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# Spurious behavior in volcanic records of geomagnetic field reversals

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Very large directional variations of magnetization have been reported in several lava flows recording a geomagnetic reversal. Such behavior could reflect real geomagnetic changes or be caused by artifacts due to post-emplacement alteration and/or non-ideal magnetic behavior. More recently, a high resolution paleomagnetic record from sediments pleads also for an extremely rapid reversal process during the last reversal. Assuming that the geomagnetic field would have moved by tens of degrees during cooling of moderate thickness lava flows implies brief episodes of rapid changes by a few degrees per day that are difficult to reconcile with the rate of liquid motions at the core surface. Systematical mineralogical bias is a most likely explanation to promote such behavior as recently reconsidered by Coe et al., 2014 for the rapid field changes recorded at Steens Mountain. We resampled three lava flows at La Palma island (Canarias) that are sandwiched between reverse polarity and normal polarity flows associated with the last reversal. The results show an evolution of the magnetization direction from top to bottom. Thermal demagnetization experiments were conducted using different heating and cooling rates. Similarly, continuous demagnetization and measurements. In both cases, we did not notice any remagnetization associated with mineralogical transformations during the experiments. Magnetic grain sizes do not show any correlation with the amplitude of the deviations. Microscopic observations indicate poor exsolution, which could suggests post-cooling thermochemical remagnetization processes.