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An archeomagnetic record from southern Africa and its bearing on the history of the South Atlantic Anomaly

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The paucity of Southern Hemisphere archeomagnetic data limits the resolution of paleosecular variation models, while at the same time important changes in the modern and historical field, including the recent dipole decay, appear to originate in this region. We have recently presented the first archeomagnetic data from Iron Age sites of southern Africa (∼1000-1650 AD) (Tarduno et al., *Nature Communications*, 2015). Magnetic data show a sharp intensity drop at ∼1300 AD, at a rate comparable to modern field changes in the South Atlantic Anomaly (SAA), but to lower values. These changes motivated our conceptual model whereby the recurrence of low field values reflects magnetic flux expulsion from the core, promoted by the unusual core-mantle boundary composition and structure beneath southern Africa as defined by seismology (specifically the African Large Low Velocity Seismic Province, or LLVSP). Because the African LLVSP is a longstanding structure, we expect this region to be a steady site of flux expulsion, and perhaps the triggering site for reversals, on time scales of millions of years. Here we discuss our ongoing efforts to extend the archeomagnetic record from southern Africa back in time, and further develop the flux expulsion- African LLVSP hypothesis, through new sampling and paleomagnetic analyses of Iron Age burnt huts, grain bins and kraals from South Africa, Zimbabwe and Botswana. Our preliminary analyses define a loop in the archeomagnetic curve for southern Africa between ca. 400 and 1000 AD, absent in predictions from available paleosecular variation models, that might record another flux expulsion episode.