

Geological features of the tsunami -lessons learned from the 2011 Tohoku-oki event-

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Tsunami geology is one of the important approaches to understand the historical and pre-historic tsunami events. After the late 1980's, the tsunami deposits have been used to understand the recurrence interval of the large tsunamis at the high-risk area in the world. The Pacific coast of the Tohoku region of Japan is one such area and the 2011 Tohoku-oki event is considered as the probable recurrence of the AD869 Jogan tsunami event. The 2011 event was unfortunately revealed the usefulness of the tsunami deposits to better understand the low-frequency large tsunamis. On the other hand, not only the recurrence interval, scale of the historical and pre-historic tsunamis should also be clarified for the future risk assessment. As such, the distribution limit of the sandy tsunami deposits has been used as the minimum inundation limit of the tsunami. However, the sandy tsunami deposits did not cover entire the inundation area of the 2011 event and, in some places, the maximum extent of the sand deposits was about 60% of the inundation distance. In this way, the sedimentary features of the tsunami deposits are not directly linked to the size of the paleo-tsunamis. At Sendai Plain, more than 1,000 data of the tsunami deposits were corrected by the various research groups. Moreover, 5-m DEM data is available at this area. These high-resolution data as well as the numerical modeling of the tsunami inundation provide us rare opportunity to understand the relationship between the tsunami deposit and hydrodynamic properties. In addition to that, I also review the current understanding of the environmental effects of the sedimentation/erosion by the 2011 event at the Sendai Plain and the recovery process.

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