

Distribution pattern of the AD 869 Jogan tsunami deposit and re-examination of the tsunami inundation area in Sendai Plain

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A large-scale earthquake and tsunami that took place in AD 869 (Jogan 11) and struck the Pacific coast of northeast Japan is recorded in the historical document. Inundation of coastal plain by the Jogan tsunami has been inferred by many historical materials and by numbers of geological evidences found in an area from Sendai Bay (Miyagi prefecture) to the northern coast of Fukushima prefecture. Previous studies have estimated the focal region of the Jogan earthquake in the continental shelf along Japan Trench and the magnitude at 8.3-8.5, although the limit of tsunami inundation, which can be associated with the width and vertical displacement of the fault, is not determined clearly. Distribution of thickness and grain-size of the Jogan tsunami deposit may infer the limit, pathway and hydraulic character of the tsunami inundation in Sendai Plain, in which well-developed beach ridges and natural levees exist.

In this study, numbers of columnar sampling of the Jogan tsunami deposit were carried out in the eastern part of the plain to determine the limit and to estimate hydraulic condition of the tsunami inundation. Although clear vertical variations of the grain-size distribution were not observed in the samples, a possible trend of landward fining was detected by preliminary analysis. Thickness distribution of the tsunami deposit may have significantly been affected by the local topography, in particular on the seaward part of the distribution area. New sedimentological data of the Jogan tsunami deposit are presented in this study.