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Debris avalanche deposits in historical-time found from the east side of Mount Ho-ou, the Akaishi Range, central Japan

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Some landforms-deposits reported from the Japanese Alps in central Honshu Island have been believed to be formed directly by glacial processes during the Pleistocene. However, recent reappraisal of these landforms-deposits indicates that these features had been produced and deformed by landslides in Holocene. This involves reevaluation of climatic geomorphology and Quaternary geology as well as paleoenvironmental reconstruction in mountain areas. Furthermore, this also causes a stir in disaster reduction and prevention related to the wide range of landslides. At this meeting, the author will describe the details of the debris avalanche deposits (DA) found from the east side of Mount Ho-ou, the Akaishi Range, central Japan. This DA has been considered to be formed by ice-mass collapse during the global Last Glacial Maximum (tied to MIS2), resulting in prominent river aggradation of the Komugawa River (the upper Fujigawa-Kamanashigawa River system). However, the following evidences and conclusions were obtained: 1) DA consists of a thick gravel layer with granitic rock clasts only although the present-day DA lies in a sedimentary bedrock area. 2) Rock clasts have characteristic auto-brecciated or jigsaw puzzle structure suggesting strong deformation by mass rock creeping and subsequent mobilization. 3) Humic soils with wood fragments are buried immediately beneath DA. 4) DA is covered by fluvial fine sand with wood fragments along the main river, probably introduced by natural-dam obstruction. 5) Wood fragments (total 5 samples including one sample by previous study) gave the ages ranging 770-990 cal AD and 670-890 cal AD. 6) Volumetric magnitude and H/L ratio of DA are estimated to be $1.8*10\hat{}7$ m$\hat{}$3 and 0.32, respectively. 7) The possible cause of DA was historical earthquakes (M$>$6.5) such as AD762 Mino-Hida-Izu Eq, AD841 Shinano Eq, AD841 Izu Eq and AD887 Goki-Shichido Eq. Either Mino-Hida-Izu Eq or Shinano Eq is believed to be the last event of the nearby Itoigawa-Shizuoka Tectonic Line active fault zone several kilometers east of Mount Ho-ou. Izu Eq could be attributable to the penultimate activity of the Tanna fault in Izu Peninsula, 120 km southeast. Goki-Shichido Eq. is considered to be caused by plate subduction along Suruga-Nankai Troughs, and it led to sector collapse and a natural-dammed lake in Yatsugatake Volcano 50 km north of the Mount Ho-ou.

Keywords: Debris avalanche, Pleistocene glaciation, Landslide, Historical earthquake, Paraglacial