

THE BANGUI MAGNETIC ANOMALY REVISITED. L. A. G. Antoine¹, W. U. Reimold², and A. Tessema¹. ¹Geophysics Department, University of the Witwatersrand, Private Bag 3, WITS 2050, South Africa (e-mail: antoine@mweb.co.za) ²Department of Geology, University of the Witwatersrand (e-mail: 065wur@cosmos.wits.ac.za).

The Bangui magnetic anomaly [1] has been identified as one of the largest and most intense crustal magnetic anomalies on the African continent. It is centered in the African Central Republic and was first detected from surface observations and later mapped by subsequent airborne and space-borne surveys. The anomaly is somewhat elliptical in shape with a short axis diameter of about 550 km. The amplitude varies between -1000 nT at ground level and -20 nT at satellite altitude (ca. 400 km) [1]. This magnetic anomaly coincides with a low gravity response, which is similarly large and anomalous. Girdler et al. [1] proposed that the Bangui magnetic anomaly is the result of a very large, old impact structure. They took into consideration the geology, coincidental magnetic and gravity anomalies, and a congruent double ring structure in the topography. They also used for their magnetic database a contour map derived from Magsat, where the Bangui anomaly appears as a distinct, isolated signature. However, recent processing of Magsat data [2] shows that this anomaly forms part of a larger feature, which begins in the region of the Bangui anomaly but is open-ended southwestward, where it

widens, much like a ship's wake, into the Atlantic ocean. From the above recently published data, it is not possible to distinguish the Bangui anomaly from this broader anomaly, as was previously done. The amplitudes in the area of the Bangui anomaly do not significantly differ from this broad intra-plate magnetic feature, which we term the Bangui-Atlantic magnetic feature. It is bounded to the north by the Cameroon–St. Helena volcanic line and to the south by the Walvis Ridge. It terminates in the west at the Mid-Atlantic Ridge.

The genetic link between the Bangui-Atlantic feature and the Bangui anomaly remains equivocal. We provide an explanation for the Bangui-Atlantic magnetic feature, namely, that it reflects a zone of thinner ocean crust bounded to the north and south by relatively thicker crust. The tectonic implications from these observations are being explored.

References:

- [1] Girdler, R. W., Taylor, P.T. and J.J. Frawley (1992) *Tectonophysics*, 212, 45-58. [2] Antoine L.A.G., et al. (1998) *Geophys. Rev.*, 2, 1-9.