

Horizontal accretion of a greenstone sequence in the central Zimbabwe Craton.

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Horizontal accretion was a fundamental process in the growth of the Zimbabwe Craton. Accretionary geometries are best preserved in areas where coarse-clastic sedimentary units with good younging indicators and a clear layering are present, e.g. in the central Midlands greenstone belt. Here, syntectonic, coarsening-upward, sequences in fan-delta deposits developed in front of west-moving thrust sheets. Felsic volcanic activity, slumping and the formation of jaspilitic chert accompanied this process.

Following sedimentation, the clastic sequences were isoclinally folded and internally stacked across extremely narrow (<0.1 m) mylonite zones that accommodated large displacements (>1 km). Such zones are commonly characterized by silicification, sulphidisation or carbonitisation and fluid pressures at the time of shearing were high.

Horizontal sliding and stacking was followed by upright folding of stratigraphically and geochronologically discrete blocks wedged between an anastomosing network of steeply west dipping ductile thrust zones. These thrusts are up to 1 km wide and characterized by several stages of transposition.

The thrusting and upright folding stage marks the actual accretionary process, resulting in the juxtaposition of mid- (3500 Ma) to late-Archean (2850 Ma; 2680 Ma) crustal blocks and syn-tectonic sediments. Colinear deformation geometries, accompanied by extensive alteration and the emplacement of internal granites are characteristic for this event. Accretion of the greenstone sequence may have occurred in front of a micro-continental block represented by the Rhodesdale Batholith.

Many of the accretionary shears are reactivated as strike-slip zones, probably simultaneous with the emplacement of gneiss domes and the introduction of gold mineralisation.