



## Bringing the Paleogene in sync with the ATS

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Despite improvements in  $^{40}\text{Ar}/^{39}\text{Ar}$  dating that have resulted in ages routinely accompanied with relative analytical uncertainties of a few tenths of a percent, considerable uncertainty persists as to “absolute” age calibration as derived from first principle and intergeochronometer calibrations. Long term reproducibility of  $^{40}\text{Ar}/^{39}\text{Ar}$  ages and intercalibration of various  $^{40}\text{Ar}/^{39}\text{Ar}$  standards likewise have been shown to vary within a few percent, although interlaboratory variations may be significantly greater. Current variation in the “absolute” age of commonly used  $^{40}\text{Ar}/^{39}\text{Ar}$  dating standards, unfortunately, remains between one and three percent. To minimize confusion in the literature, Earthtime Ar geochronologists in 2005, proposed an interim solution, by reporting  $^{40}\text{Ar}/^{39}\text{Ar}$  ages relative to Fish Canyon Sanidine at 28.02 Ma. Unfortunately, currently used geologic timescales are not in agreement with this calibration adding confusion amongst “users” of geochronologic data. Current Cenozoic timescales for example, mix ages of various derivatives including astronomically derived ages for the Neogene and isotopically derived ages for the Paleogene. As a result, ages for the Paleogene appear not to be in sync with those used for the Neogene. To address this issue, we report new  $^{40}\text{Ar}/^{39}\text{Ar}$  ages on key Paleogene calibration points, intercalibrating these results directly with aliquots of Fish Canyon Sanidine and the astronomically tuned A1 Ash (Faneromeni). Results indicate about a one percent underestimate in the age of the Paleogene compared with the Neogene, much of this accounted for by the age of Fish Canyon at 28.02 Ma rather than 27.84 Ma (BKSA 95), less discrepancy is noted in the recalibrated GTS 2004 timescale. Intercalibration of the A1 Ash with Fish Canyon Sanidine obtained in this study does not appear to support recommendations for yet an older age ( $>28.02$  Ma) for Fish Canyon Sanidine based on the astronomical calibrations alone. This may be due, in part, to our reliance in this study to only the Faneromeni A1 sample.