

Relationship between facies of tsunami deposits and paleo sedimentary environment which were reconstructed from plant macro fossils in peat

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Correlation of tsunami deposits is important to assess inundation area by paleotsunami. In general, correlation of tsunami deposits is conducted using facies of tsunami deposits and age marker (tephra or ¹⁴C dating). However, even though some tsunami deposits were formed by same tsunami, the facies of tsunami deposits often vary due to paleo sedimentary environment. Herein, we show facies variations of tsunami deposit which were formed by same tsunami but were preserved in different sedimentary environment. Our study area is Kiritappu wetland, Hokkaido. We surveyed about 40 m² area of the wetland and focused on 17th and 12-13th century tsunami deposits which were already correlated in the wetland by tephrochronology. Sedimentary environment was reconstructed by analysis of plant macro fossils in peat. Our results showed that tsunami deposits formed at water place (characterized by reeds within peat) were thicker than the tsunami deposits formed at relatively dried wetland. Moreover, tsunami deposits formed at water place showed bluish color and had clear sedimentary structures such as lamina and grading. Our results indicate that correlation by tsunami deposit facies is not preferable unless sedimentary environment is discussed. Such findings were important to discuss correlation of tsunami deposits at wetland.

Keywords: tsunami deposit, subduction zone earthquakes, correlation