

## 宇宙線照射生成核種 Be-10・Al-26 の深度プロファイルを用いた湿潤地域における侵食速度の評価

### Quantitative determination of erosion rates in humid region using depth profiles of in situ-produced Be-10 and Al-26

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Quantitative determination of erosion rates is important across a diverse range of disciplines in geology, geomorphology, and biogeochemistry (Granger and Riebe, 2007). Yet rates of erosion have until recently been difficult to quantify over long timescale. Measurements of in-situ produced terrestrial cosmogenic nuclides (TCN) allow us to understand earth surface process quantitatively (Goss and Phillips, 2001). It has been successfully used to provide erosion rates of bedrock in arid regions where slow erosion process take place (e.g. Cockburn et al., 1999). On a global scale, environmental parameters such as mean annual precipitation have been used to explain erosion rate variability (Bierman and Caffee, 2002). However, the relationship between erosion rates and precipitation is still under debate due in part to scarcity of data from humid regions. In addition, erosion rates deduced from drainage basins, which is the only method to quantify erosion rates in humid regions, are strongly affected by basin slope (Riebe et al., 2000). Therefore, different approach to determine the erosion rates in humid regions is required to corroborate findings from arid regions. Here we present hilltop depth profiles of in situ-produced <sup>10</sup>Be and <sup>26</sup>Al from Japan. Due to such sampling location, the contribution of basin slope should be minimized, allowing a direct comparison to studies of bedrock erosion rates in arid regions. When applying TCN-based erosion rates in mid latitude humid regions, where granitic saprolite is distributed, density uncertainties play an important role in determining erosion rate. The aims of this study are (1) to develop a model for TCN depth profiles, based on actually measured density in granitic saprolite, and (2) to assess the correlation of erosion rates and precipitation. These data indicate a link between earth surface process and climatic condition.

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