. 14C age differences between coexisting planktic and benthic foraminifera are presented for three well dated mid-deep depth cores as a measure of changing ventilation during deglaciation. The 2 piston and 1 gravity cores were collected from 41˚07.1'N, 142˚24.2'E, water depth 1366 m(MR01-K03 PC4/5), 41˚33.9'N, 141˚52.1'E, 970 m(IMAGES MD01-2409), off Japanese main island and from 36˚36.85'N, 158˚20.90'E; water depth 3390 m(NGC108), the Shatsky Rise. These records exhibit a clear antiphase relation during the deglacial between ventilation of NPIW and that related to the midwater Atlantic Meridional Overturning Circulation. Ventilation rates increased during the Heinrich 1 and Younger Dryas cooling episodes and significantly decreased during the preBo-

real (early Holocene) and Bølling-Ållerød (B/A) warmings. NPIW ventilation during deglaciation appears to have been controlled by surface ocean salinity changes in response to changes in atmospheric teleconnections over the North Pacific driven by reorganization of oceans' overturning circulation.