[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS11]tsunami deposit

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The 2011 off the Pacific coast of Tohoku Earthquake and tsunami have an influence on the development of tsunami deposit research. After the tsunami, a lot of findings have been reported on various research fields. However, identification criteria of the tsunami deposit are not yet established. Moreover, it is still uncertain how to use the tsunami deposit in the risk assessment. In this session, we welcome researches from all aspect of sedimentary records of modern and paleo tsunamis both onshore and offshore, and numerical and experimental modeling studies for risk assessment. In addition, we also welcome other event deposits, such as flooding and storm surge, that they are considered to be important for discrimination of tsunami deposit.

[MIS11-P02]Triggers and scales of mid-17th-century tsunami estimated from tsunami deposits in western Pacific coast, Hokkaido

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Pacific coast in Hokkaido, northern Japan has frequently suffered tsunami disaster caused by earthquakes related to the subduction of the Pacific Plate at the Kuril Trench and the Japan Trench. A characteristic sandy event layer, probably resulting from a 17th-century tsunami, was discovered by using a handy auger from the coastal sediments in the western part of the Pacific coast of Hokkaido. The event layer, which shows thinning and fining trends in an inland direction, indicate that the event layer was formed by a tsunami. The time of the event layer formation is inferred to be in the middle 1600s, because the event layer is deposited right below the AD 1663 Us-b tephra, separated by a very thin intervening peat layer. The exact trigger event of this tsunami was not identified in this study area. Great subduction-zone earthquake centered off eastern Hokkaido and the 1640 Hokkaido Komagatake eruption are candidate source events for this tsunami. The most likely model is involvement of a mega earthquake along the Kuril trench occurring at an interval of 300 - 500 years. The Earthquake Investigation Committee (2017) announced that the probability of the mega earthquake (M8.8) within 30 years is at most 40 % at the Kuril trench.

Two sandy event layers were discovered from the western pacific coast (Ex. Noboribetsu area). The lower layer was covered by the AD 1640 Ko-d tephra, which is inferred to be originated by the 1640 Hokkaido Komagatake eruption. The upper layer, on the other hand, probably correlated with the common event layer from the Iburi coast, indicates that the mega earthquake along the Kuril trench occurred before AD 1663 and after AD 1640.

Based on the characteristics of historical tsunami deposits and the examination of recent tsunamis, we can estimate the inundation depth of the historical tsunami events. We estimated the scale (Mt: tsunami Magnitude) of two tsunami events by investigation of these deposits. The tsunami caused by the Komagatake eruption is possible that the tsunami affected to Shiraoi, not to Mukawa area. The tsunami

deposits in eastern part of Mukawa area yields larger than Mt 8.6-8.7, which values are consistent with the Government’s assumption of 17th century earthquake value, Mt 8.8 along the Kuril Trench.