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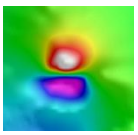

Memo to: Geoff Eupene
From: Terry Hoschke
Date: 1 July 2014
Subject: Willeroo Geophysics

The following is a brief report on the geophysics over EL 28026 (Willeroo) in the NT. A magnetic and radiometric survey covering the area was flown by UTS Geophysics in 2013. It was flown at 200m line spacing with EW lines.

The magnetics is noisy probably due to extensive basalt cover, however filtering (upward continuing the grid to 100m) significantly cleaned up the data (Figure 1). There are a number of discrete magnetic anomalies trending roughly NS through the centre of the area with amplitudes of about 100nT. They are unusual in that they are coincident with topographic highs, have strong thorium anomalies, are elevated in uranium, and low in potassium (Figures 2, 3). They are mapped as Cretaceous sediments (Figure 1) although the radiometric response over these features is very different to other areas of mapped Cretaceous sediments in the area.

Magnetic data covering two prominent anomalies (M1 and M2, Figure 1) was inverted in 3D and the results shown in Figures 3 and 4. The high magnetic susceptibility isosurfaces do not reach the surface which could mean they are capped by Cretaceous cover or deeply weathered. The causes of the magnetic anomalies are steeply dipping and may be due to intrusions. If intrusions are the cause then they could be related to carbonatites as they have high concentrations of thorium and uranium and occur in relative isolation (Gunn and Dentith, 1997). These anomalies do not have the obvious concentric zoning that is presented in the published literature but are certainly worth following up.

In addition to the magnetic anomalies there are a series of uranium anomalies trending NW and probably related to a major structure. Unlike many of the uranium anomalies in the NT caused by radon in springs, these are coincident with topographic highs and should be explained.

References

Gunn, P.J. and Dentith M.C., 1997, Magnetic responses associated with mineral deposits, AGSO Journal of Australian Geology & Geophysics, 17(2), 145-158.

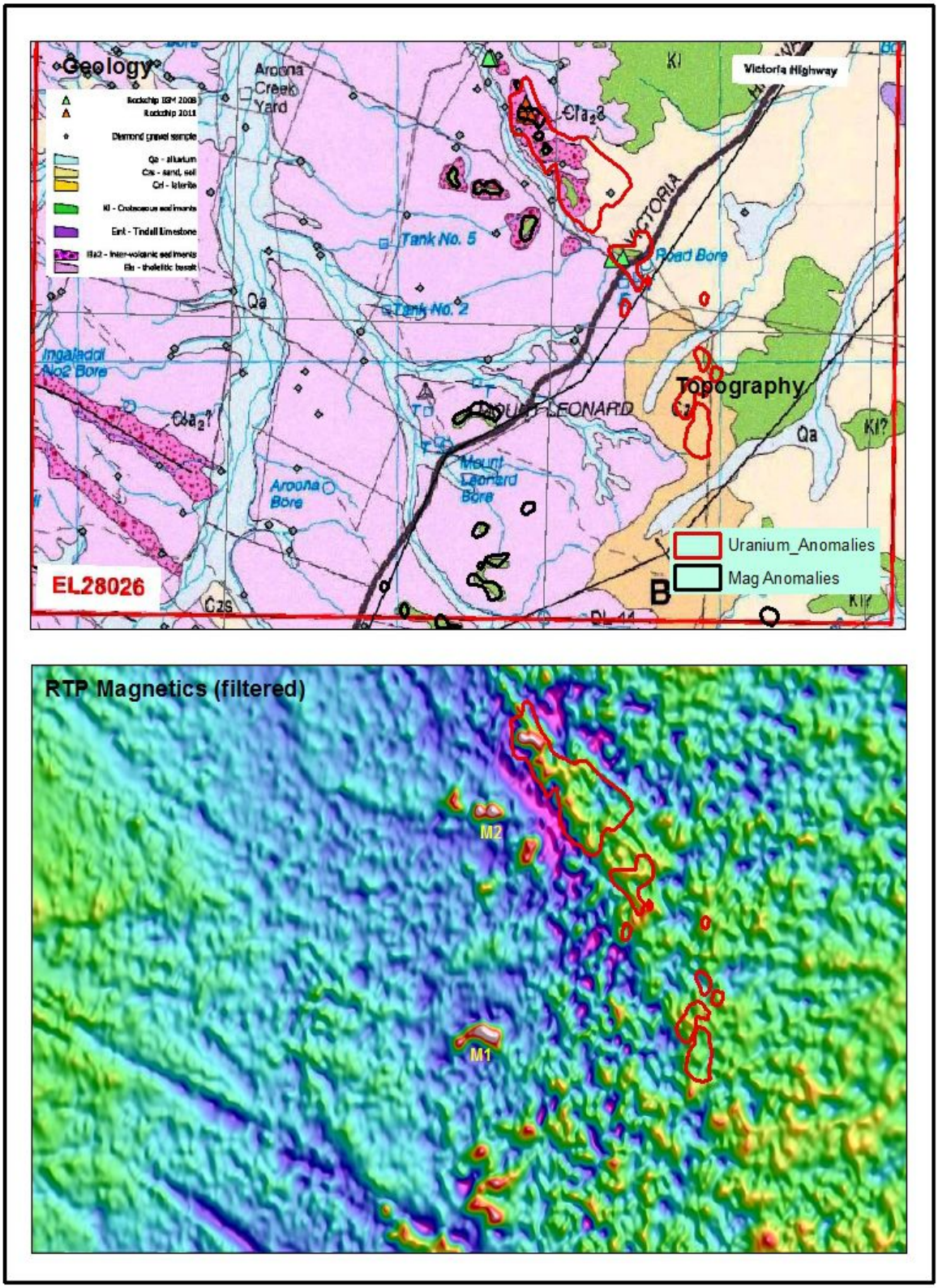

Figure 1 Willeroo Geology and RTP magnetics upward continued 100m.

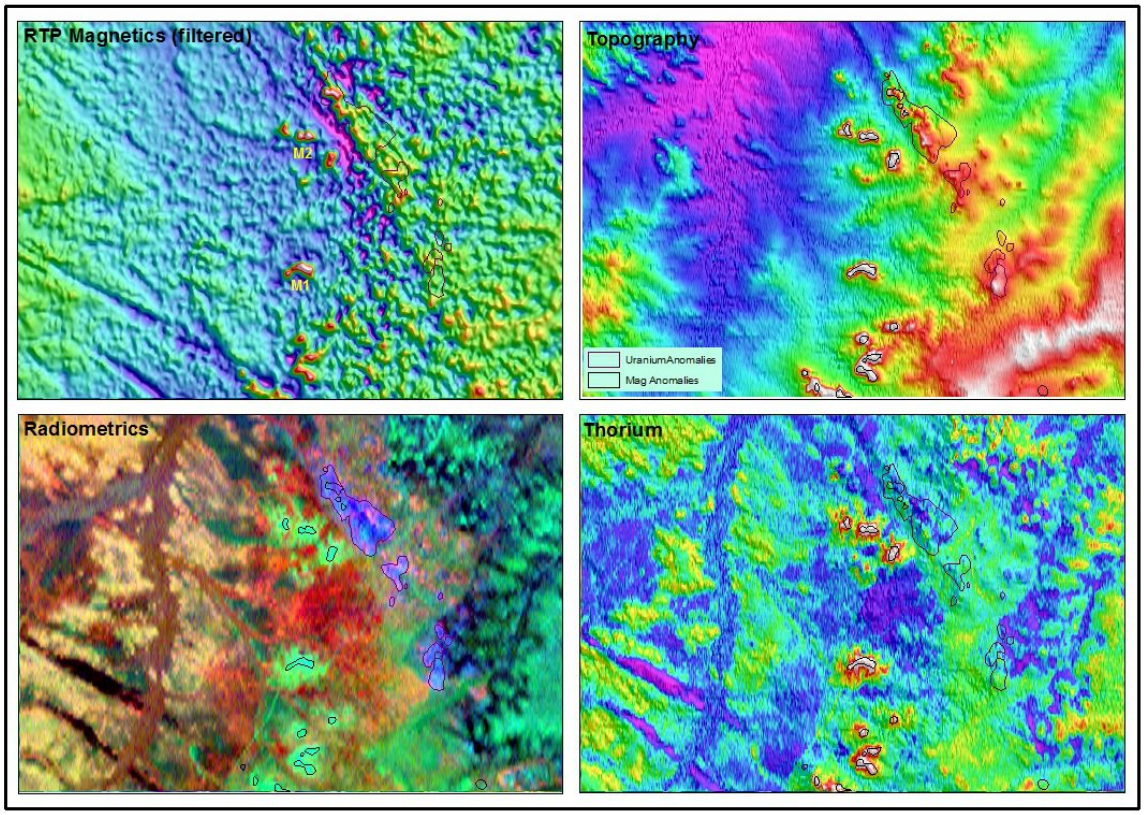

Figure 2. Willeroo geophysics and topography showing magnetic and uranium anomalies.

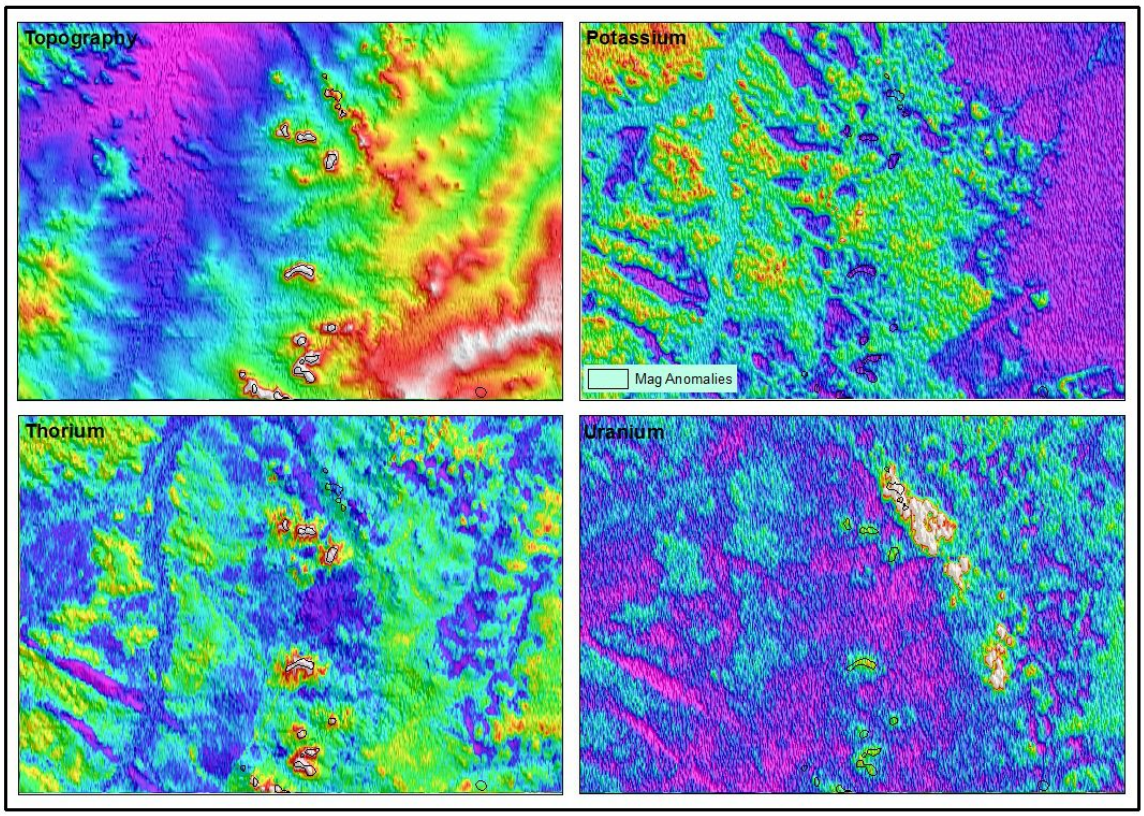

Figure 3. Willeroo radiometrics

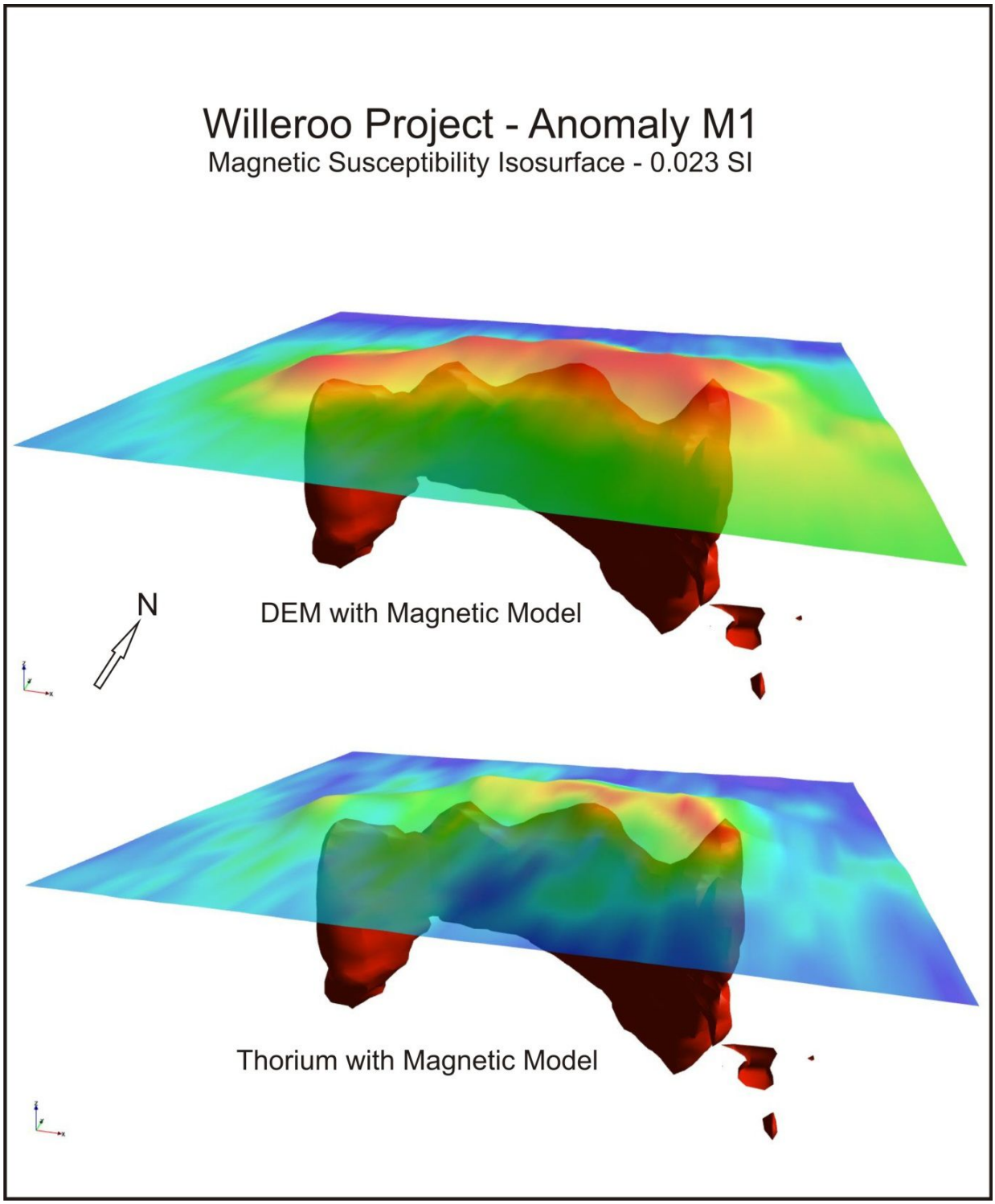

Figure 4. Willeroo M1 anomaly showing a high susceptibility isosurface under topography and thorium

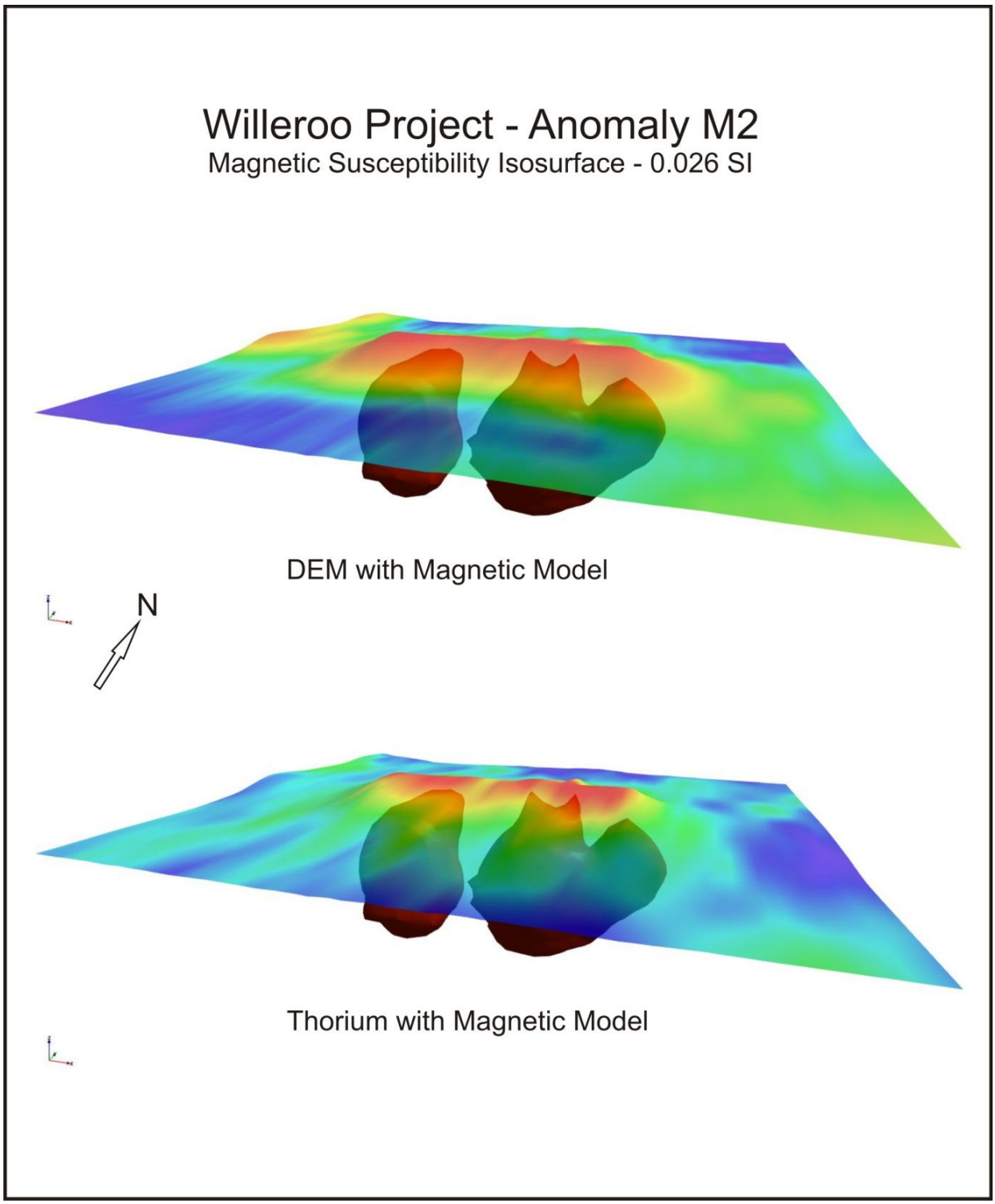

Figure 5. Willeroo M2 anomaly showing a high susceptibility isosurface under topography and thorium