

Advanced examination technique for river erosion in inland area – a case study of the Kii Peninsula, Japan –

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Yasue et al. (2014) focused on detached meander cores to estimate an erosional rate in alluvial region with few terraces. However, two subjects, 1) chronology of emergence age, 2) applicability of this method to other region, should be improved. To examine above, this research was conducted along the Totsugawa River in the Kii Peninsula, central Japan. This research contributes to evaluate uplift and erosion during Late Quaternary for site selection and safety assessment of a geological disposal of high-level radioactive waste.

Four sediment cores were collected from three sites of detached meander cores, located at 100 to 120 m above from the river surface, where was suitable for optically stimulated luminescence dating using feldspar (pIRIR) and identification of fluvial channel sediments by main stream. Field survey and sample collection for pIRIR and terrestrial cosmogenic nuclide (TCN) dating, microfossil and tephra analyses were performed at outcrops of alluvial terraces at elevation of 90 to 100 m, located at the downstream of detached meander cores and 40 to 50 m above from the river surface. Moreover, sample collection for pIRIR dating and microfossil analysis was performed at outcrops of marine terraces at elevation of 40 m, located around the river mouth.

Cross-laminated sand bed with rounded gravels was recognized at only one detached meander core at ca 100 m from the river surface. This sediment was interpreted as a fluvial channel sediment by main stream because the well-sorted sand layers indicated stable bed load environments. Sand and gravel beds including weathering angular gravels were mainly composed the other drilling sites. They were interpreted as slope deposits because the matrix, mixture of silt to conglomerate, implied that were provided from small water catchments. Thick (more than 54 m) slope deposits were recognized under the detached meander core at ca 120 m from the river surface. It clearly suggests that this topographic flat surface of detached meander core was not originate by the old fluvial channel.

We would like to conduct pIRIR and TCN dating on the sand samples obtained from drilling cores and outcrops. In addition, we would like to discuss the timing of emergence from river channels by conducting volcanic ash and microfossil analysis in muddy sediments. The integration will improve the estimation of the erosional rate in inland region.

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Reference:

Yasue, K., Takatori, R., Tanigawa, S., Ninomiya, A., Tanase, A., Furusawa, A., Tajikara M. (2014) Study on index of erosion rate in inland mountains: Case study using old river valley around detached meander cone. *Jour. Geol. Soc. Japan*, 120(12), 435-445.

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