

Paleomagnetism of the Abu monogenetic volcano group distributed over the northern part of Yamaguchi Prefecture

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Monogenetic volcanoes showing the K-Ar ages younger than 2 Ma are widely distributed over the Abu area of Yamaguchi Prefecture. We collected paleomagnetic samples of alkaline basalt and calc-alkaline andesite to dacite from sixteen sites, in order to add the useful data for paleo-secular variation (PSV) study. K-Ar ages of rocks from fifteen sites have already determined by Kakubuchi et al. (2000). Nine specimens per each site were used for magnetic measurement. Progressive thermal demagnetization was adopted to eliminate viscous remanent magnetization and to isolate the characteristic remanent magnetization (ChRM). The specimens were demagnetized at ten steps: every 50 degree C from 200 degree C to 500 degree C and every 30 degree C from 530 degree C to 590 degree C. The ChRM component was analyzed using principal component analysis (Kirschvink, 1980). For twelve sites, only one stable ChRM was isolated and for the rest four sites (three of them have the K-Ar ages of 1.64 Ma or 1.94 Ma corresponding to Matuyama Chron), almost all specimens showed unstable behavior during the demagnetization treatment. Magnetic polarities of fourteen sites were found to be coincident with the geomagnetic polarity timescale, taking account to the errors of the K-Ar age determination. Data sets from 11 sites were used to calculate mean virtual geomagnetic pole (VGP), excluding the sites showing that 95 % confidence limit of the mean ChRM direction is more than 10 degree and that the magnetic polarity is reversed. The mean VGP was calculated to be latitude = 88.8 degree N and longitude = 98.8 degree E ($k = 38.2$, $A95 = 7.5$ degree). The angular standard deviation (ASD) with respect to the mean VGP position was calculated to be 13.1 degree, although the VGP data were too scanty to discuss the PSV. Undoubtedly, the resultant ASD value is obviously low compared with a reported value (14.2 degree with the upper limit = 16.1 degree and the lower limit = 12.7 degree) for the Brunhes Chron in Japan (Morinaga et al., 2000).