

Paleotsunami history in Hachinohe, Aomori

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Since the Tohoku-oki earthquake followed by tsunami on March 11, 2011, many researches on paleotsunamis along the Pacific coast of Tohoku and Hokkaido have been conducted (e.g. Ishimura and Miyauchi, 2015). On the other hand, no researches have been conducted around Hachinohe, Aomori. There is a possibility that Aomori may be affected by tsunamis occurred both along the Japan and the Kuril trenches (Nakamura et al., 2012 ; Minoura et al., 2013). Thus, it is important to reveal the history of paleotsunamis in Hachinohe in order to reconstruct the history of paleotsunamis occurred along these two trenches. Moreover, the place faces to the flecion point of these two trenches, where no historical earthquake and tsunami are known. Therefore, the objective of our study is to reconstruct tsunami records in Hachinohe through geological survey followed by laboratory analyses.

In this research, we found up to 11 sandy deposits in Hachinohe and identified them as event deposits based on sedimentary features. Subsequently we correlated each of these event deposits based on lithology. As a result, 4 event layers are distributed widely and continuously. Since upward fining is confirmed in all of these four event layers, they were deposited in a way of settling of suspended sediments. In addition, landward fining and thinning are confirmed in them. Therefore, the source for these deposits is likely to be from sediments near seashore.

Following above, in order to consider possibilities of these event deposits being tsunami deposits, we evaluate possibilities of these event layers having been deposited by storms based on previous studies (Watanabe et al., 2016). The results show that it is impossible even for the storm surge and waves generated by the largest possible typhoon to deposit sands to this study site. Thus, we identified these four event layers as tsunami deposits. Since discovered tsunami deposits may be correlated with tsunami deposits found at adjacent sites such as northern Iwate and the Shimokita Peninsula, further studies are required to determine the sources of tsunamis. Moreover, identification of origin of other 7 event layers is critically important to estimate the recurrence interval of tsunami.

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