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Plenty Project – EL 24180
HOISTEM
Heli-borne Time Domain Electromagnetic Survey

Data Modelling & Interpretation Report

for

Thor Mining

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1. SUMMARY

In late November of 2006, a helicopter borne time domain electromagnetic survey (Hoistem) was flown over the Plenty Project Area (EL 24180). The project is located approximately 120km NE of Alice Springs (figure 1). The survey consisted of 126 traverses with 400m line spacing, collected in a North-South Orientation for a total collection of approximately 1800 line km of data (figure 2).

The Hoistem system maps the palaeo-topography of the crystalline basement due to the significant electrical contrast between the younger overlying unconsolidated sediments (conductors) and the crystalline basement units (resistors). Through modelling the data, the contact between the crystalline basement and overlying sediments can be accurately mapped. From this any topographic lows/palaeo-drainage features can be defined and delineated.

Additionally the modelling of the data establishes the conductivity of the sediments overlying the basement. An area where the conductivity of these sediments is higher may represent zones of higher organic material. Organic material is a good reducer and is a known catalyst inducing uranium rich fluids to precipitate the uranium into the adjacent sediments.

The results of modelling the data have defined a major palaeo-channel that strikes East-North-East across the south eastern part of the survey area (figure 1). Within this palaeo-channel there are three significant isolated deeper troughs, two of which are filled with conducting sediments. Intersecting the major channel is another significant north-westerly striking channel that has a very sharp eastern bank. This indicates that the eastern margin may be structurally controlled. The intersection of these two palaeo-channels represents a high priority target location, with the likely creation of favourable trap/host sediments and potential areas of mixing fluids.

The western part of the survey area is dominated by a large moderate depth basement low. Within this large basin there are several isolated low pockets however the conductivity of these sediments are higher in comparison too those in the two major channels.

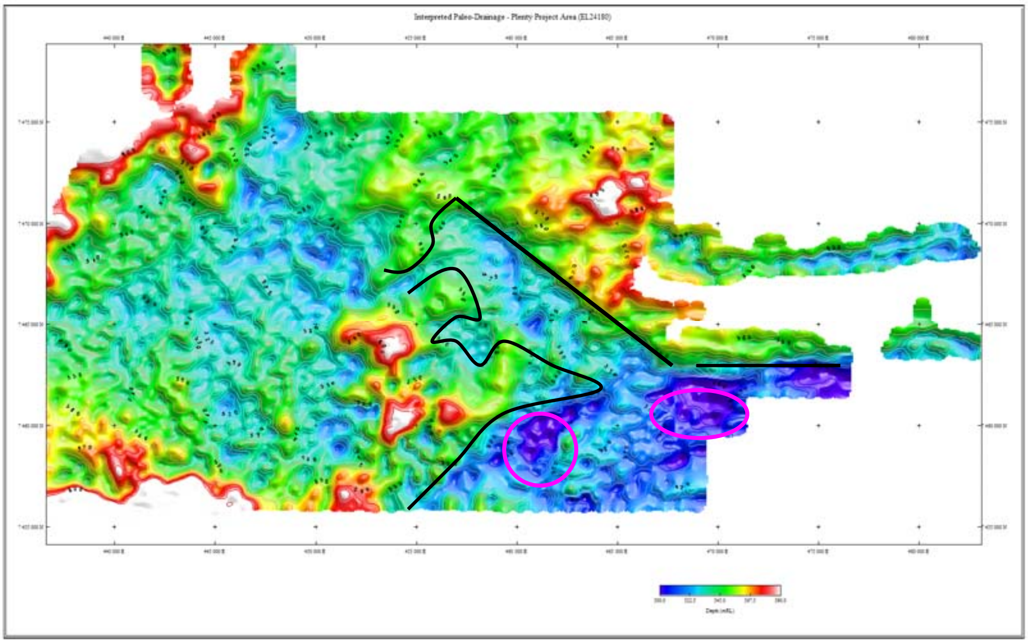

Figure 1: Interpreted basement top with black lines representing the outline of the two major palaeo-channels and the magenta circles highlighting the conductive sediment filled isolated basement lows.

2. SURVEY LOGISTICS & LOCATION

The logistical report, as supplied by GPX airborne services, outlines the data collection system and survey specific information. However in summary the Hoistem system is a time domain electromagnetic system. It operates with an inloop configuration, having the receiver co-planar and in the middle of the transmitter loop. It operates at 25hertz with a 5msec on-time pulse and a 15msec off-time. The system is towed below the helicopter and data is collected approximately 35m from the ground.

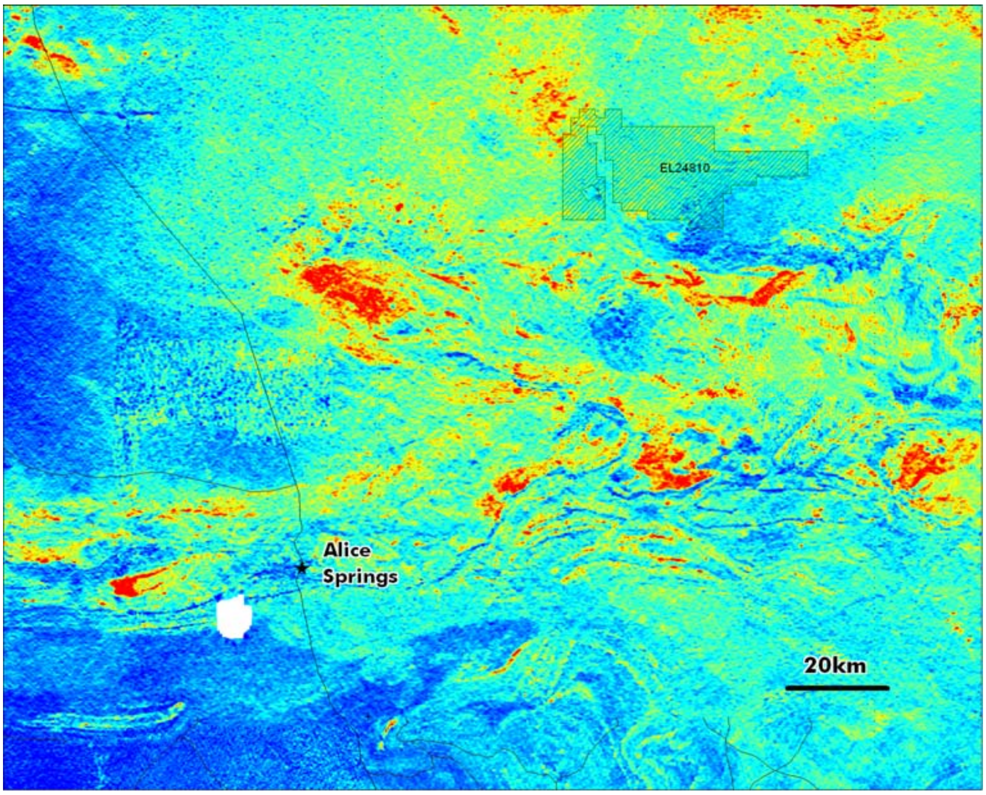

Figure 2: Location of Plenty Project Area (EL 24180) overlain on NT Uranium channel image.

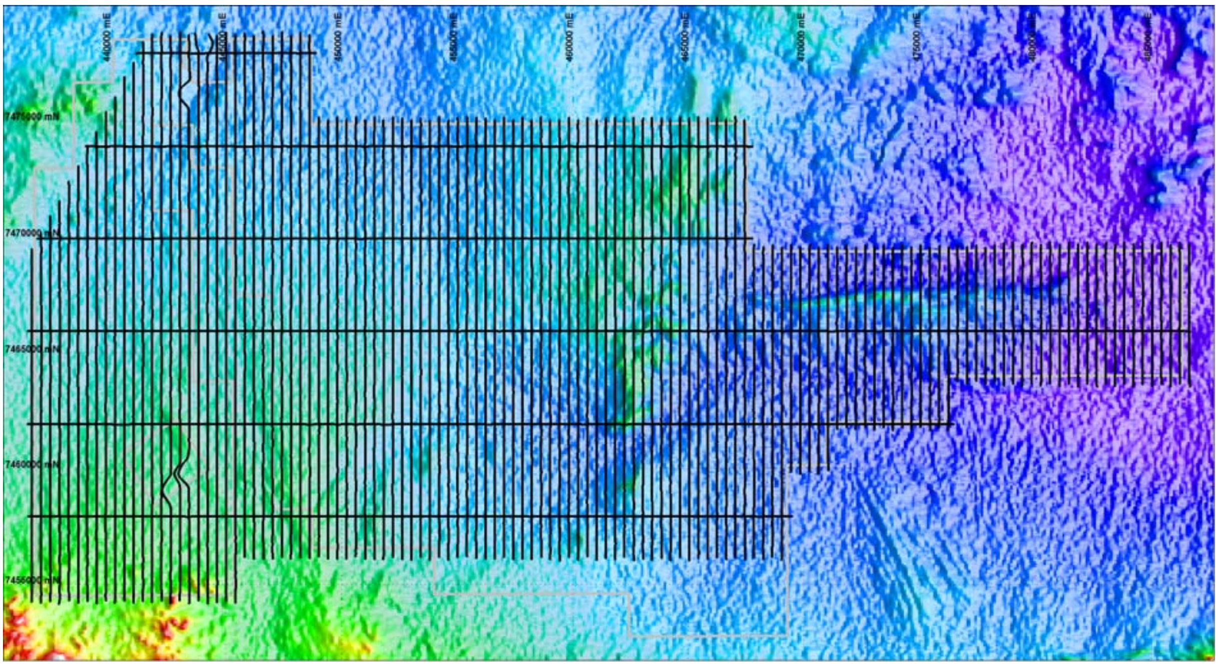

Figure 3: Flight line diagram for the HoisTEM survey over the Plenty Project Area (EL 24180) draped on the Shuttle DTM.

3. OBSERVED DATA & MODELLING

The Hoistem Electromagnetic data collected during the survey is of good quality. There doesn't appear to be any bunching of the early time channels due to system response. This allows most of the early time channels to be used in the interpretation and modelling process. The lower data threshold (noise limit) is approximately 0.1 uV/Amp, for the modelling of the data a noise level threshold of 0.2 uV/Amp was used and the first two time channels were removed.

The Hoistem system maps the palaeo-topography of the crystalline basement due to the significant electrical contrast between the younger overlying unconsolidated sediments (conductors) and the crystalline basement units (resistors). Undertaking 1D layered earth inversions of the observed data along a traverse enables an electrical cross section of the earth to be constructed (figure 4). From this electrical cross section the thickness of the overlying sediments and conversely the palaeo-topography of the basement are interpreted.

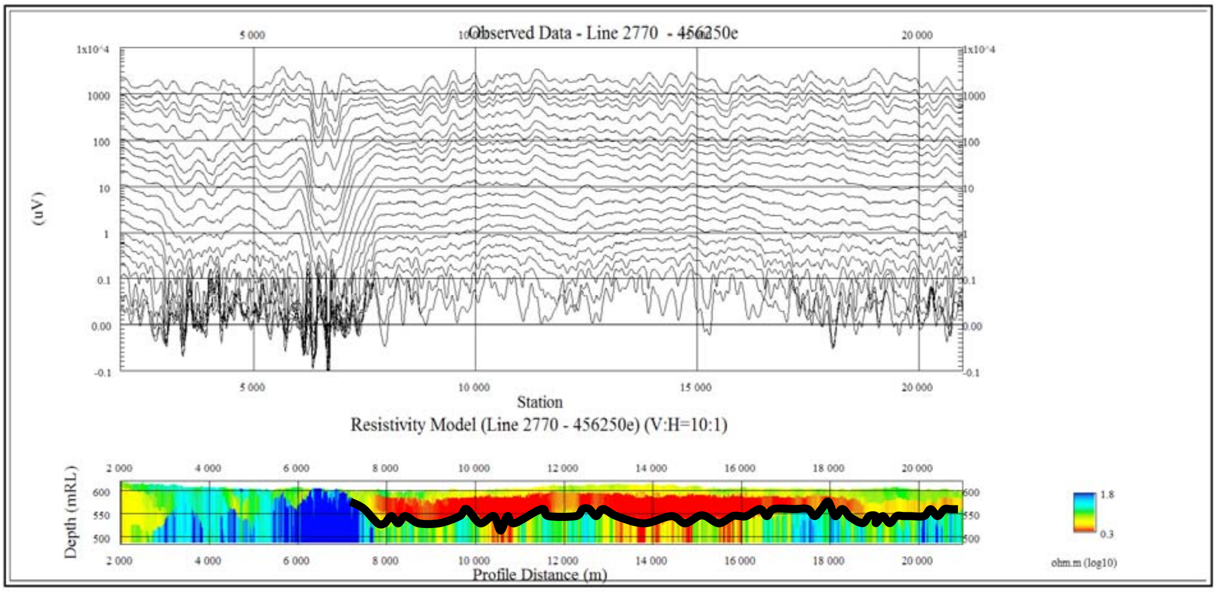

Figure 4: Observed data and resultant electrical cross section model for flight line 2770 (456250e). The black line represents the interpreted top of the basement.

By undertaking the 1D layered earth inversions for every station along every traverse, the sediment cover / crystalline basement contact is interpreted. From this a map of the palaeo-drainage for the area has been compiled (figure 5). The shallow basement is represented by red with the deeper parts of the basement being blue/purple. The final model of the data clearly displays a major basement channel in the south east of the survey area, trending in an east-north-east/east direction. Within this channel there are a couple of isolated deeper pockets.

Intersecting the major palaeo-channel is a second major channel striking in a north-westerly direction. The eastern margin of this channel has a very sharp definition. This indicates that it maybe structurally controlled. On closer inspection the north westerly orientation can be see a couple of other times within the interpreted basement surface map (indicated by arrows in figure 5). Another interesting sharp boundary orientation within the data is NNE.

The western half of the survey area is dominated by a large broad moderate low in the basement topography. Within this area there are some isolated lows along one of the north westerly trends. Also there appears to be a narrow channel striking in a north easterly direction that connects this large basin to the north-westerly striking major palaeo-channel.

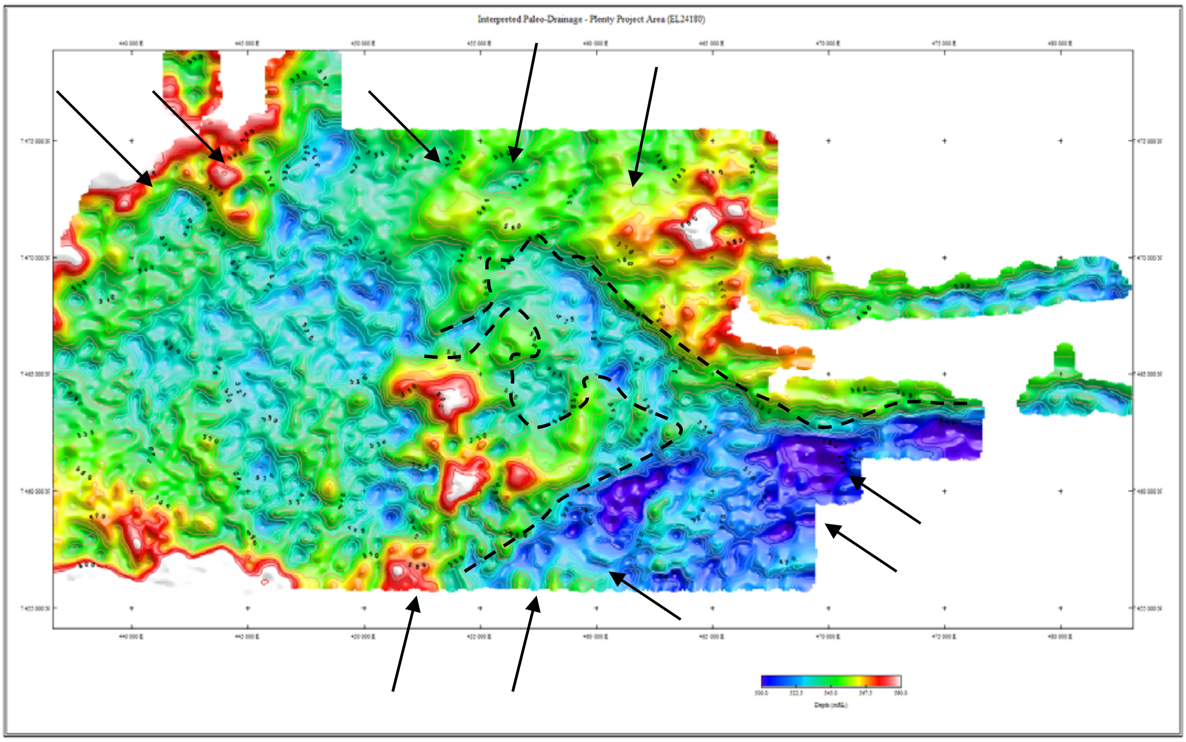

Figure 5: Image plan with contours of the palaeo-channels for the Plenty Project Area. The dashed lines outline of the palaeo-channels. The arrows represent potential structural trends visible in the interpreted data.

4. THREE DIMENSIONAL MODEL

The interpreted surface of the basement topography can be viewed in 3D modelling software (figure 6). This 3D view enables the basement trends to more easily recognised.

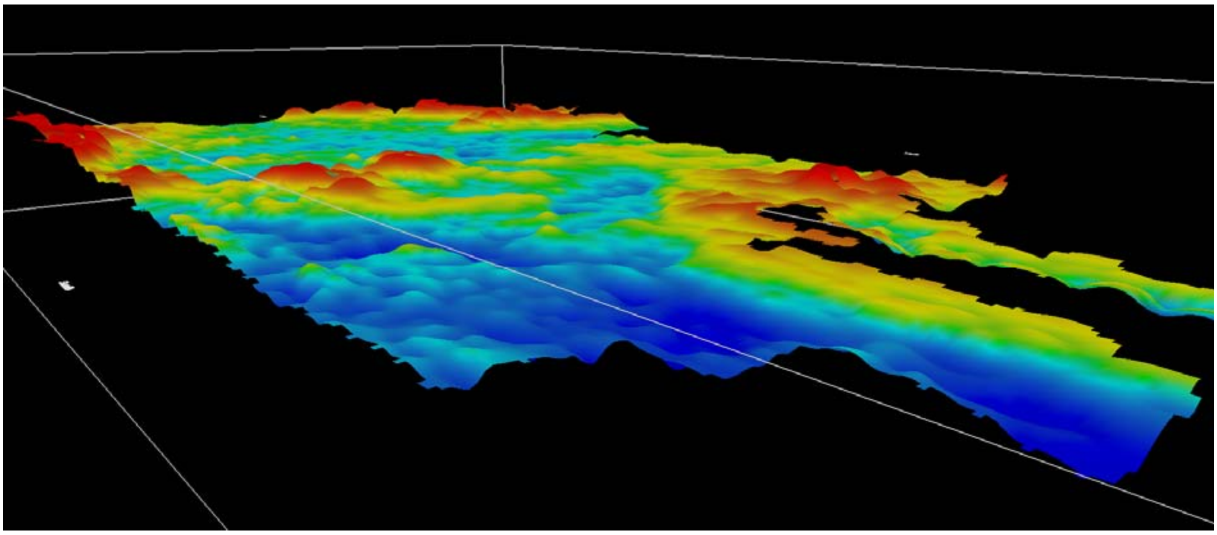

Figure 6: Snap shot of the 3D model showing top of basement surface.

Also by three dimensionally gridding all the resultant models, conductivity shells of the sediments above the basement can be made (figure 7). The conductivity of these shells is potentially related to the content of the organic material. As organic material is a good fluid reducer the areas of higher conducting shells/organic material, represent good locations for trap sites.

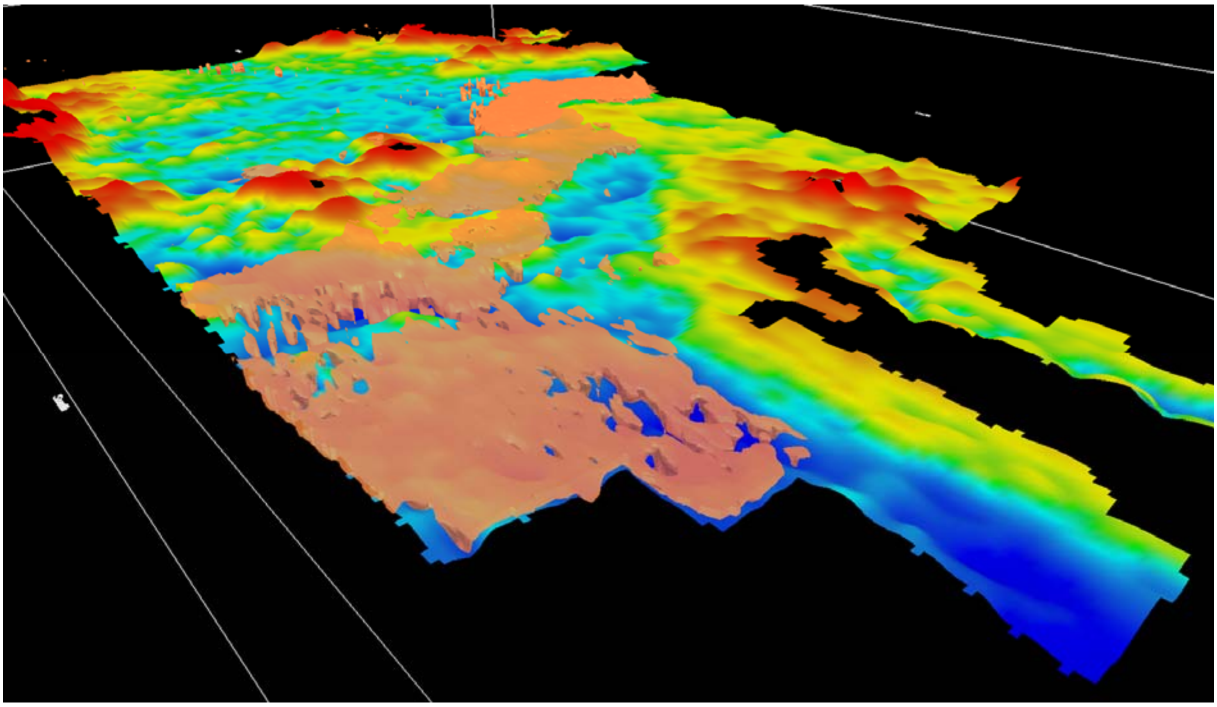

Figure 7: Snap shot of 3D model showing conductive sediments within the palaeo-channels.

Normally by combining the model derived from the Hoistem with other datasets, various correlations can be identified. However within the Plenty project area there isn't a strong correlation between the interpreted basement and the other datasets. Figures 8a, 8b and 8c display the basement interpretation with a high pass filtered digital terrain image and the 2nd vertical derivative image of the magnetic data.

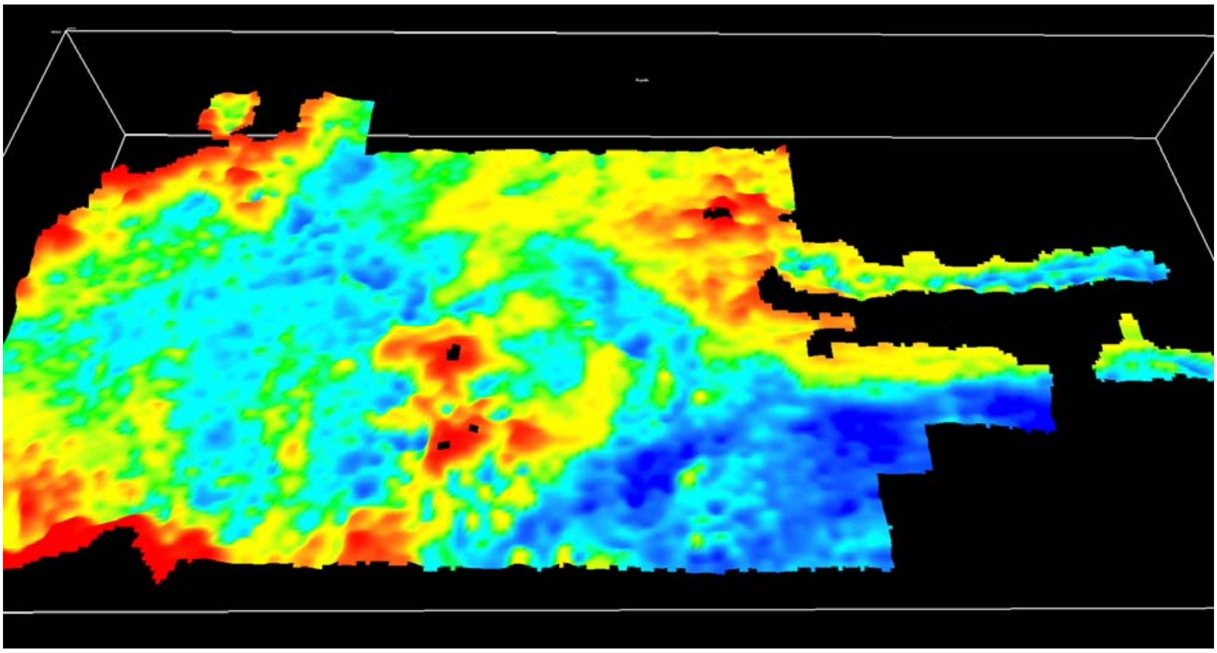

Figure 8a: 3D snapshot of the basement topography

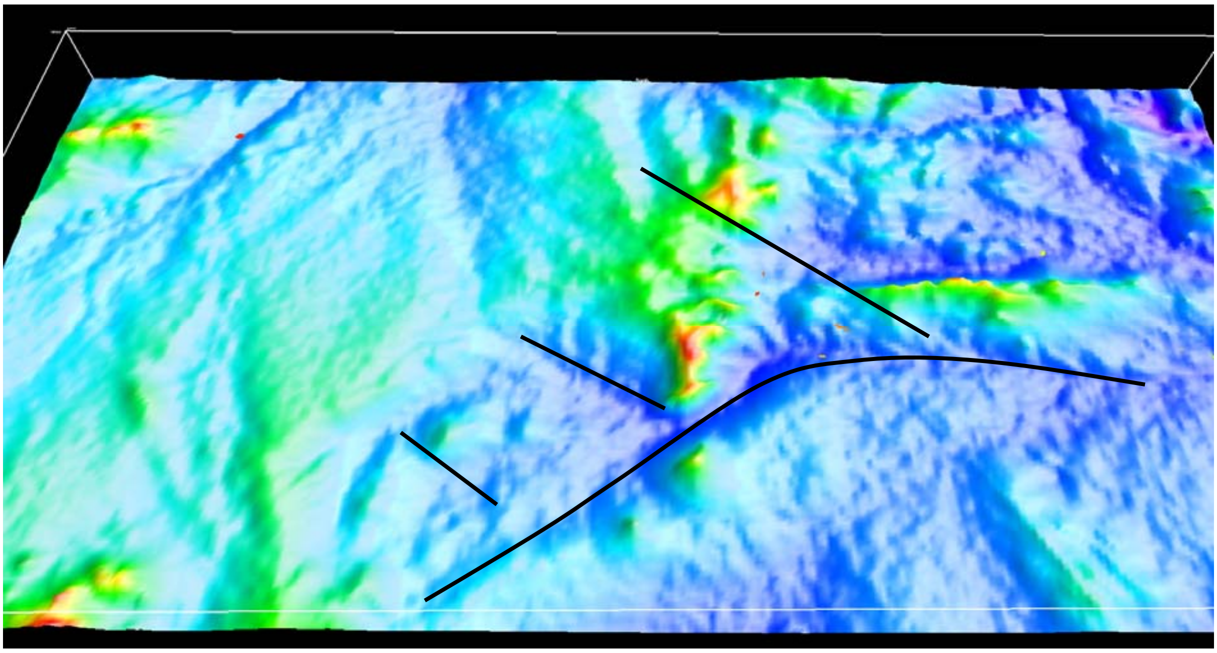

Figure 8b: 3D snapshot of the high pass filtered digital terrain image (the filter has removed the longer wavelength features). The black lines highlight the potentially common elements between the interpreted basement topography and the digital terrain image.

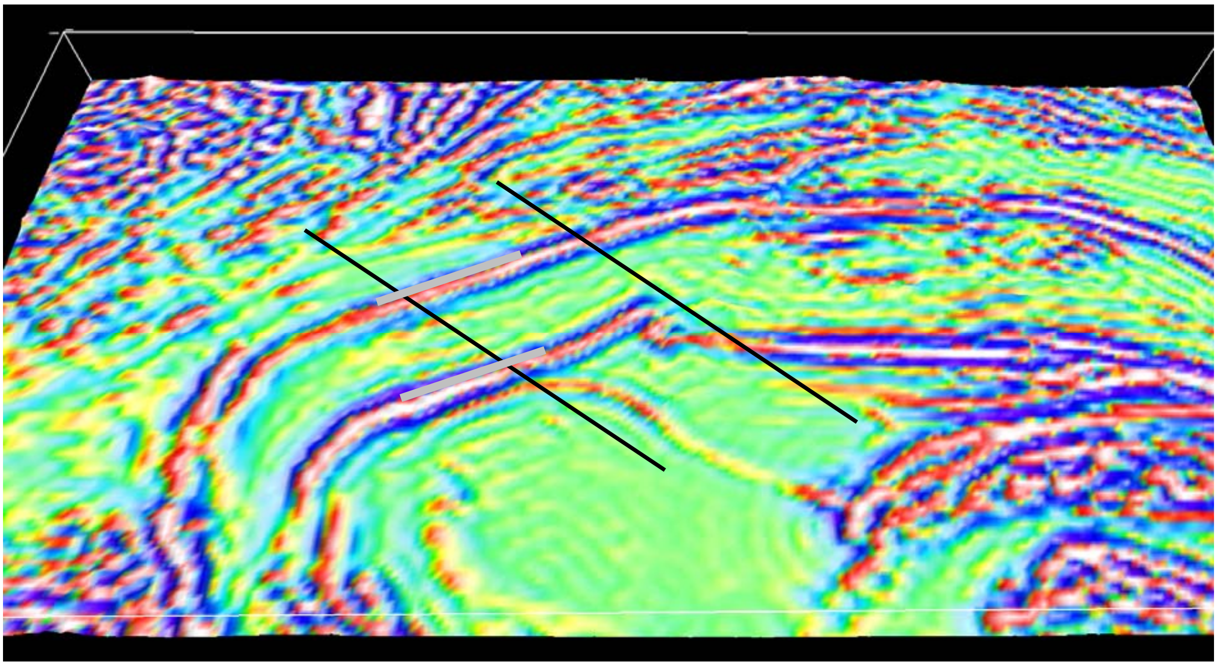

Figure 8c: 3D snapshot of the second vertical derivative. The black lines represent some structures in the magnetic data that are common to the structurally trends within the interpreted basement topography. The grey lines outline the magnetic features that are coincident with the some of the palaeo-channel trends in the interpreted basement.

5. CONCLUSSION

Modelling of the Hoistem data has successfully defined the palaeo-topography of the basement. It has also identified areas where the sediments overlying the basement are more conductive and potentially correlating with areas that contain more organic material. These areas with organic material within the palaeo-drainage offer good locations for the deposition of uranium.

The model when combined with other datasets has only a small amount of correlative features. However the current day topography appears to have an expression in it that reflects the major palaeo-channel defined within the survey area. Also the eastern margin of the northwest oriented channel correlates well with a northwest striking discontinuity in the magnetic data.

Where the two channels intersect presents itself as a high priority area to search for uranium deposits. It is in this location that good trap/host sediments may have been deposited due to changing fluid flow conditions (velocity and direction). Additionally the intersection area presents a location where fluid mixing is likely to be occurring, precipitating the deposition of uranium.