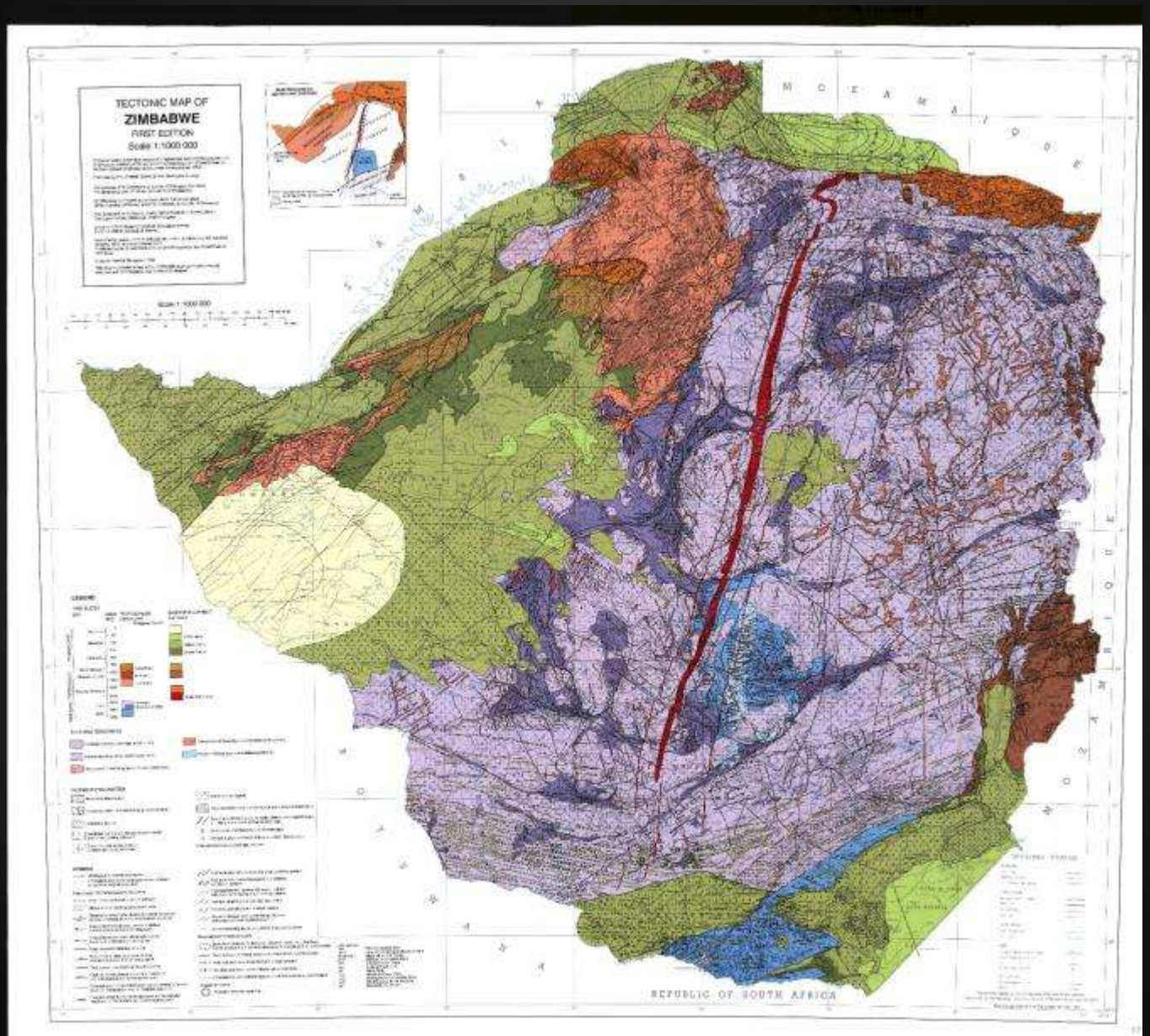
Transtensional tectonics for the 2575Ma Great Dyke and diachronous (2634-2517Ma) Razi-Chilimanzi suite plutonism

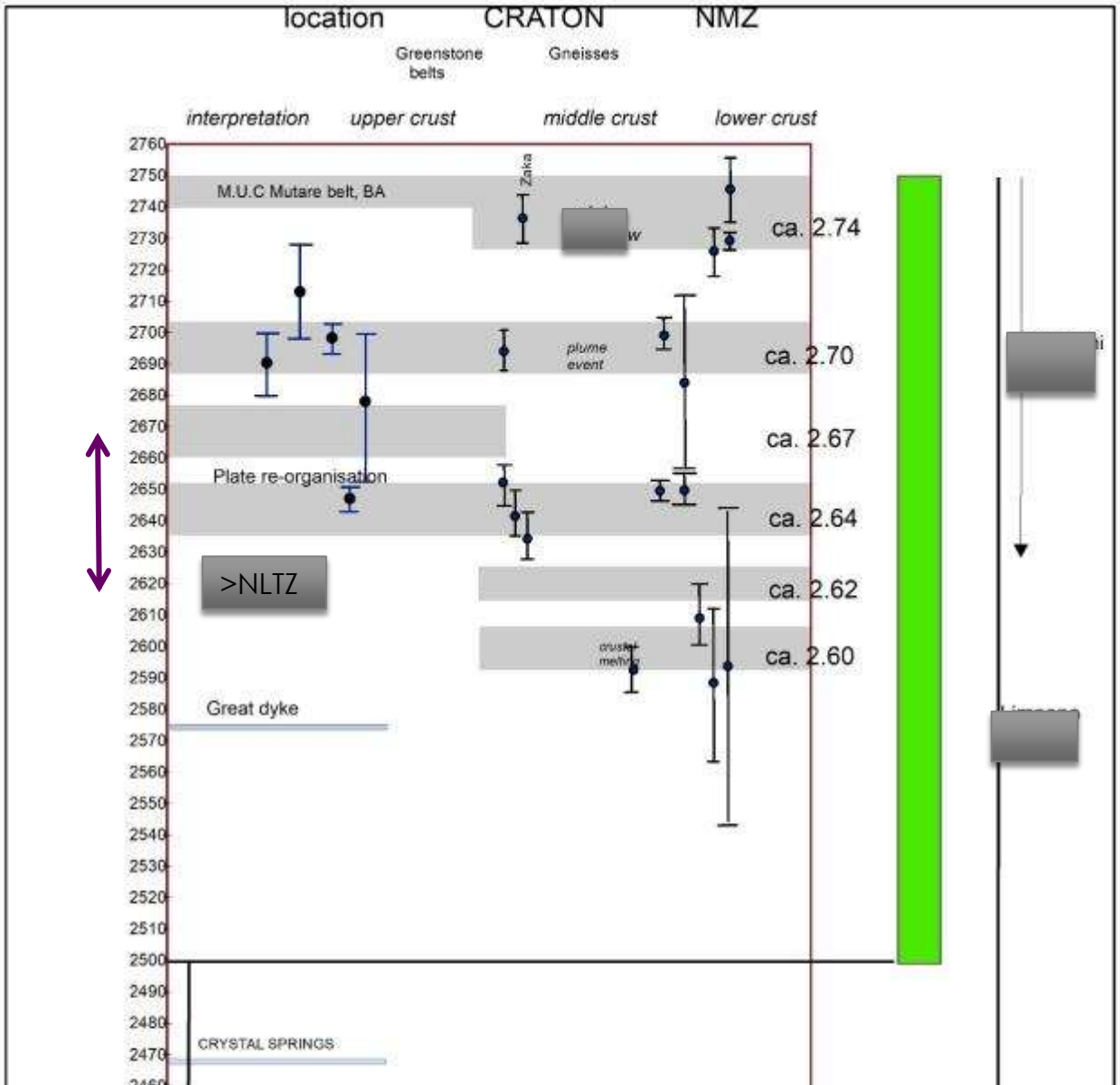
- ✓THE END OF MCGREGORS VERTICAL TECTONICS
- ✓TRANSCRATONIC GREAT DYKE, PAN-CRATONIC CHILIMANZI
- ✓NB: PEAK MET IN NMZ AT 2.58GA

✓GLOBAL TECTONICS: **OBLIQUE CONVERGENCE/DIVERGENCE** & CONVERGENT SETTINGS, LCF & NE-YOUNGING PLUTONS

Tectonic map of Zimbabwe



Neoarchean events on the Zimbabwe craton & NMZ



Rifting

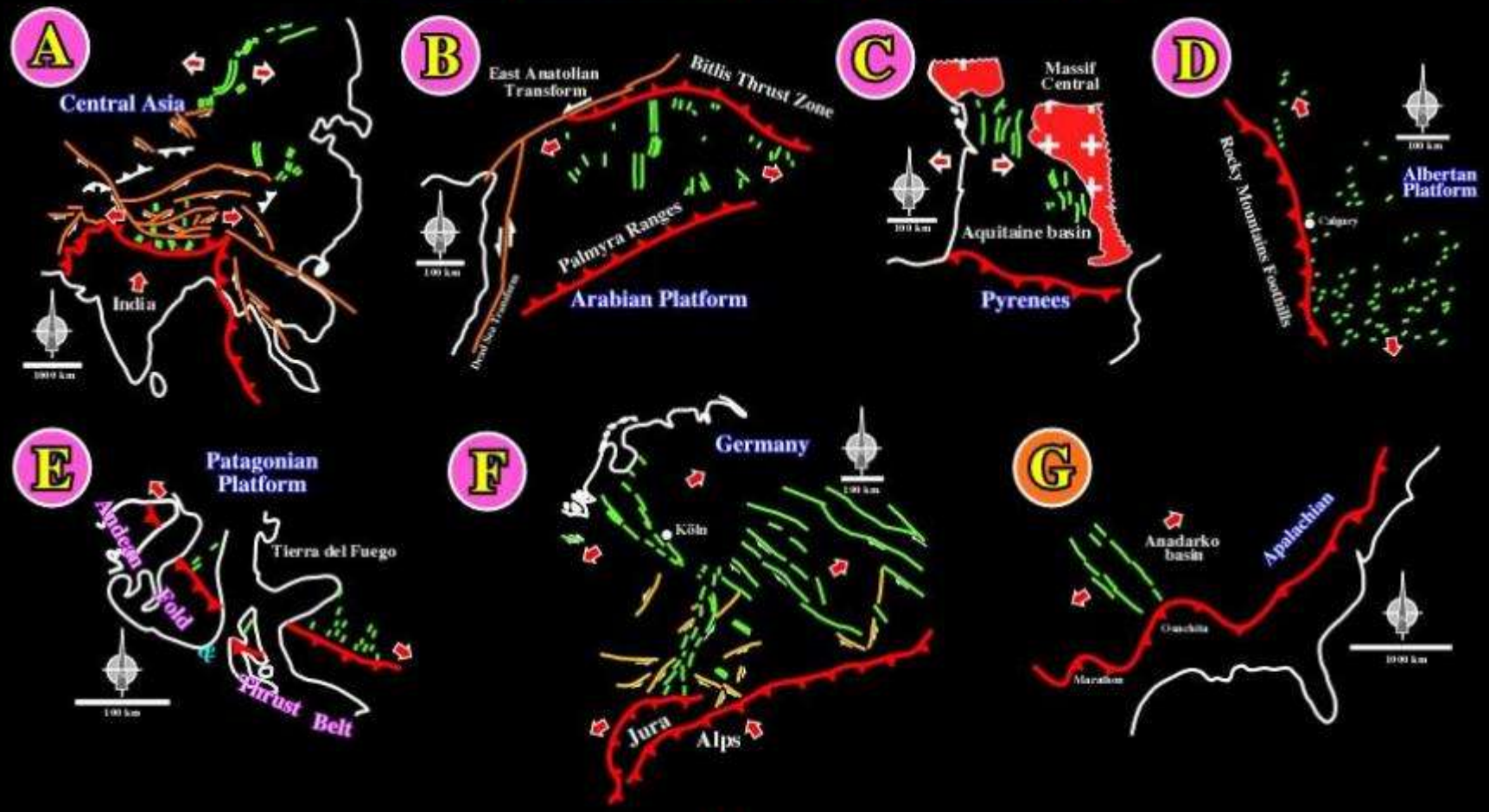
Active rifting; controlled by mantle plume

Passive rifting; controlled by plate tectonic stress

What rift-type is the Great 'Dyke' lopolith & fanned-satellites?

Does rifting (of sorts) answer 'space problem' for granite emplacement? Or exhumed metamorphic core complex for the NMZ?

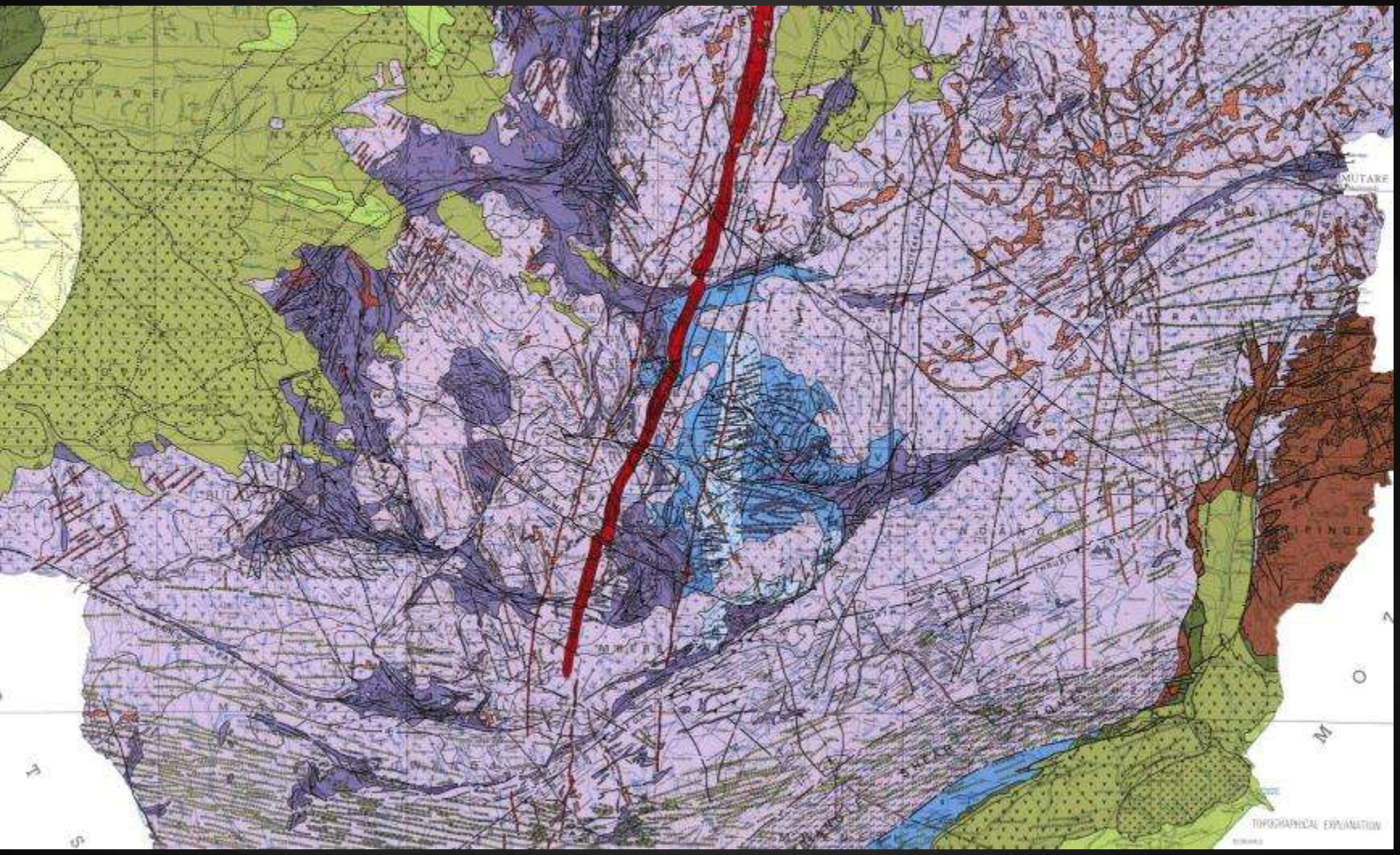
Analogs for Laterally Extended Forelands



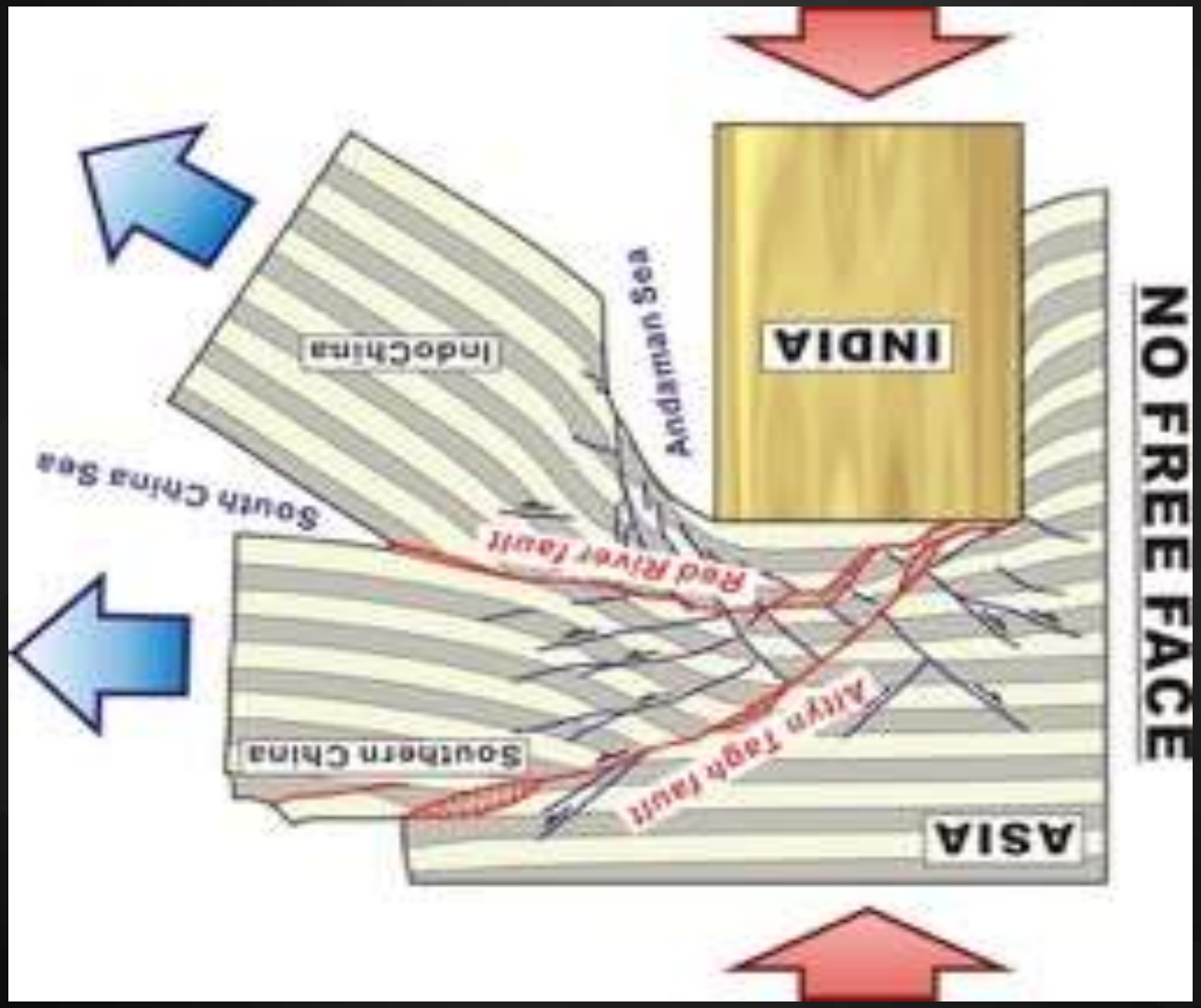
Strike slip fault | Normal fault (grabens, rifts, fractures) | Thrust fault | Direction of extension | Shoreline

CCramez, adapted from Hancock, P.L. & T.G. Bevan, 1987

Arcuate southern face & Tokwe indenter (blue)

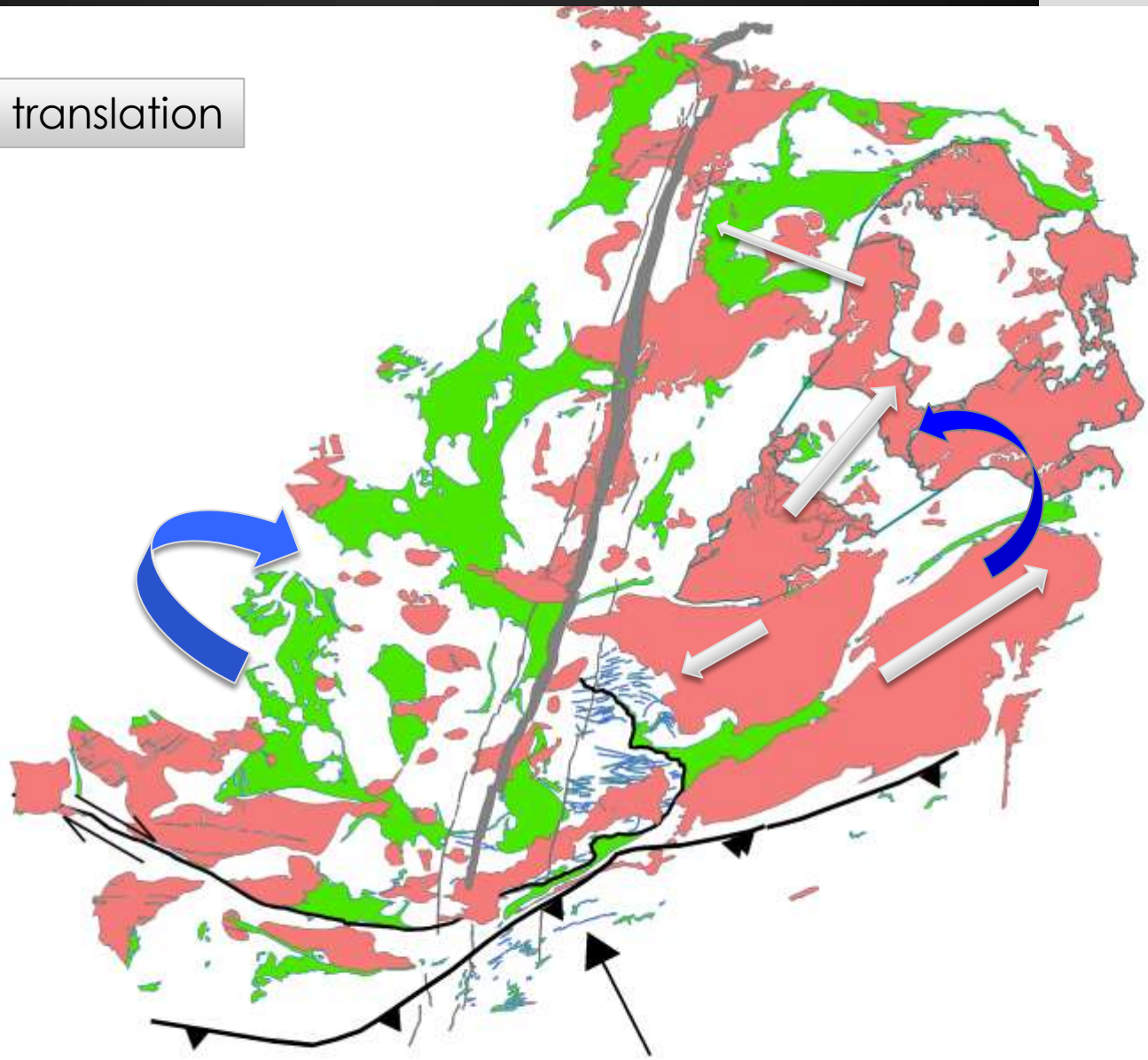


Indentation analogue modelling: consider Tokwe block

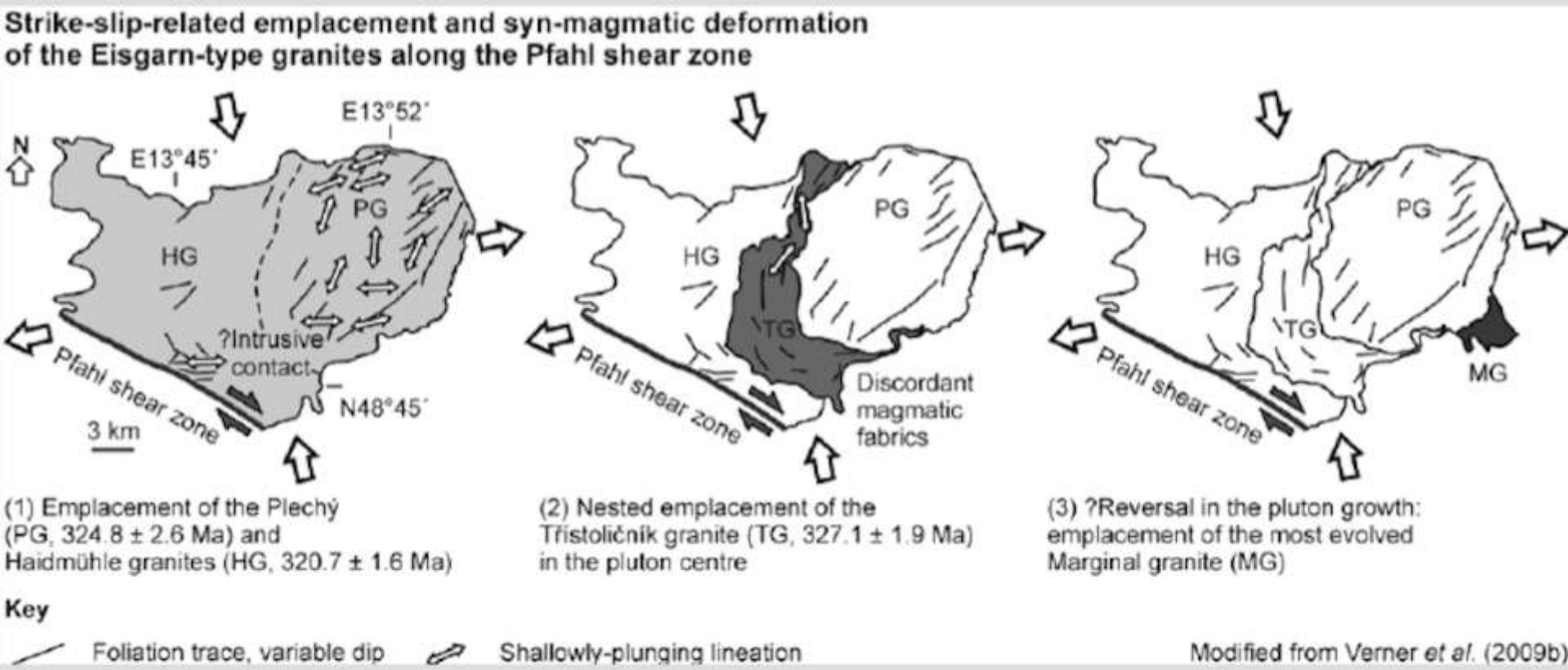


Tectonic framework in late Archean of Zimbabwe craton

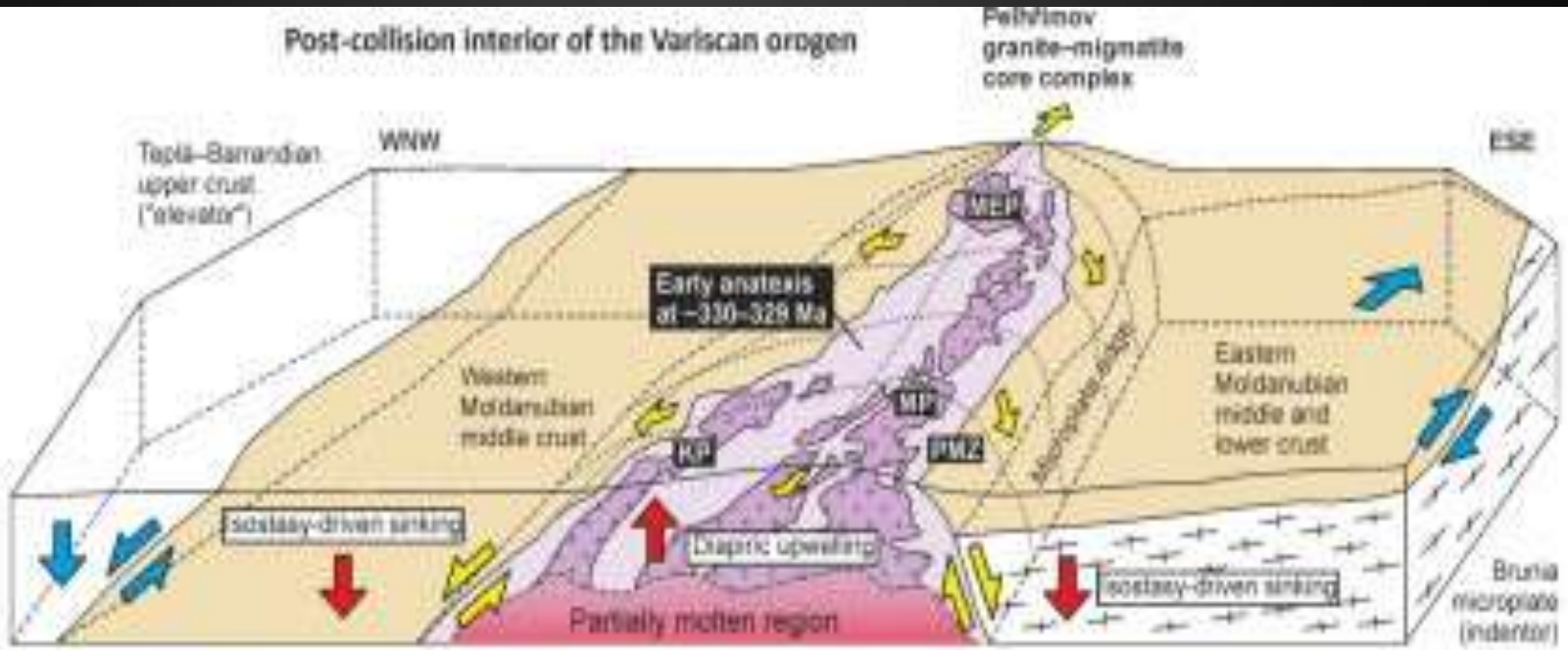
Distortion, rotation, translation



Compare & contrast with Zimbabwe craton post-2.65Ga



Analogue of Murehwa batholith, western margin (2016 Summer symposium field trip)



Megacrystic parallel to long axis of pluton

Close-up on aligned K-feldspars; magmatic fabric

CS and C' shear bands

S-C quartz ultramylonites in the footwall of Murehwa batholith

Shear band-like structures in footwall host-rock gneiss

Dextral shear band-like structures in footwall host-gneisses of Murehwa batholith

Extensional kink bands

Layer-parallel extension: boudins and suprasolidus leucosome in amphib. migmatite H/W

Asymmetric boudins in Murehwa granite-migmatite complexes (H/W down). NB Boudinage scale independent to lithospheric scale

Melt migration front

C’ shear bands: Mvuma