

Natural dam constructions and breaks at the Oshika and the Mitoku River, Misasa-town, Tottori southwest Japan

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Four terrace-like deposits caused by deep seated landslides were known at the lower part of the Oshika River in Misasa, Tottori, south-west Japan. Another similar terrace-like deposit seems to be at the middle part of the Mitoku River in Misasa, which is neighboring north of the Oshika. These five landslides seem to be related to earthquakes caused by the Iwatsubo active fault, which runs in the eastern part next to the Oshika and the Mitoku river basin. The objectives of this study are to clarify whether natural dams were constructed or not, and if there were natural dams, how the dams were broken down.

We conducted topo-map reading to make distribution map of terraces and their longitudinal profiles projected along the river. We did also hand borings to get soil samples in order to measure radioactive carbon datings. In the field, we observed terrace deposits.

At three sites out of the five landslides, natural dams were formed judging from reservoir silty-clay deposit at Sengenbara, Mitoku, or steep gradient (1/8 at Kannokura, 1/13 at Nishioshika, in the Oshika) terraces distributed just downstream-side of the dams in 1.2 to 1.4 km long. Large andesite boulders (ca.1 to 2 m in diameter) were observed as deposits of these dams. 12 Carbon 14 dating values showed the followings: i) deep seated landslides occurred at three different times: 34,000 yr ago at Nishioshika and Mogura, 10,300 yr ago at Sengenbara, and 1,200 yr ago at Kannokura. These large landslide events suggest that the Iwatsubo active fault moves at about ca.10,000 yr intervals and successive intensive rainfall caused landslides. ii) Natural dam broke in many batches and the reservoirs maintained for longer times: 400 yr or more at Kannokura, 8,000 yr or more at Sengenbara, and 30,000 yr at Nishioshika. We need datings of Higashioshika landslide event.

Keywords: natural dam, out-burst flooding, deep seated failure, fluvial terraces, radioactive carbon chronology, Iwatsubo active fault