Ventilation changes in the mid-depth NW Pacific during the last deglaciation: possible linkage with the East Asian Monsoon

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Ventilation changes occurred during the last deglaciation in the North Pacific contain a crucial information about millennium scale climate changes. Based on co-existing planktonic and benthic foraminiferal radiocarbon ages from sediment cores MR01K03 PC4/PC5 (41N, 142E, Water depth: 1,366m), Ahagon et al. (2003) demonstrated that the mid-depth ventilation in the NW Pacific was significantly changed during this interval, especially in the Younger Dryas (YD; 11.5-13 cal. kyr BP) and the Bolling-Allerod (BA; 13-15 cal. kyr BP) periods. These ventilation changes may be originated from two main reasons, 1) response of atmospheric forcing transmitted via high-latitudes of the North Atlantic or tropics, 2) transient response of changing global thermohaline conveyor.

Several studies also support deglacial sea surface salinity anomaly, perhaps coincides with BA interval, in the North Pacific region (e.g., Zheng et al., 2000). However, the source of fresh water is still unclear. Recent climatological analysis suggests that the East Asian Monsoon (EAM) is a key mechanism to deliver the moisture to North Pacific from the tropic (Emile-Geay et al, 2003). Therefore, we speculate that the past change of the mid-depth ventilation in the NW Pacific was tied to EAM intensity.

References

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