

## The estimation of frequency for deep-seated landslide with carbon dating in Kii mountain area

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Typhoon 12 in 2011 induced deep-seated landslides in Kii mountain area. In Kii mountain area, heavy rainfall also induced great damage by large scale landslide in 1889. From above we need the frequency of deep-seated landslide to construct countermeasure for sediment disaster in Kii mountain area.

Although previous report shows the method to use tephra for estimation of frequency of deep-seated landslide, in Kii mountain area we can find few point of tephra sedimentation. In recent years some study shows the methods to estimate frequency of sediment disaster with chips of wood and carbides. In this study we applied the method with chips of wood and carbides to estimation of frequency of deep-seated landslide in Kii mountain area.

In this study we proposed the research flow to pick sample shown as below;

- a) Extracting landslide deposit by LiDAR
- b) Preliminary research in field
- c) Main research in field and picking sample up
- d) Analysis sample with carbon dating

In a) we extracted the site where landslide dams may have been as landslide deposit to observe along river side closely with topographic map by LiDAR. In b) we investigate access route to the research site and whether chip of wood and carbide are or are not roughly. In c) we investigated closely and picked sample up with special sampler we developed for this research. This sampler can collect sample including soil. In d) we analyzed samples and organized carbon dating data.

We collected 28 samples in 11 landslide deposits. Especially it was easier to collect samples in upper and bottom of landslide deposits and underwater deposits than other sites. The research flow and special sampler we developed can help to collect sample effectively. In addition we found deep-seated landslide occurred once in 100 ~ 150 years in Kii mountain area from analysis of carbon date. This result isn't inconsistent with the past disaster reports. However, carbon dating has some error. To estimate accurately we need more investigation.

Keywords: deep-seated landslide, carbon dating, Kii mountain area