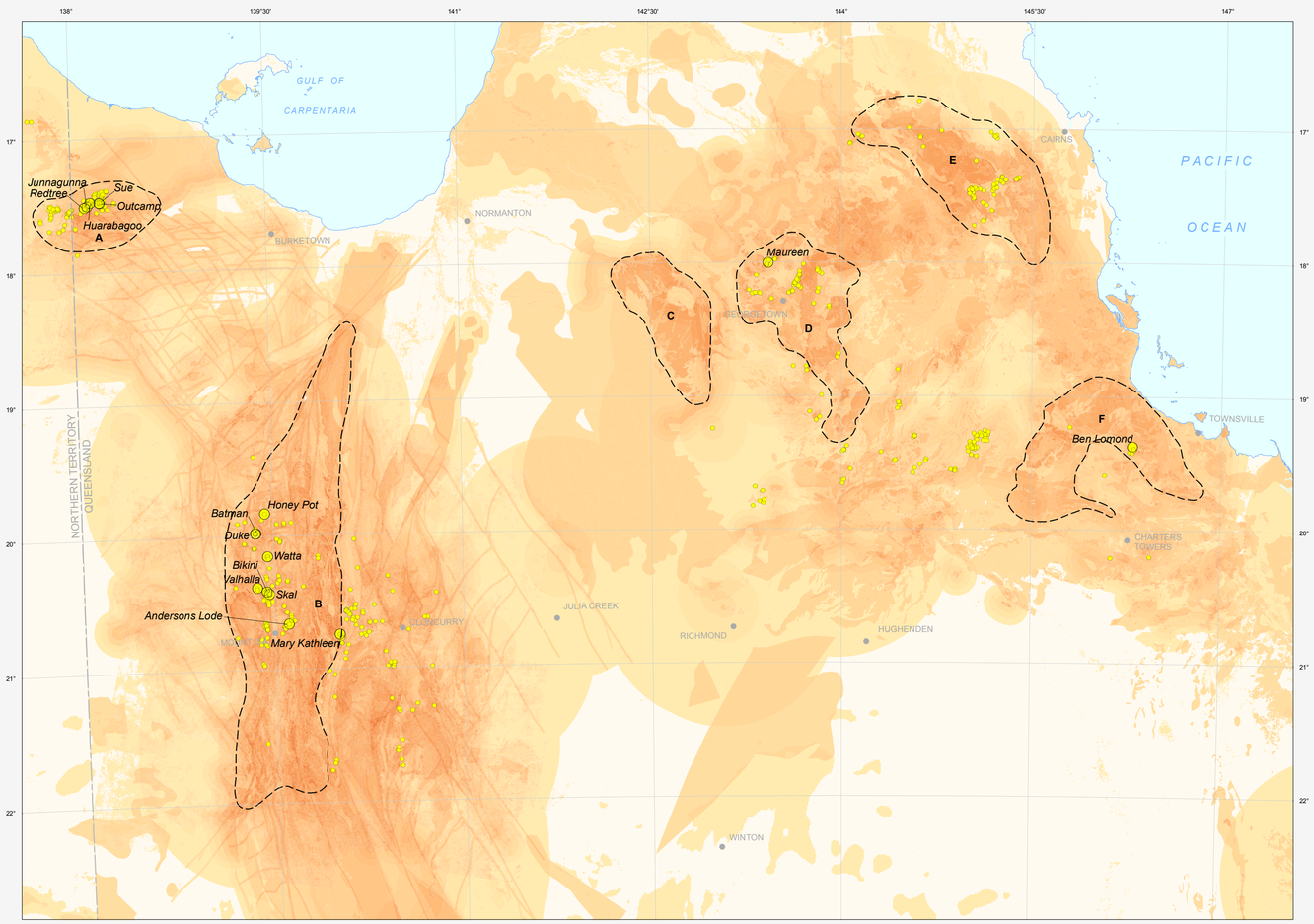
NORTH QUEENSLAND ENERGY SYSTEMS ASSESSMENT

UNCONFORMITY-RELATED URANIUM POTENTIAL



Unconformity Uranium Potential

Low — High

Potential for unconformity uranium deposits based on summation of mineral system parameters shown in insets. Using this analysis, the following areas have been identified as having significant potential for unconformity uranium deposits: See text (Huston, 2010) for more information and references.

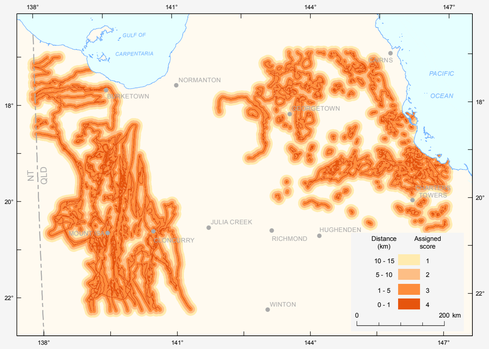
A *Westmoreland region*
B *Mount Isa Inlier*
C *Esmeralda Supersuite*
D *Area around and south of Maureen*
E *Paleozoic magmatic belt southwest of Cairns*
F *Northern Charters Towers region*

0 250 kilometres

Transverse Mercator Projection; Central Meridian 144° E; Geocentric Datum of Australia (GDA94)

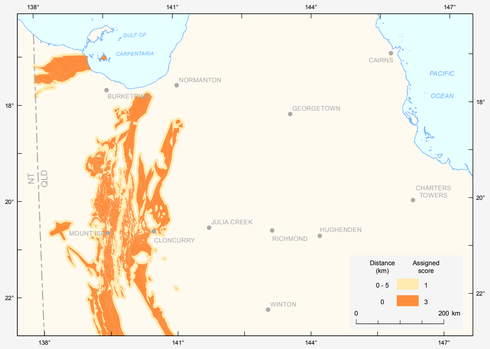
Uranium deposits
Uranium occurrences
High potential boundary

Unconformities



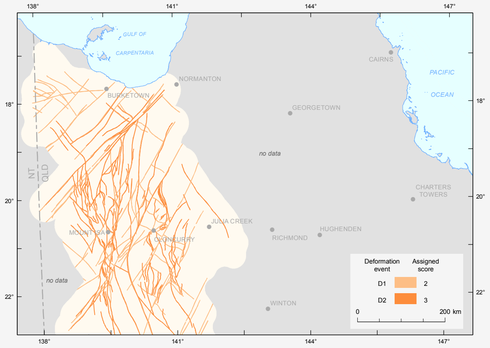
Distribution of unconformities interpreted from the solid geology map of northern Queensland.

Leichhardt superbasin



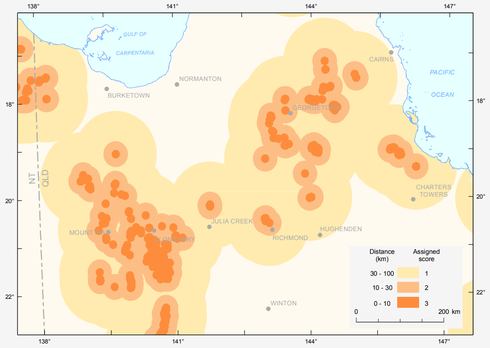
Distribution of Leichhardt Superbasin rocks from solid geology map of north Queensland

D1 and D2 faults



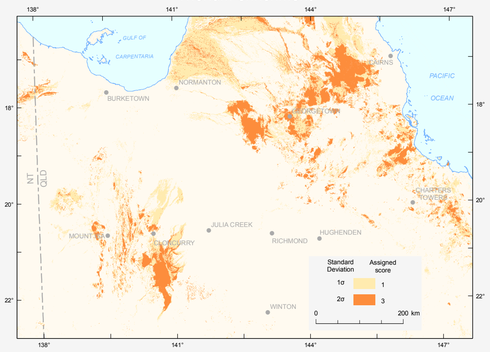
Distribution of faults inferred to have been active during regional D1 and D2 stages of the Isan Orogeny (~1640 – 1565 Ma). A 1 km buffer has been applied from the fault.

Uranium source



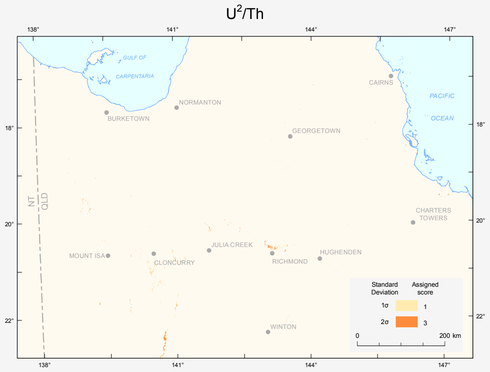
Potential uranium-rich source rocks using a cut off value of 10 ppm uranium. The values were estimated from filtered gamma-ray spectrometric data.

Thorium enrichment



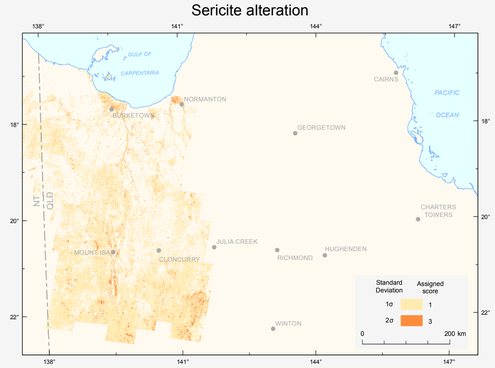
Thorium enrichment (one and two standard deviations above the mean) derived from gamma-ray spectrometric data. Thorium enrichment at the surface may indicate deeper levels of mineralisation.

U^2/Th



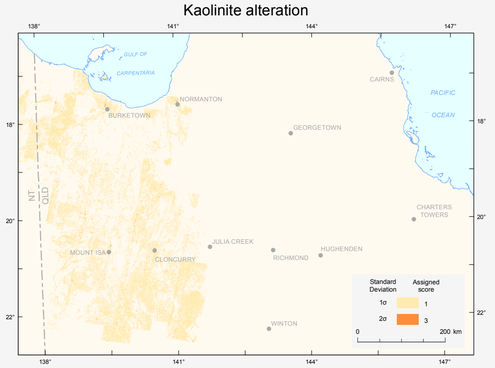
Areas of higher than average U^2/Th ratios (one and two standard deviations above the mean) derived from gamma-ray spectrometric data.

Sericite alteration



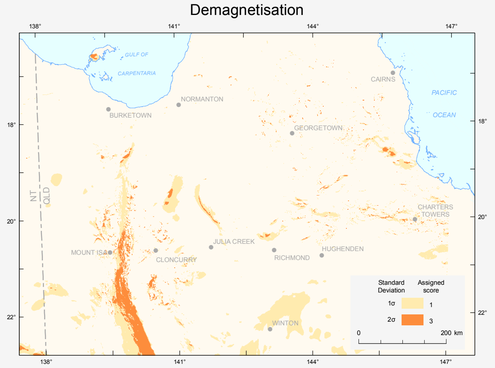
Sericite alteration derived from the ASTER data ([band5+band7]/band6) for north Queensland. Areas assigned for values of [band5+band7]/band6 one and two standard deviations above the mean.

Kaolinite alteration



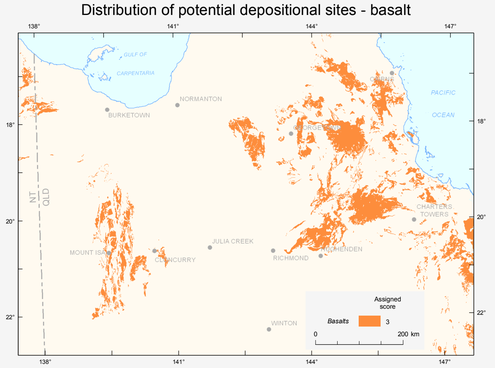
Kaolinite alteration derived from the ASTER data (band7/band5) for north Queensland. The presence of kaolinite may indicate alteration proximal to fluid pathways. Areas assigned for values of band7/band5 one and two standard deviations above the mean.

Demagnetisation



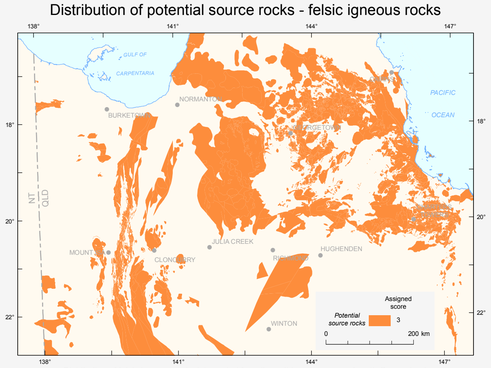
Areas of lower than average (one or two standard deviations below the mean) magnetisation derived reduced-to-pole aeromagnetic data.

Distribution of potential depositional sites - basalt



Distribution of basalt derived from the surface geology map of north Queensland.

Distribution of potential source rocks - felsic igneous rocks



Distribution of felsic igneous rocks interpreted from the solid geology map of north Queensland.

Compiled by T.P. Mernagh, Geoscience Australia
Data analysis by T.P. Mernagh and D.P. Connolly
Cartography by D.P. Connolly
Produced by GIS Services Group, Onshore Energy and Minerals Division, Geoscience Australia using ESRI ArcGIS 9.3 software

This map forms part of Geoscience Australia's Onshore Energy Security Program

It is recommended that this map be referred to as:
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MAY 2010

PLATE 3