

## Emplacement age of a debris-flow deposit by using viscous remanent magnetization: a case study on granite porphyry boulders from Kii Peninsula, Japan

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Elucidation of occurrence age and periodicity of debris flows is one of the most important examinations to prevent debris disasters. We investigated an emplacement age of boulders from an old debris-flow deposit by using the palaeomagnetic method of stepwise thermal demagnetization (ThD) for viscous remanent magnetization (VRM) in Nachikatsuura town, Wakayama Prefecture, Japan. The old debris-flow deposit outcropped by debris flows occurred by the Typhoon Talas on September 2011 in the Kanayama valley of the Nachi River basin. The estimated depositional age was  $3,650 \pm 30$  yBP ( $2,057-1,943$  calBC,  $2\sigma$ ) by the  $^{14}\text{C}$  analysis for a buried wood piece (Nishiyama and Wakatsuki, 2014). Some granite-porphry boulders near the wood piece were sampled and shaped into cubic test pieces of 2.23 cm on a side. We examined heating durations and placements of the test pieces for the stepwise ThD experiment by measuring the temperature change inside the test piece by heating in the ThD equipment. In order to minimize the effect of multi-domain magnetic grains, low-temperature demagnetization was applied prior to the stepwise ThD. The stepwise ThD was applied at 5°C steps, and demagnetization temperature of VRM was recognized as a bending point on the vector diagram and Schmidt net. In the presentation, we estimate the emplacement ages by applying theoretical time-temperature curve of VRM on the acquired temperatures.

Keywords: Granite porphyry, Thermal demagnetization, Viscous remanent magnetization