

## Paleomagnetism of Harutagawa formation

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The Beppu-Shimabara graben in the Hohi volcanic zone is thought to be a volcano-tectonic depression. Volcanic stratigraphy and age studies of the area unraveled the late Pliocene structural formation history of Hohi volcanic zone (e.g. Kamata, 1994, Kido, 2007). The age and sedimentation rate of lacustrine deposits in Hohi volcanic zone is one of the keys for interpreting the temporal relation between the formation of Beppu-Shimabara graben and the huge pyroclastic flows appeared in the area. So, we study the magnetostratigraphy of the Harutagawa formation, which is one of those lacustrine deposits. The formation is dominated by conglomerate and mudstone to siltstone, in the lower and upper parts, respectively, but bears many tuff layers all over the formation. F.T. ages of two tuff layers, one is from lower part and the other is from upper part of Harutagawa formation, are determined as 3.1Ma and 2.53Ma, respectively (Kido, 2007).

Samples for paleomagnetic analysis were collected at 15 sites in one continuous outcrop of the Harutagawa formation. The sites were set to be spaced equally in the stratigraphy. Samples were collected by a portable electric motor drill. A few pilot specimens from each site were subjected to progressive thermal and alternating field demagnetization. But alternating field demagnetization was not effective. All remaining specimens were, therefore, subjected to progressive thermal demagnetization. The samples had mean magnetic intensity of  $1.7 \times 10^{-4}$  A/m and  $7.7 \times 10^{-5}$  A/m before and after demagnetization, respectively. Samples from 6 sites do not have stable magnetization or thought to remagnetized completely by the present magnetic field. As the result, 9 sites are determined their polarities. In ascending order, 3 were reversed and 6 were normal in polarity. The reversed polarity sites were correlative to Kaena or Mammoth subchron in Gauss reversed polarity chron. This correlation indicates that the Harutagawa formation deposited in less than 0.2m.y.. If sedimentation rate of Harutagawa formation was constant, it was more than 0.45m/ky.