

Preliminary paleomagnetic results from Devonian dulladerry volcanics, east Australia: Paleozoic APWP of Gondwana

Masako Miki [1], Chris Klootwijk [2]

[1] Earth and Planetary Sci., Kobe Univ., [2] Australian Geological Survey Organisation

Paleomagnetic study was carried out on the 24 sites of Devonian Dulladerry volcanics in the Lachlan Fold belt in east Australia. The reliable primary components were obtained after thermal demagnetization higher than 500 degrees from 9 sites. They pass the fold test and contain both normal and reversed direction. The VGP direction calculated from the mean paleomagnetic direction is latitude = -80.9 degrees and longitude = 359.8 degrees. This is concordant with the previous middle to late devonian poles.

In spite of lots of paleomagnetic study over the last few decades, there is still controversy in the Paleozoic APWP of Gondwana, because of widely distributed Carboniferous overprint, the difficulty of age control, and/or the difficulty of tectonic control. The Devonian Dulladerry volcanics in the Lachlan Fold belt in east Australia are investigated in this study. Advantage of paleomagnetism of this volcanics is the adequate age control from both paleontogy and isotope method, the distribution of the volcanics on both side of folds, and the magnetic stability of the unmetamorphosed volcanic rocks. This study must give the important data to reconstruct the Paleozoic Gondwana.

We collected oriented core samples from 24 sites of rhyolite, ignimbrite and porphyrites. Each site is composed of 10 independent core samples. At least one specimen from each site was subjected to stepwise AF demagnetization. Almost specimens were subjected to stepwise thermal demagnetization, because the pilot study indicated the thermal demagnetization was more effective to separate the NRM components. The temperature variation and the anisotropy of magnetic susceptibility were measured to have the information of the magnetic minerals in the rock samples.

Three or more components were displayed during thermal demagnetization. In preliminary results, the characteristic high temperature components with adequate tilt correction were obtained from 9 sites after the demagnetization higher than 500 degrees. The mean direction of 9 sites for south polarity is $D=-174.8$ degrees and $I = 43.3$ degrees with the radius of 95 % confidence limit of 14.6 degrees. These components are likely to be the primary origin from the following view points. 1) Both normal and Reversed directions are obtained. 2) They pass the fold test. 3) They have rather high unblocking temperatures.

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