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# Axial dipole moment over the past 400 years from single spot archeointensities

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The temporal variation of the axial dipole moment g10 was deduced from the archeointensity data that were obtained from a volcanic island Miyakejima in Japan for the last 400 years, as combined with the field model gufm1. The basaltic lava flows are extremely well dated based on the ancient documents on the eruptions and the detailed field surveys. Essentially no age error is necessary to be considered. Thellier paleointensity experiments gave expected geomagnetic field intensities for the recent volcanic materials that were collected from the upper and lower clinkers and scorias. Volcanic eruptions in Miyakejima occurred intermittently about every 50 years for the last 400 years, providing a reliable past geomagnetic field record both in temporal and intensity variations. Using an automated spinner magnetometer with thermal demagnetizer TSpin, Thellier paleointensity measurements were performed for about 300 specimens. I applied the same method as Gubbins et al. [2006] to the single spot archeointensity variation from Miyakejima, and obtained monotonous decay of the axial dipole over the last 400 years. Contrary to gufm1 that assumes a linear decrease of g10 from 1840 to 1590 by extrapolating the post-1840 instrumental records, Gubbins et al. [2006] argued no definite temporal trend on g10 recognizable from the existing archeointensity database. The scattered archeointensity data should be considerably smeared by both age and intensity errors as resulted from various materials, locations and experimental methods involved. Our single spot archeointensities are free from these problems and suitable to deduce the dipole moment variation.

Keywords: archeointensity, Thellier method, geomagnetism