Paleomagnetism of the ~860 Ma Manso dyke swarm, West Africa: implications for the assembly of Rodinia

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HIGHLIGHTS

- High-latitude position for West Africa between 915 and 860 Ma.
- Long-lived **WABAMGO configuration (West Africa-Baltica-Amazonia-Congo)** between ~1200-800 Ma.

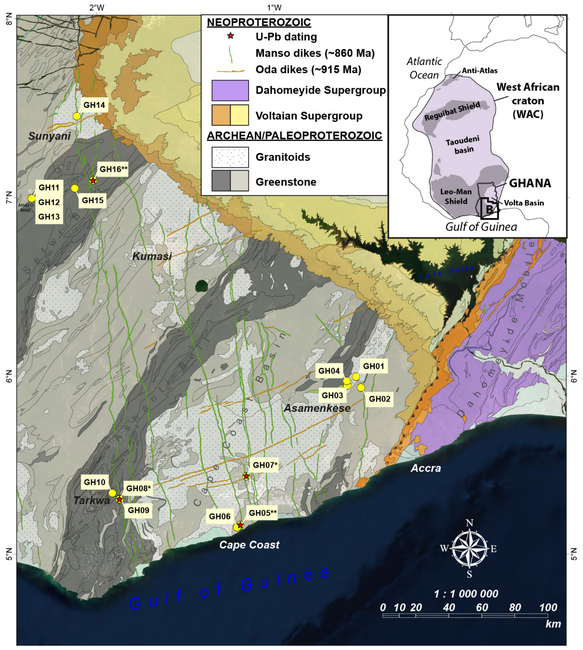


Figure 1. Location of the study area in the West African Craton (WAC). Geological map of the Neoproterozoic units of Ghana with sampling location for geochronology (red stars) and paleomagnetism.

Figure 2. Field photograph of the Manso dolerite dyke at GH08 site. Primary magnetite showing ilmenite exsolution.

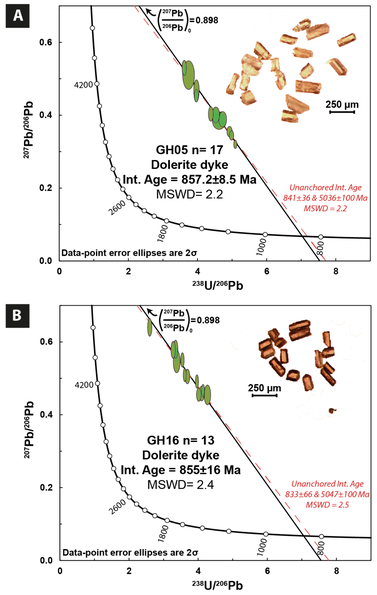


Figure 3. U-Pb Terra-Wasserburg diagrams for apatite dating of the Manso dolerite dykes at GH05 (A) and GH16 (B) sites.

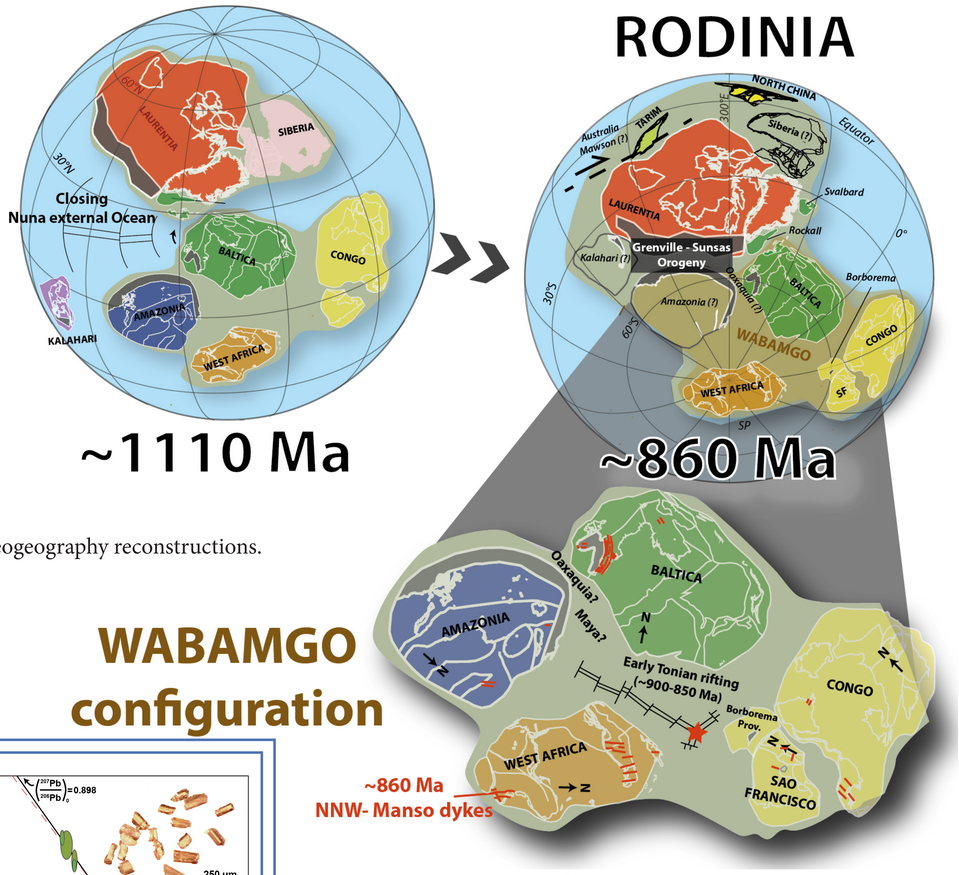


Figure 6. Paleogeography reconstructions.

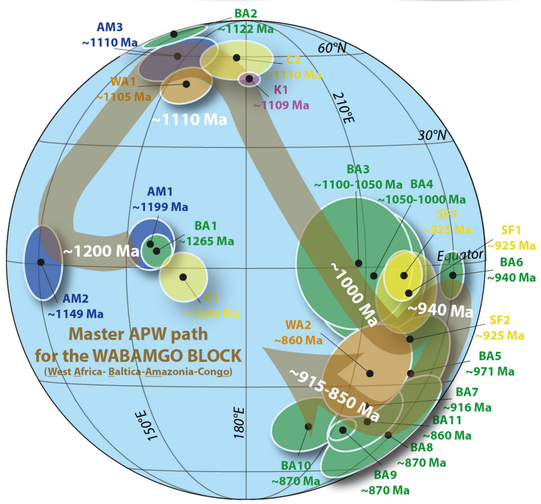


Figure 7. Master Apparent polar wander path (APW) for WABAMGO.

Processo nº 2017/18840-6, Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP).

PMAG DATA => PRIMARY REMANENCE !

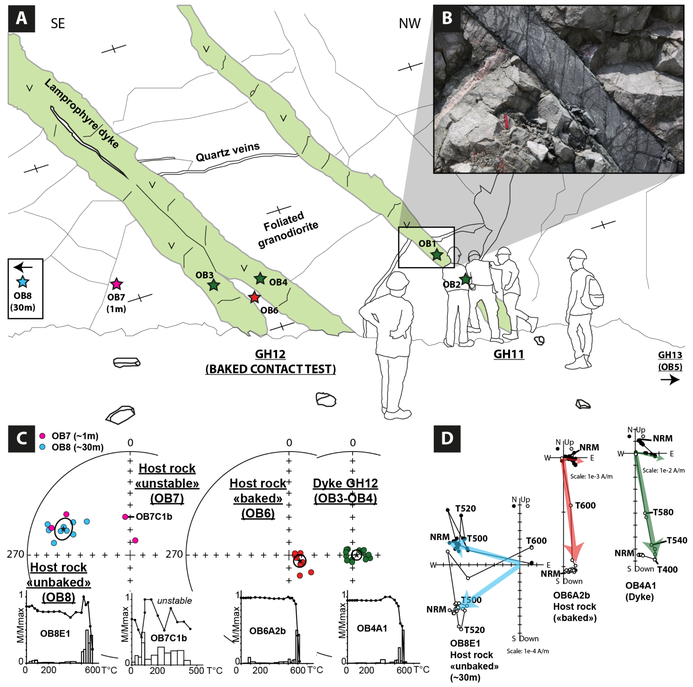
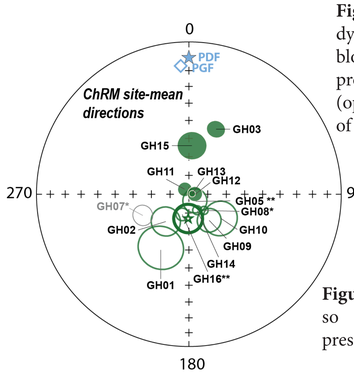


Figure 4. Baked contact test for the GH12 dyke. A: Outcrop with location of the sampled blocks. B: Field photograph of the GH11 lamprophyre dyke. C: Equal-area stereonets (filled (open) symbols represent positive inclination) of site-mean directions. D: Zijderveld plots.



Site mean direction
Dm = 181.9° ; Im = −77.2° (N = 13, α95 = 7.6°, k = 30.6)
Paleomagnetic pole
177.6°E, 28.3°S (A95 = 12.7 °K = 11.6)

Figure 5. Site mean directions for the Manso dykes. Present geomagnetic (PGF) and present dipolar (PDF) fields are indicated.

FIRST TONIAN KEY POLE FOR WEST AFRICA

=> First data to define the WAC in Rodinia.

=> WABAMGO collided with Laurentia at ~1.0 Ga to form the Rodinia supercontinent.

REFERENCE:

Antonio, P.Y.J., et al., West Africa in Rodinia: High quality paleomagnetic pole from the ~860 Ma Manso dyke swarm (Ghana). Gondwana Research, 2021. 94: p. 28-43.