Geomorphic Characteristics and Settlement Location along the Tsunami-hazardous mid-Sanriku Coast in Northeastern Japan

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In contrast to the north Sanriku Coast where higher marine terraces are well developed, scattered distribution of small terrace patches were formerly reported along the mid-Sanriku Coast. However, most of the scattered terrace patches show the characteristics of piedmont gentle slopes particularly in the zone composed of granitic rocks. We investigated this type piedmont gentle slopes in the Funakoshi Peninsula and its surrounding, and revealed the followings: (1) Gentle slopes of around 3 - 15 degrees are distinguished from steep slopes around the zone of 70 - 90m above the sea-level and are subdivided into the higher gentle slope and the lower ones. (2) The higher ones are composed of deep weathered granite and slope deposits including weathered angular gravels. On the other hand, the lower ones have slope deposits including fresh granitic angular gravels, by which deep weathered layer is truncated. (3) The lower end of the lower gentle slopes are in some places cut by Holocene sea cliffs and the upper continuation of the lower gentle slopes in the back-hills show the dell-like form. The geomorphic characteristics as above suggest the processes of piedmont gentle slope formation in the late Quaternary climate and sea-level changes.
The several landforms along the coast, including near-shore lowlands and piedmont gentle slopes, have been used as the location of fishery and agricultural settlements. Histories of location and relocation of several settlements were retraced. The histories are the results of residents' cognition of geomorphic setting as resources for living including usual fishery and agricultural activity and for evacuation from unusual but repeating tsunami hazard in changing socioeconomic and technologic conditions. The changing residents' cognition can be reassessed from the viewpoint of geomorphologists. The knowledge should be applied to wise use of geomorphic resources.

Keywords: piedmont gentle slopes, tsunami, human activity

