

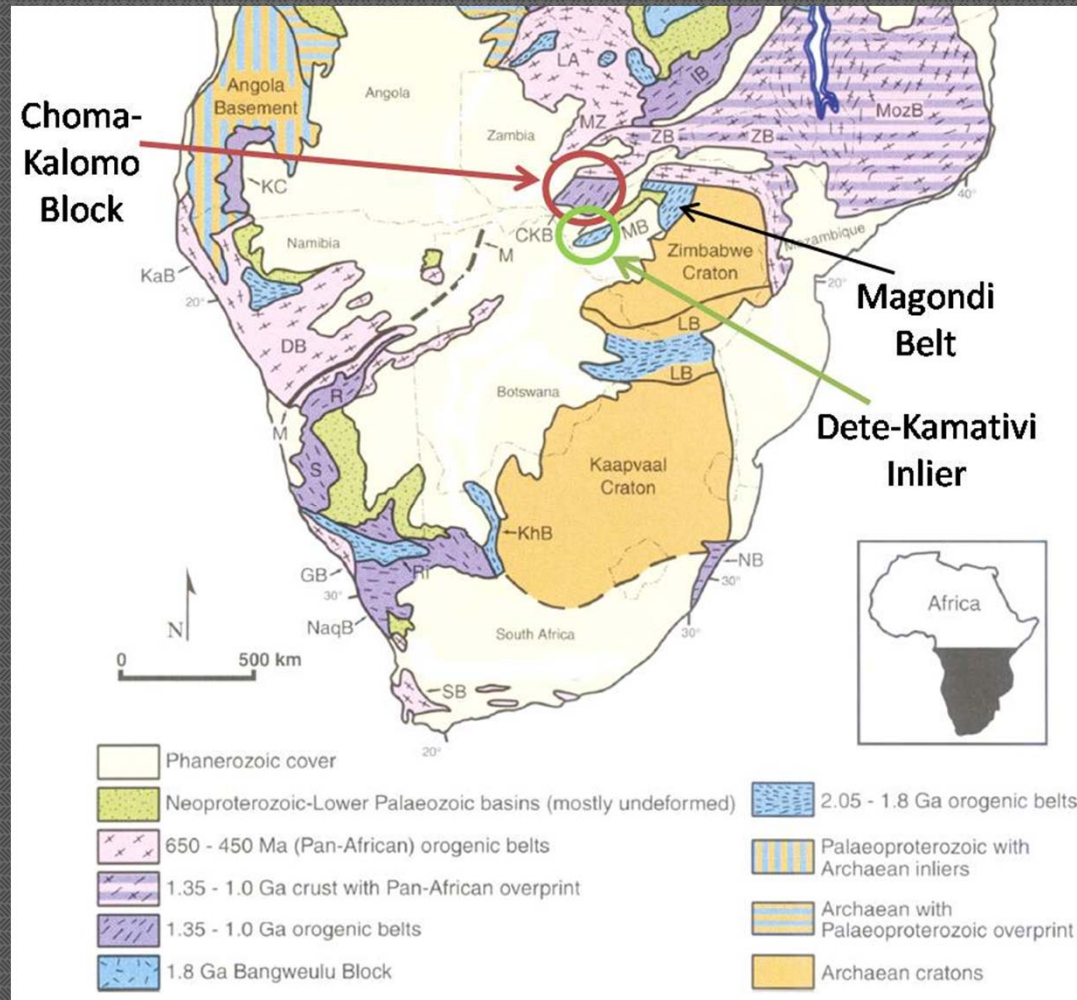
Implications for the extent of the Zimbabwe Craton, from U-Pb zircon geochronology of the Dete-Kamativi Inlier (NW Zimbabwe) and the Choma-Kalombo Block, of SE Zambia.



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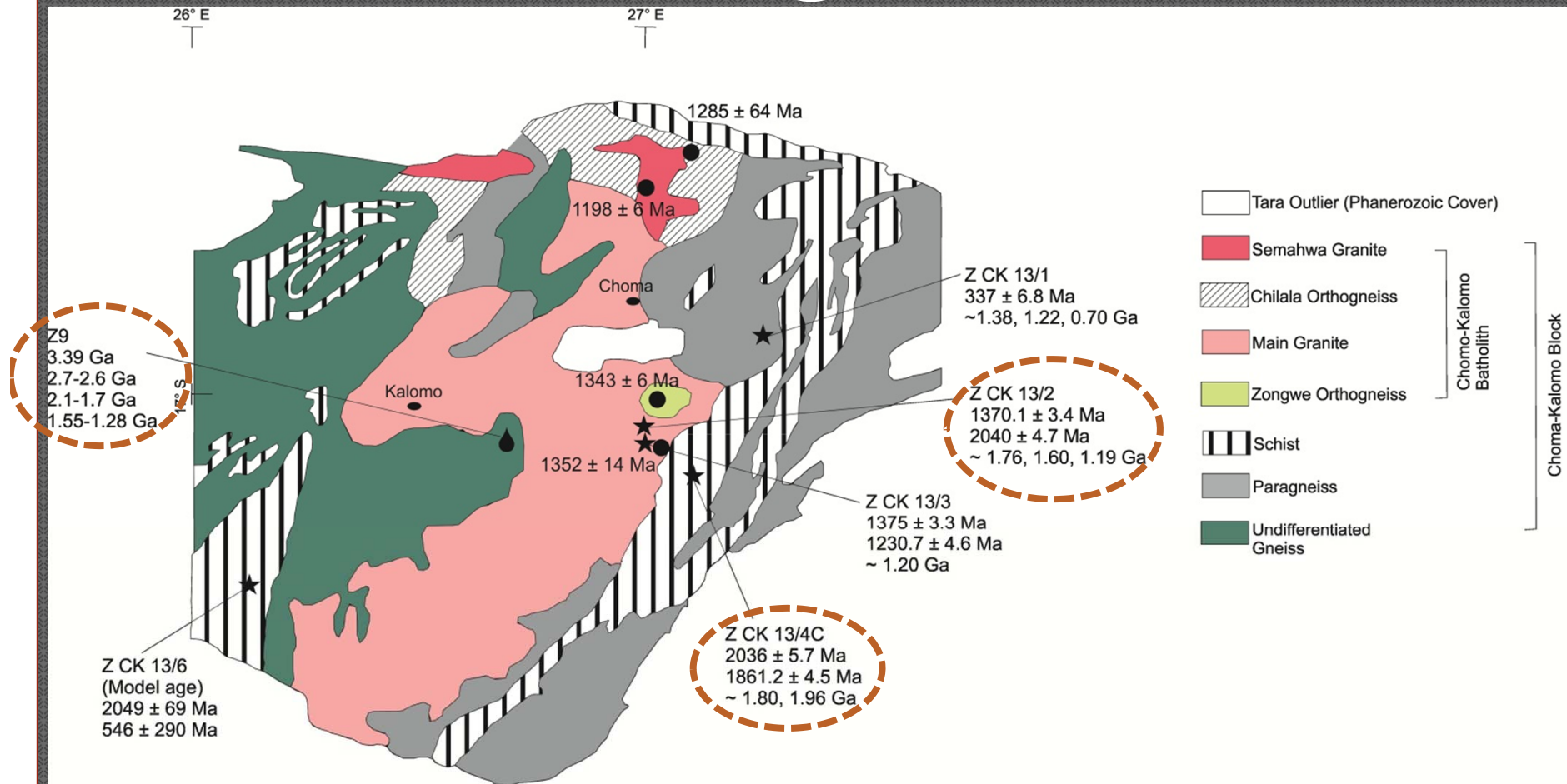
Regional Setting



Proposed relationship models between the DKI & CKB

- Unrug (1992) proposed that both the CKB and DKI are exotic terranes with respect to the Zimbabwe Craton and the Palaeoproterozoic Magondi Belt, having been originally connected to the Kibara Belt.
- Bulambo *et al.* (2006) argued that only the CKB was originally connected to the Kibara Belt, but became caught up in the Pan-African collision between Zim & Congo Cratons.
- This implies no links between the CKB and DKI prior to the Pan-African.

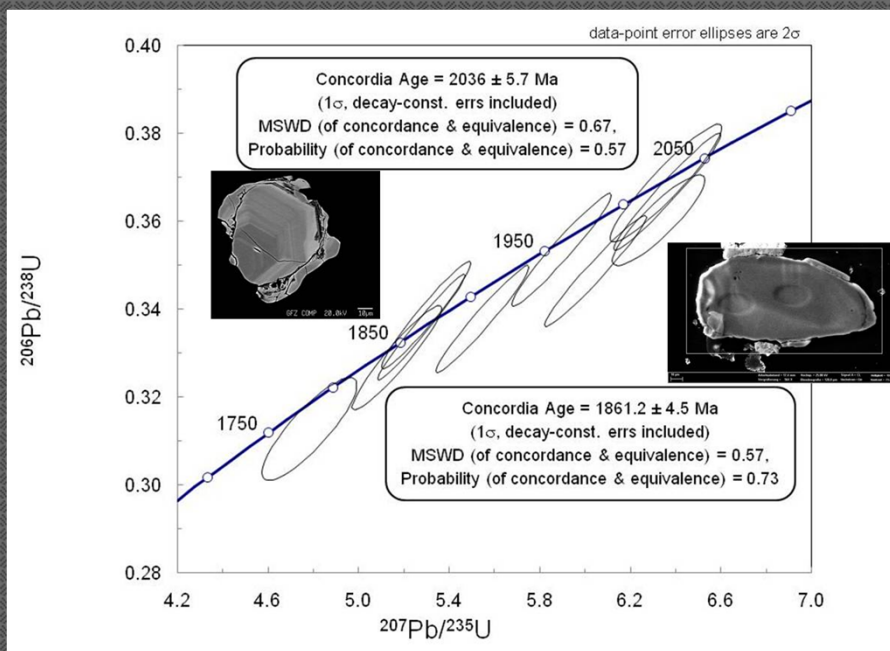
Regional Geology: Choma-Kalomo Block



Previously undocumented Palaeoproterozoic component within the CKB

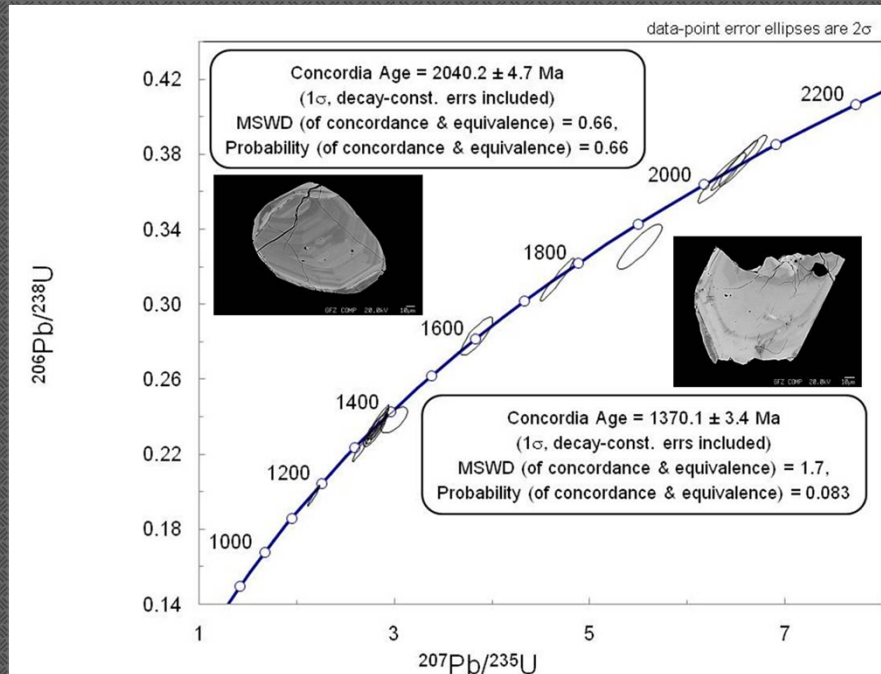
Z CK 13/4C: qtz-musc-tourm schist

1.86 & 2.03 Ga detrital zircons

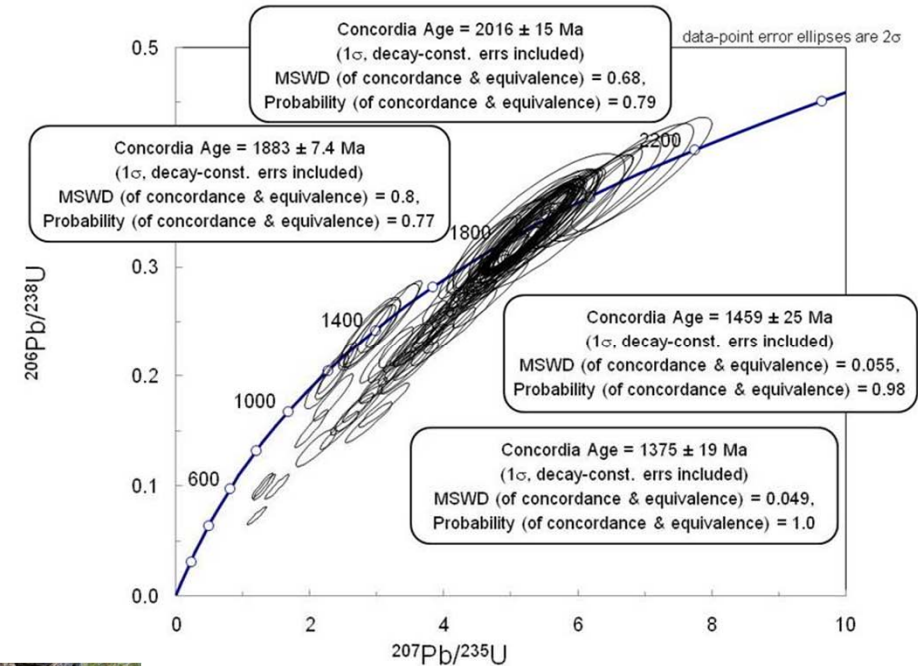
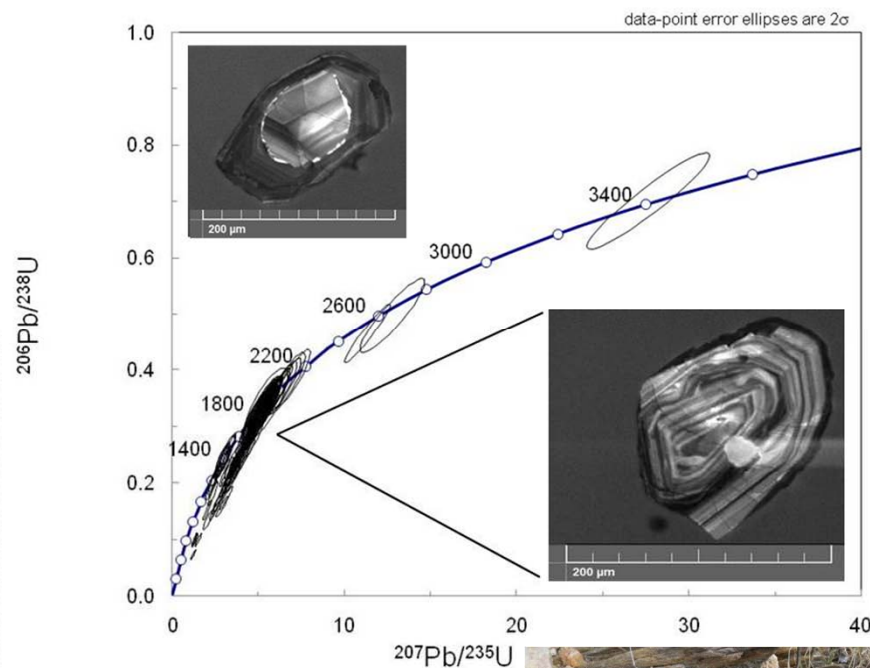


Z CK 13/2: Granulite

2.04 Ga igneous zircons



Younger sedimentary cover sequence

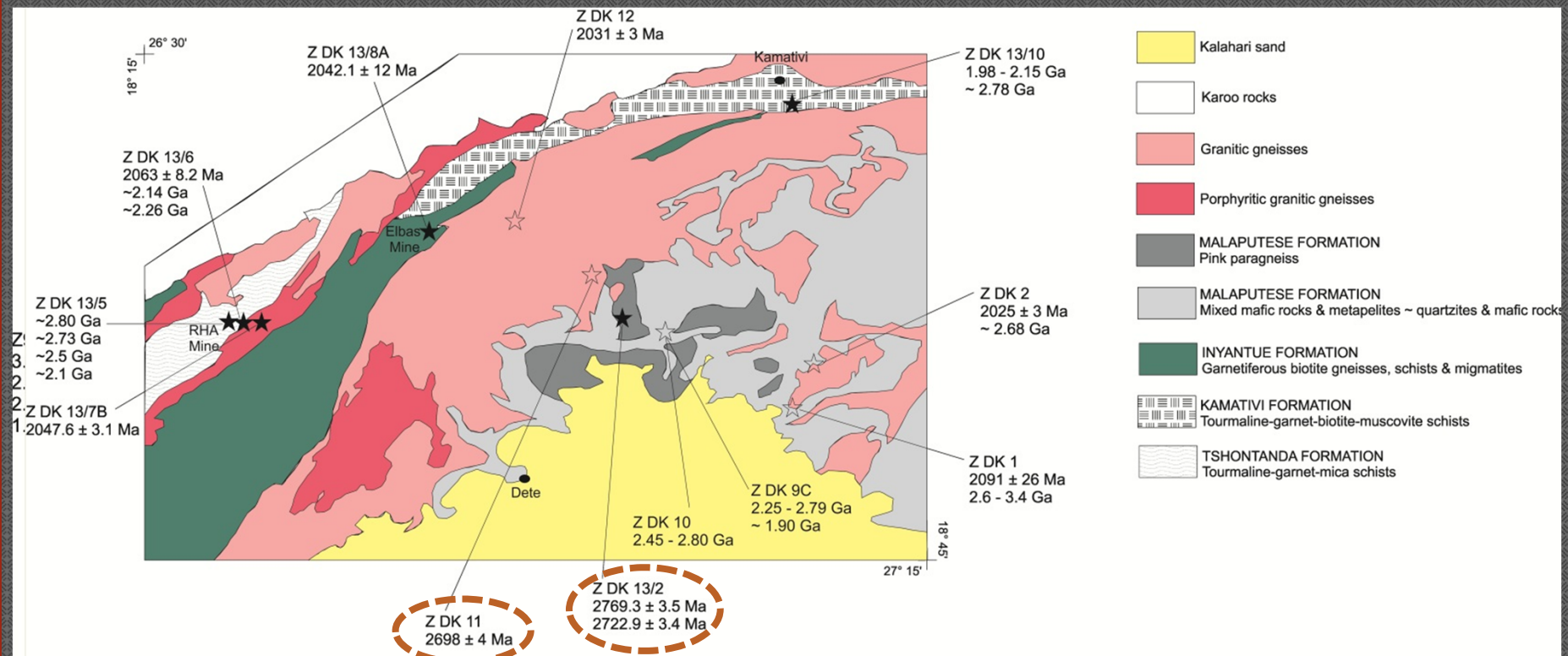


Z 9:
bt-musc schist



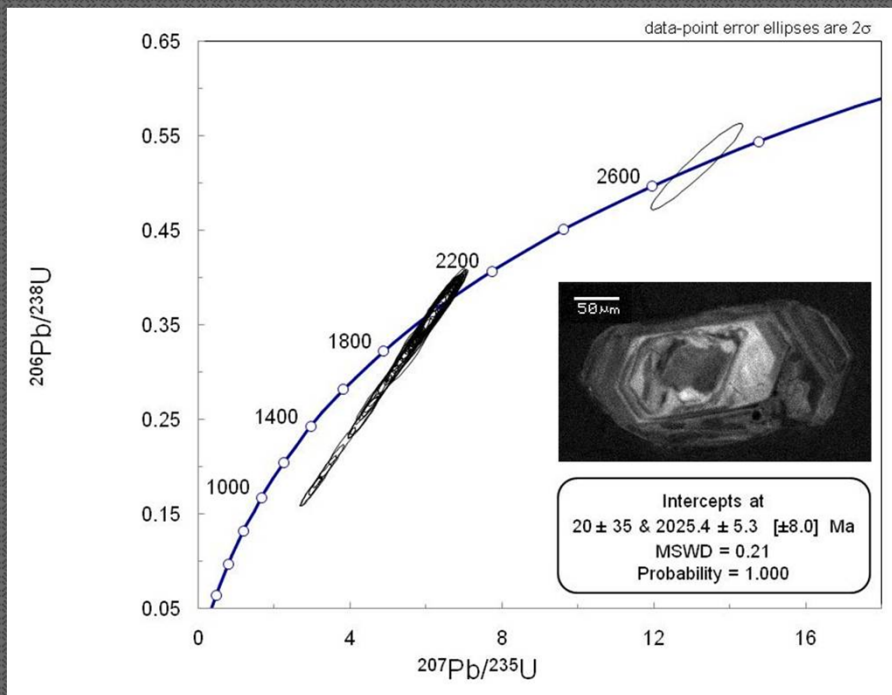
3.39, 2.7-2.6
& 2.01-1.88 Ga detrital zircons

Regional Geology: Dete-Kamativi Inlier

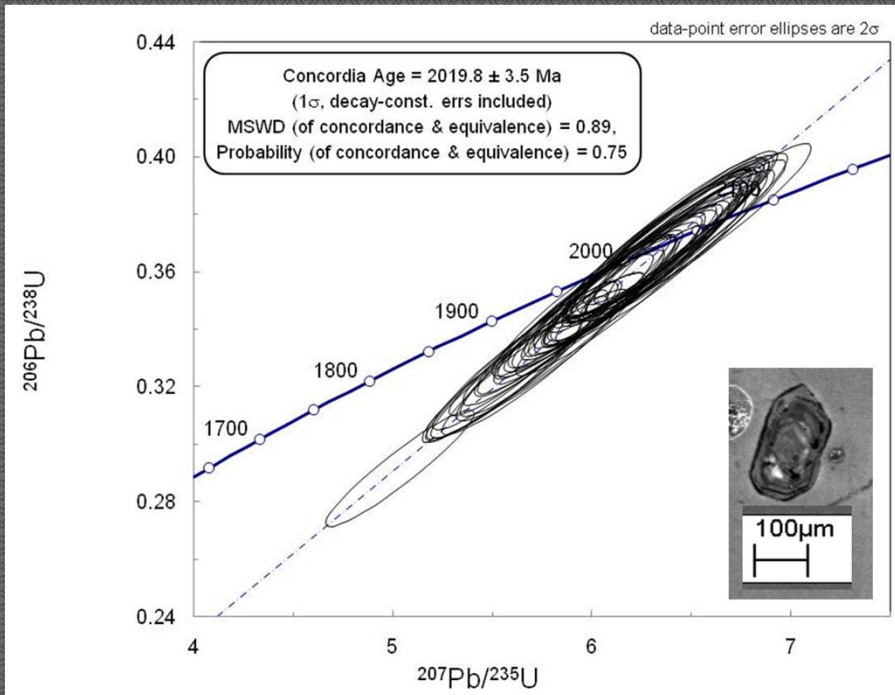


Palaeoproterozoic Arc rocks in the DKI

Z DK 2: Granite



Z DK 12: Orthogneiss

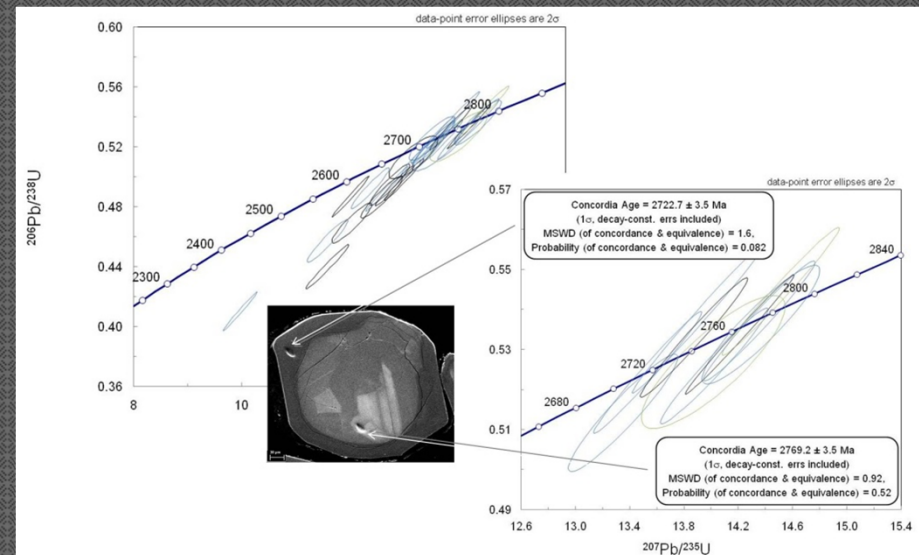
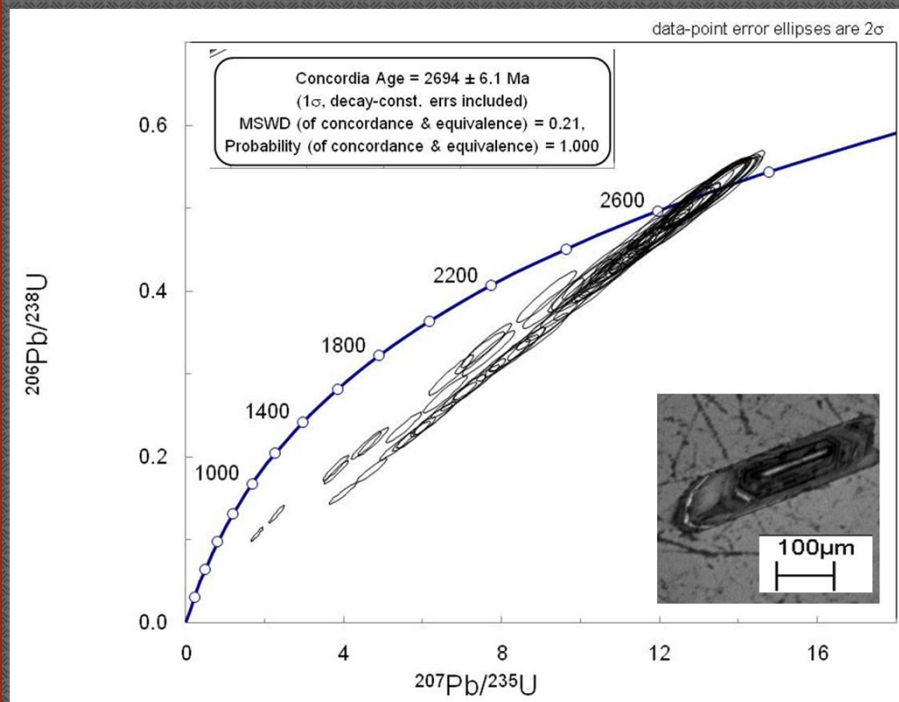


2.02 & 2.01 Ga igneous zircons

Archaean aged basement rocks in the DKI

Z DK 11: Orthogneiss

Z DK 13/2: Orthogneiss

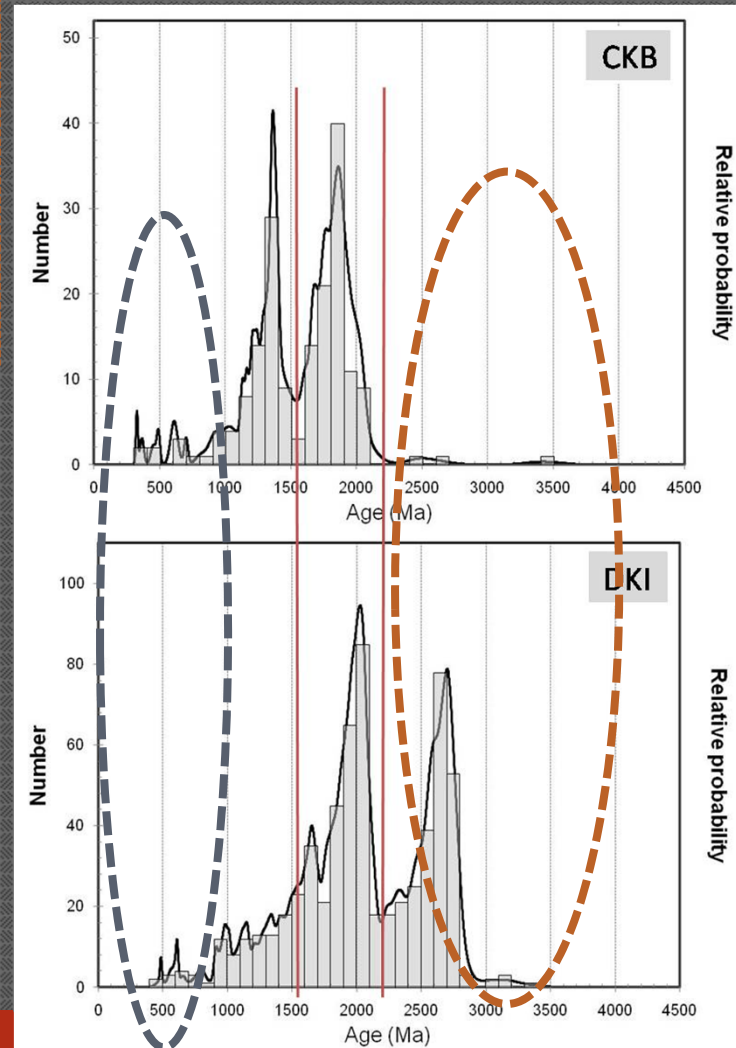


2.69 & 2.72-2.76 Ga igneous zircons

Comparison between CKB & DKI

Overlap between
1.6 & 2.2 Ga
(Peak at ~ 2.02 Ga) –
Magmatic Arc along
W margin of
Zimbabwe Craton

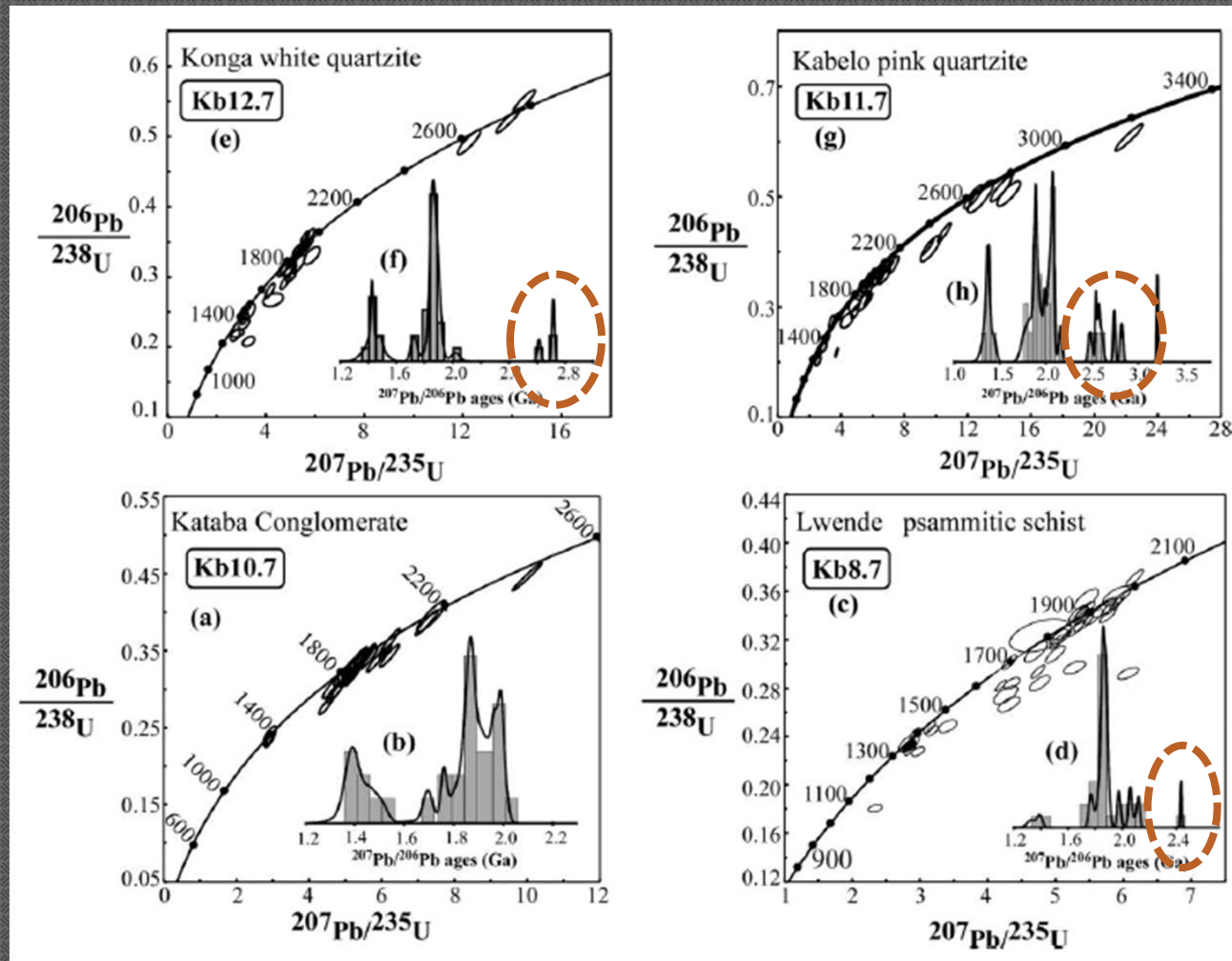
Pan-African overprint



Palaeoproterozoic
and Archaean zircons
– Ages correlate with
the Magondi Belt and
Zimbabwe Craton

Similarly aged pegmatite
deposits at
~1030-990 Ma

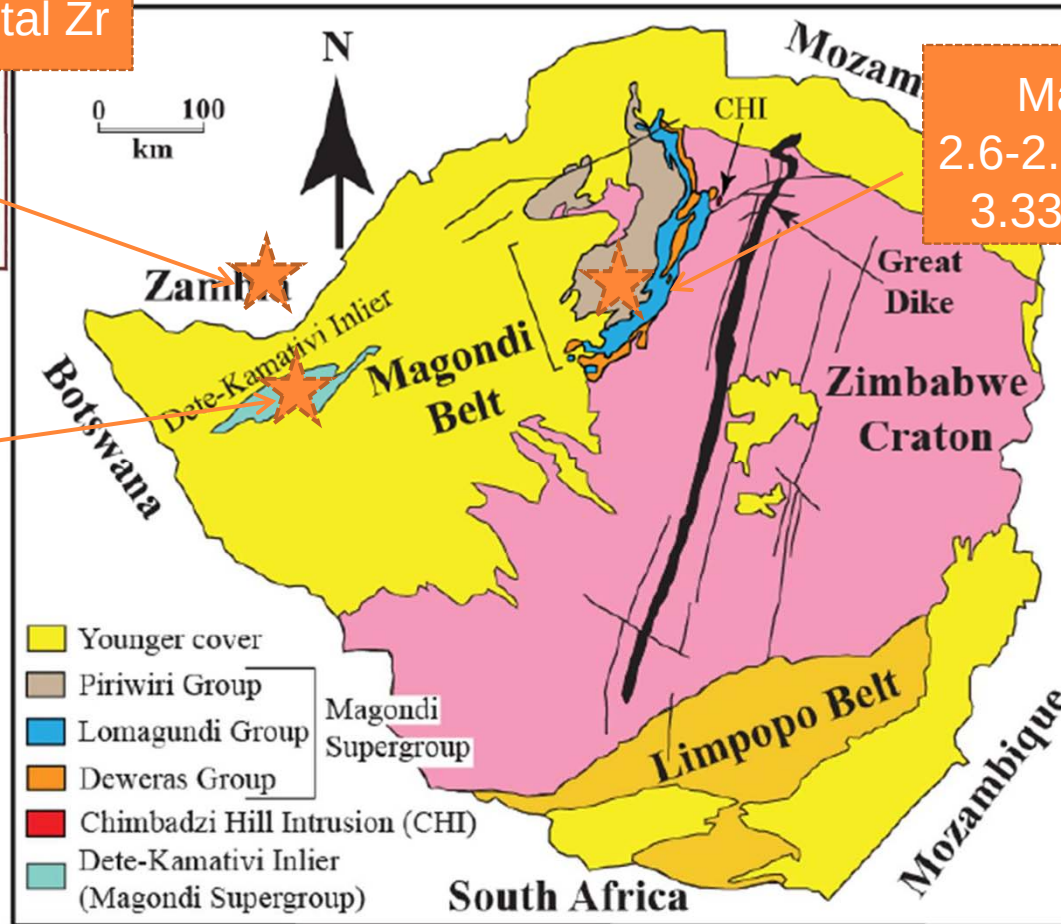
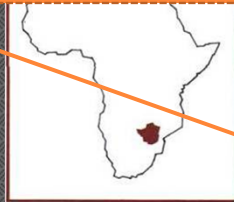
Kibara Belt Geochronology



Where is the western boundary of the Zimbabwe Craton?

CKB:

1.8-2.04 Ga basement
3.39, 2.7-2.6 Ga detrital Zr



Magondi Belt:
2.6-2.7 Ga basement
3.33 Ga detrital Zr

DKI:

2.6-2.7 Ga basement
3.34 Ga inherited Zr

Conclusions I



- Orthogneisses dated at ~ 2.7 Ga are the oldest rocks in the DK1. They therefore represent the westernmost known outcrops of the Archaean Zimbabwe Craton.
- From this we conclude that the Zimbabwe Craton extended much further west than previously thought, and possibly even extended across the Mid-Zambezi rift to southern Zambia, where it may constitute the basement of the CKB.

Conclusions II



- Samples in **both** the DKI and CKB have ages between **1.8 Ga (metamorphism) & 2.04 Ga (magmatism)** – these ages correlate with events within the Magondi Belt.
- Based on this, the DKI and the CKB are believed to be **correlatives of the Magondi Belt**, as they have a shared history since the Palaeoproterozoic, or at the very least ~ 1 Ga (pegmatite data).
- Thus the **current models** put forward by Unrug (1992) and Bulambo *et al.*, (2006) **are not valid**.

Conclusions III – A new model



- The CKB is not an exotic terrane, rather it is a **metacratonic region of the Zimbabwe Craton**.
- We propose that the CKB became detached from the Zimbabwe Craton due to the gradual **decratonisation** by lithospheric removal during subduction **caused by the repeated formation of Andean-Arcs along the western margin of the Zimbabwe Craton** in both the Palaeoproterozoic (2.02-2.03 Ga) and Mesoproterozoic (1.37/ 1.18 Ga).

Thank you for your attention

