

The rate of clay mineral formation over 52,000 years in Kozushima

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To estimate the rate of clay formation, four rhyolites in Kozushima (Tenjyo-san: 1,100; Kobe-yama: 1,800; Ohsawa-yama: 26,000; Awanomikoto-yama: 52,000 y. B. P.), different in extent of weathering, were studied. No clay mineral was observed in the younger two rhyolites by SEM, while allophane and halloysite were observed in the older two rhyolites. The specific surface area increases with increasing age and it is mostly attributable to the presence of clay minerals. Therefore, the amount of clay minerals was estimated based on the increase of specific surface area. When allophane and halloysite are considered together, the rates of clay formation were calculated to be $\sim 7\text{E-}20$ mol/cm²/sec for the initial 1,100-26,000 years and $\sim 1.4\text{E-}19$ mol/cm²/sec for the subsequent 26,000-52,000 years.