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Late Quaternary uplift rate using marine terrace across the Shimokita peninsula, northeastern Japan forearc

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We estimated the late Quaternary uplift rate across the northeastern Japan forearc (Shimokita peninsula) using the height distribution of MIS 5.5 marine terraces as determined from tephra and cryptotephra stratigraphy. The heights of inner margins (shoreline angles) of the MIS 5.5 marine terrace surface were previously reported to be 43-45 m and 30 m around Shiriyazaki and Gamanosawa, respectively. These heights decrease westward and are possibly due to a west-dipping offshore fault. But in some places, the heights of terrace inner margins are probably overestimated by thick sediments. We found the MIS 5.5 wave-cut platform which is overlain by rounded gravels and loess deposits containing a basal Toya tephra horizon (MIS 5.4) at Shiriyazaki by boring. The MIS 5.5 wave-cut platform (paleo sea level) is about 25 m above sea level, nearly half or two-thirds of the reported height of the terrace inner margin. Our result shows that the late Quaternary uplift rate across the Shimokita peninsula should be reconsidered. Further studies are also required whether or not the intra-plate (offshore) fault is a factor of the forearc uplifting at the peninsula. Main part of this research project has been conducted under the research contract with Nuclear and Industrial Safety Agency (NISA).

Keywords: Marine terrace, Shimokita peninsula, Quaternary, Uplift rate, Offshore fault