

Chronological studies for the Hida Mountains uplift with the use of correlation of widespread tephra layers.

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The Kurehayama gravel bed distributed along the edge of Toyama Plain. This gravel bed comprising thick boulder gravels directly reflects the uplift of the Hida Mountains. Tamura and Yamazaki (2004) examined the tephra layers contained in the Kurehayama gravel bed. In that study, Omine tephra (1.65Ma) and Taniguchi tephra (2.2-2.3Ma) layers which are distributed widely in central Japan, interbedded at the upper to middle part of the Kurehayama gravel bed. Therefore, the Hida Mountains began to uplift before 2.2-2.3Ma. In this study, Maruyama2 tephra interbedded at the lower part of the Kurehayama gravel bed, is correlated with Minamidani2 tephra (2.65Ma). Minamidani2 tephra is widely distributed in Tokai and Kinki, Kanto and Niigata area. The similarity of following features confirms the correlation between Maruyama2 and Minamidani2 : mineral assemblage, refractive index of the volcanic glass and chemical composition of the volcanic glass.

The Muroda Formation is unconformably underlain by the Otagawa Formation and unconformably overlain by the Kurehayama gravel bed. The formation, which probably represents a shallow marine environment, is composed mainly of tuffaceous sandstone and tuff (Muroda tuff). In this study, Muroda tuff is correlated with Souri tephra (3.3-3.5Ma). Souri tephra is widely distributed in Tokai and Kinki, Kanto and Niigata area. The similarity of following features confirms the correlation between Muroda tuff and Souri tephra : mineral assemblage, refractive index of the volcanic glass and chemical composition of the volcanic glass.

Based on the tephra correlation, the sedimentary period of the Kurehayama gravel bed is over 1Ma. The Hida Mountains began to uplift between 3.3-3.5Ma and 2.65Ma.