L136-004 **Room: Function Room A** **Time: May 19 10:15-10:30**

Millennial scale changes in intermediate depth circulation recorded in the sediment cores from the northwestern North Pacific

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We are investigating and reconstructing changes in the westerly jet, surface water temperature, salinity, and intermediate-deep water ventilation over orbital and millennial time scales by using marine sediment cores collected in the Japan and Okhotsk Seas and the northwestern North Pacfic. Our understanding of the paleo-environment of the western North Pacific as described by proxy records in marine sediments can be summarized as follows: (a) atmospheric circulation, in particular north and south migrations of the westerly jet axis, had a great impact on the subarctic Pacific sea surface environments; (b) a mechanism propagated through atmospheric circulation is important for explaining the synchronization of climate changes between the subarctic Atlantic and the subarctic to mid-latitude Pacific; and (c) changes not only in sea surface conditions (SST and SSS) but also in intermediate-deep layer conditions (ventilation rate and water temperature) and the carbon cycle are occurring in response to climate changes across millennial time scales. It is notable that the ventilation age of the intermediate&-deep layer in the northwestern North Pacific was younger during the H1 cold period and older during the B/A; warm period than in the present. In other words, ventilation at the intermediate-deep layer was more active during H1 and less active during the B/A; compared with the present.

Increased surface density during H1 may trigger deep convection in the high latitudes of the North Pacific. This hypothesis was tested using paleo climate models so-called water-hosing experiments that forces mimick a glacial meltwater pulse in the North Atlantic by prescribing anomalous freshwater fluxes. The model results were consistent with the proxy record that indicates that the ventilation rate increased at intermediate depths in the northwestern North Pacific during H1. In this presentation, we will introduce the collaborative proxy-climate model intercomparison study, and will suggest a hypothesis of propagation mechanism of millennial-scale abrupt climate changes.