Sea surface temperature and salinity changes in the northern Okinawa Trough in the period of 10.3-15.0 cal. ka BP

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High-resolution paleo- sea surface temperature (SST) and salinity (SSS) variations since the late last glaciation (LLG) provide valuable information in understanding the influences of regional sea level as well the climate changes in the Okinawa Trough. In this study, a multi-decadal centennial resolution SST and SSS changes in the northern Okinawa Trough (NOT) for the last deglaciation (10.3-15.0 cal. ka BP) have been reconstructed by using an alkenone unsaturation index and the oxygen isotope ratio of planktonic foraminifera *G. ruber(ss)* in Core S6. The SST record shows an step-increase during the Heinrich stadial 1 (HS1). An abrupt drop was recorded at the onset of the Bølling–Allerød (B/A) period and then the SST reached to a high value in the mid B/A. A sharp drop of SST was recorded at the onset of the Younger Dryas (YD),then the SST rose to a plateau across the YD, with a sharp increase in the end of the YD. The residule salinity shows a similar trend as the SST during the HS1. Since the onset of B/A, the SSS dropped gradually and reached to a minimum at the end of the B/A, then gradually increased to a high value at the YD termination. The SST and SSS decreases occurred at the onset of the B/A and the YD, corresponded to the beginning timing of the Antarctic Cold Reversal (ACR), as a result of the melt water pulse 1a (MWP1a). However the duration of the SST and SSS dropping are not consistent with the YD event as observed in the Greenland ice records. Records from the NOT surface water are more gradual and shorter contrasted with the longer-lasted and more abrupt ending YD event in Greenland.

The detailed, asymmetric YD structure in the NOT may have experienced a more complicated transition during the B/A and YD events. Sea level variation plays an important role in shaping the local water structure. As well the effect of North Atlantic anomalies and insolation changes is probably responsible for the asymmetrical trends of the NOT and the Greenland ice core record during the B/A and YD period.