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^{40}Ar/^{39}Ar age of a large amplitude directional fluctuation during the Matuyama-Brunhes reversal, Guadeloupe

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We obtain new ^{40}Ar/^{39}Ar ages for three lavas that record part of the Matuyama-Brunhes geomagnetic field reversal on the island of Basse-Terre, Guadeloupe. These lavas record a reversed-transitional-reversed magnetostratigraphy and have a weighted mean isochron age from 13 experiments of 784.6 $\pm$ 5.8 ka (2σ analytical uncertainty) relative to an age for the Fish Canyon sanidine standard of 28.201 Ma. This is a far greater precision than obtained through previous K-Ar dating. Our mean age is indistinguishable at the 2σ level from the weighted mean isochron age of a large directional fluctuation preceding the main directional change of the reversal recorded in six previously dated lavas from Haleakala, Maui. In addition, the mean age of the Guadeloupe and Maui lavas are distinct at the 2σ level from the ages of transitional lavas from Chile, Tahiti and La Palma; previously determined to record a precursor phase of the reversal. We suggest that lavas from Guadeloupe and Maui record a temporally coeval, but morphologically non-uniform, large amplitude directional fluctuation between the Matyuama-Brunhes precursor and the main directional change of the reversal. This fluctuation in direction is consistent with observations from some North Atlantic, South Atlantic and West Pacific marine sedimentary records of the Matuyama-Brunhes reversal. Absolute palaeointensity estimates from the Guadeloupe lavas indicate fluctuating field strength during this time. This intensity and directional variability suggests there is a "mixed zone" connected to the total reversal process that lies between the precursor and main directional reversal and this may be related to the relative contributions of dipolar and non-dipolar fields seen at the Earth's surface.