

A new $^{40}\text{Ar}/^{39}\text{Ar}$ age and magnetostratigraphy of the Afro-Arabian Large Igneous Province in the Lima-Limo section erupted in Oligocene

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We report new $^{40}\text{Ar}/^{39}\text{Ar}$ ages on fresh groundmass grains from a 2 km-thick section in the Lima-Limo area of the NW Afro-Arabian Large Igneous Province (AALIP). A succession of seven magnetozones (R4-N3-R3-N2-R2-N1-R1, from top to base) were identified by Ahn et al. (submitted), which are tentatively correlated to Chron C11n.1r (29.477-29.527 Ma) (R4) - C11n.2n (29.527-29.970 Ma) (N3 to N2) - C11r (29.970-30.591 Ma) (R2 to R1) of the geomagnetic polarity time scale 2016 (GPTS 2016; Ogg et al., 2016). A new age was obtained from the R4 magnetozone agrees with the previously reported ages by Coulié et al. (2003) and Hofmann et al. (1997) but has higher precision. From our age and its uncertainty, the R4 magnetozone can be correlated to Chron C11n.1r of the radio-isotopic age model considered for constructing GPTS 2012 (Vandenbergh et al., 2012) rather than the astronomical age model adopted for GPTS 2012. Our correlation is consistent with the two previously proposed magnetostratigraphy (Rochette et al., 1998; Ahn et al., submitted). From the time-interval of 0.12 Myr of C11n.1r for the radio-isotopic age model and the area of $\sim 600,000 \text{ km}^2$ (Mohr, 1983), the average eruption within the R4 magnetozone is estimated to be $5 \text{ km}^3/\text{yr}$, which is higher than that of the Siberian LIP.

Keywords: Afro-Arabian Large Igneous Province, magnetostratigraphy, $^{40}\text{Ar}/^{39}\text{Ar}$ dating