

ACG034-09

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## Erosion rates of weathered granitic soil surfaces in Abukuma, Japan deduced from cosmogenic nuclides depth profile

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Measurements of in-situ produced cosmogenic nuclides (CRN) allow us to understand earth surface process quantitatively. It has been successfully used to provide erosion rates in arid region where slow erosion process is taken place (e.g., Gosse and Phillips, 2001). Coupled measurements of CRN provide unique solution of both minimum exposure age and maximum erosion rates (Yokoyama et al., 2005). CRN based erosion rates determination have not been applied extensively in mid latitude humid area, where weathered granitic soils are distributed, due to fast erosion rate, namely long-lived CRN do not have sensitivity to provide both erosion rate and exposure ages. It is therefore required to apply CRN depth profile method to obtain accurate erosion rate for those area yet few studies have been conducted by far. Here we present <sup>10</sup>Be and <sup>26</sup>Al depth profiles from eastern Abukuma, Japan to understand quantitative erosion rate. Our previous study successfully demonstrated that deeper layers at least 80 cm below surface must be analyzed to achieve highly accurate measurement because near-surface layers are potentially influenced by pedogenic processes (Shiroya et al., 2010). In this study, therefore, we sampled granitic soils from 300cm-deep outcrop.

The sampling sites are located in the eastern Abukuma Mountains, Japan at an altitude of 540 m and 620 m above sea level. CRN (<sup>10</sup>Be and <sup>26</sup>Al) are measured by AMS (Accelerator Mass Spectrometry) at Micro Analysis Laboratory Tandem Accelerator, The University of Tokyo. We will discuss geomorphologic and geologic implications based on the results of CRN measurement including discussions of erosion rates of weathered granitic soils in eastern Abukuma mountains.

### References

- Gosse and Phillips, *Quatern. Sci. Rev.* 20, 1475-1560 (2001)
- Shiroya et al., *Geochemical Journal* 44, e23-e27 (2010)
- Yokoyama et al., *Jour. Geol. Soc. Japan* 111, 693-700 (2005)

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