



10th Inkaba yeAfrica/!Khure Africa (AEON)
Conference/Workshop
Lord Milner Hotel, Matjiesfontein - Karoo
29 September – 3 October 2014



Gypsum Deposits Associated with the Whitehill Formation (Ecca Group) in the Steytlerville-Jansenville Area, Southern Karoo, South Africa

Roberto Daniel Almanza

Supervisor: Professor PWK Booth, NMMU

Co-Supervisor: Professor MJ de Wit, NMMU & AEON



AEON

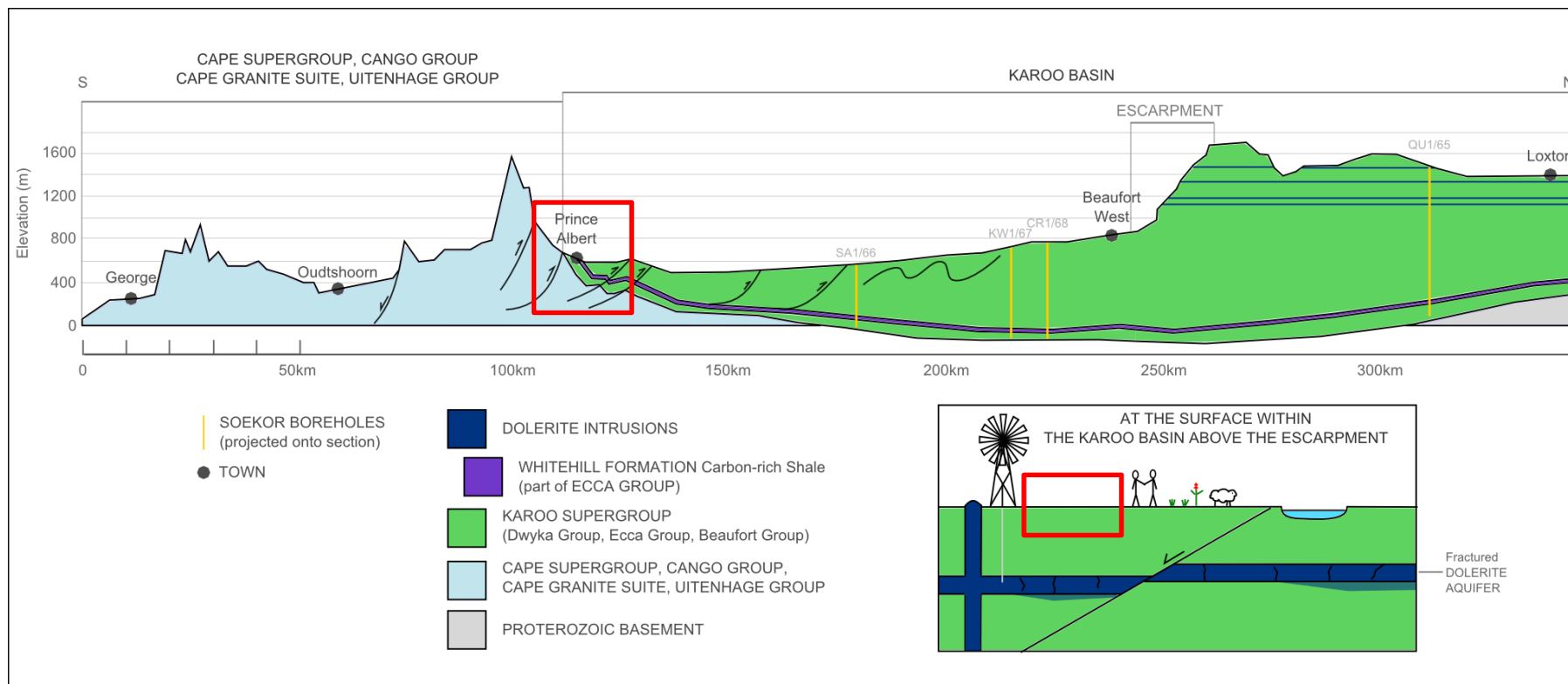
AFRICA EARTH OBSERVATORY NETWORK
EARTH STEWARDSHIP THROUGH SCIENCE



**Nelson Mandela
Metropolitan
University**

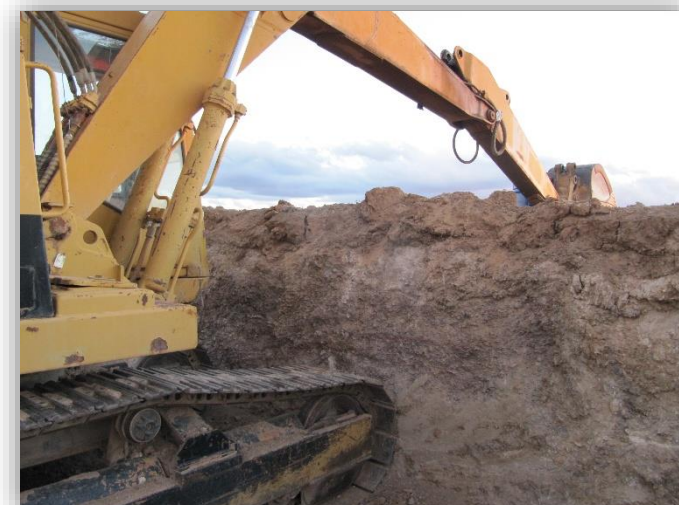
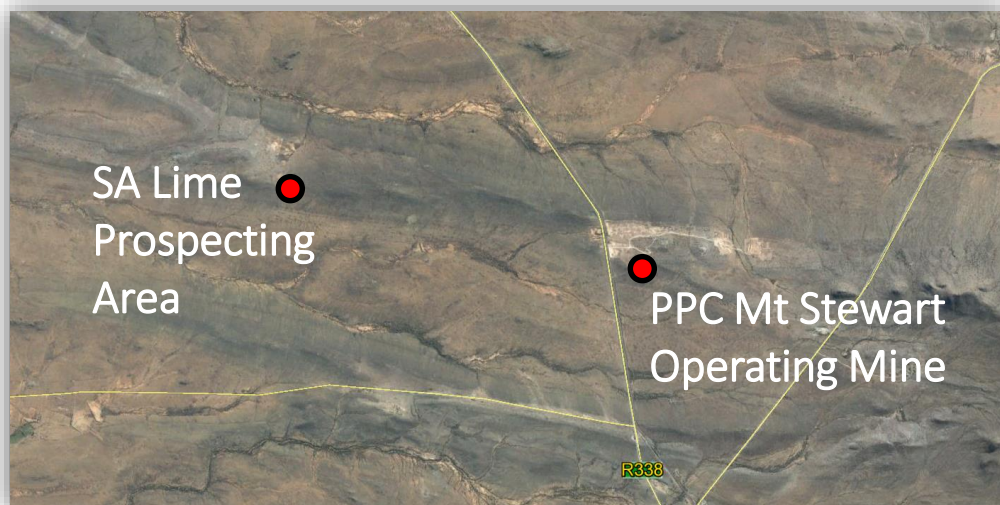


INTRODUCTION





INTRODUCTION





GYPSUM USES



Wallboard and Plaster Material



Toothpaste



Soil Additives



Gypsum
 $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



Orthopedic Casts



Cement



Dentistry



GYPSUM USES



Wallboard and Plaster Material



Toothpaste



Soil Additives



Gypsum
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Orthopedic Casts

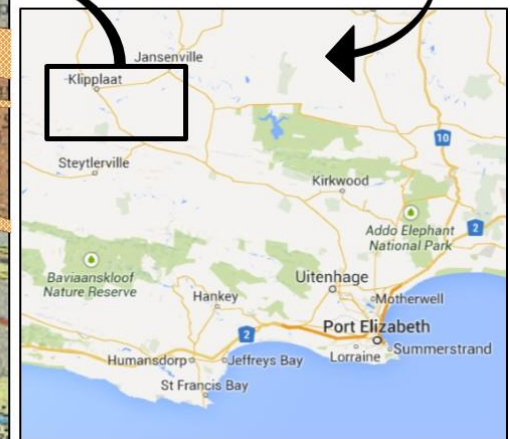
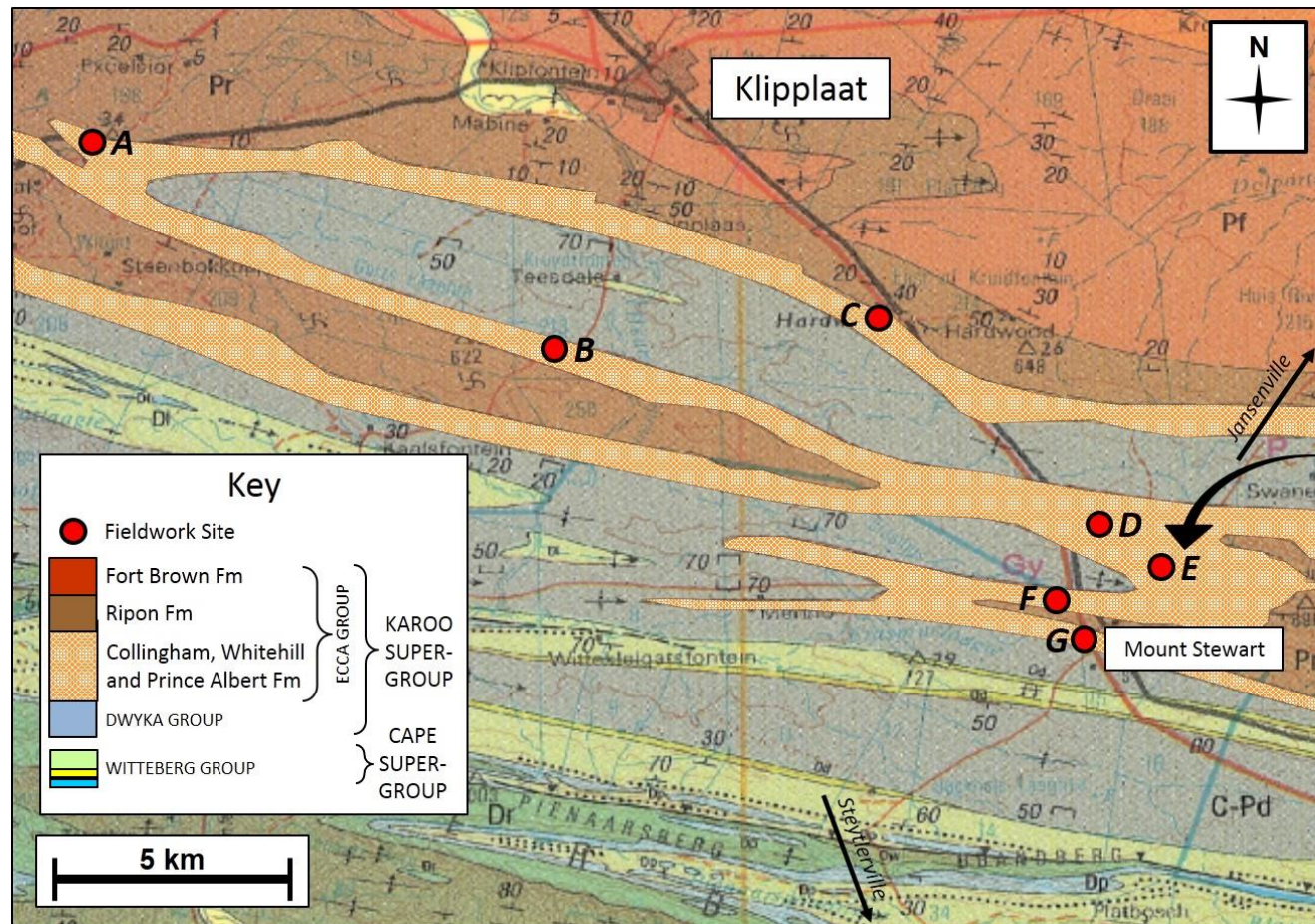


Cement



Dentistry

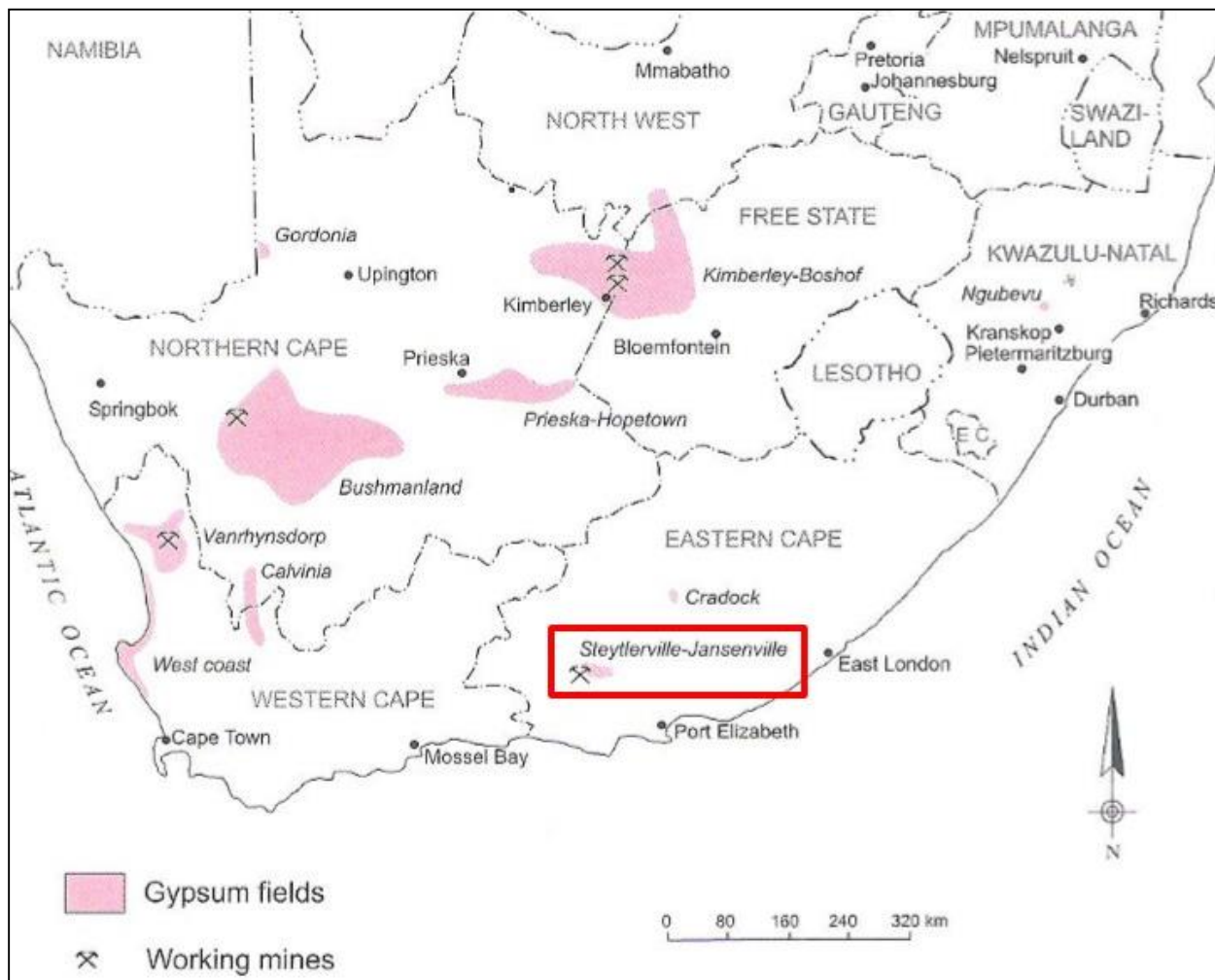




After Rogers *et al.*, 1991

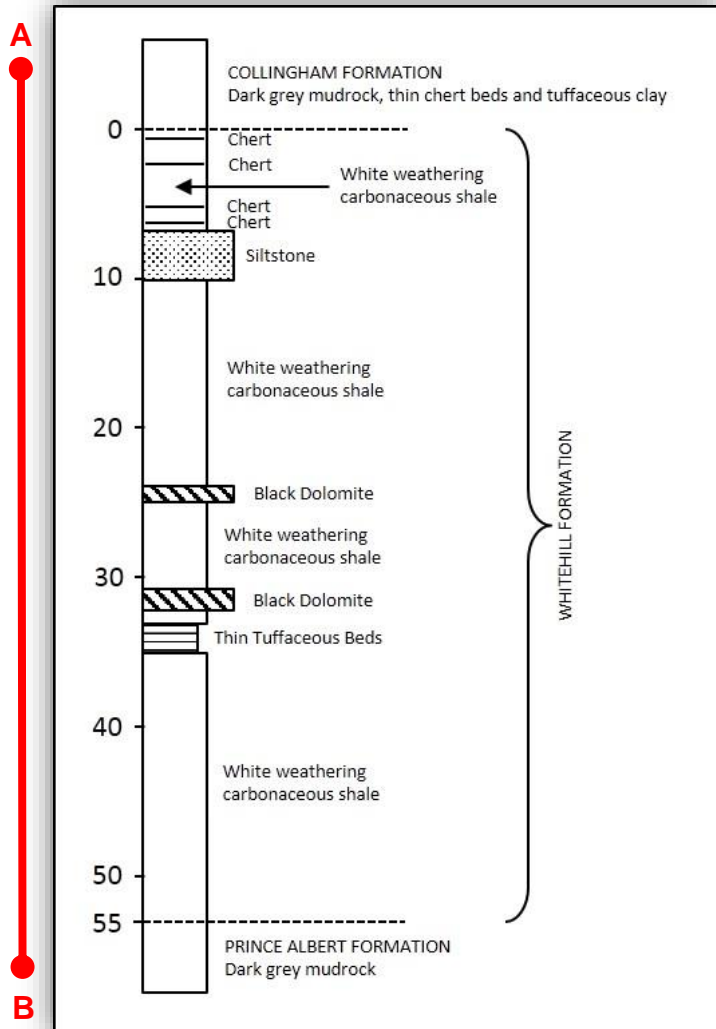


STUDY AREA





WHITEHILL FORMATION



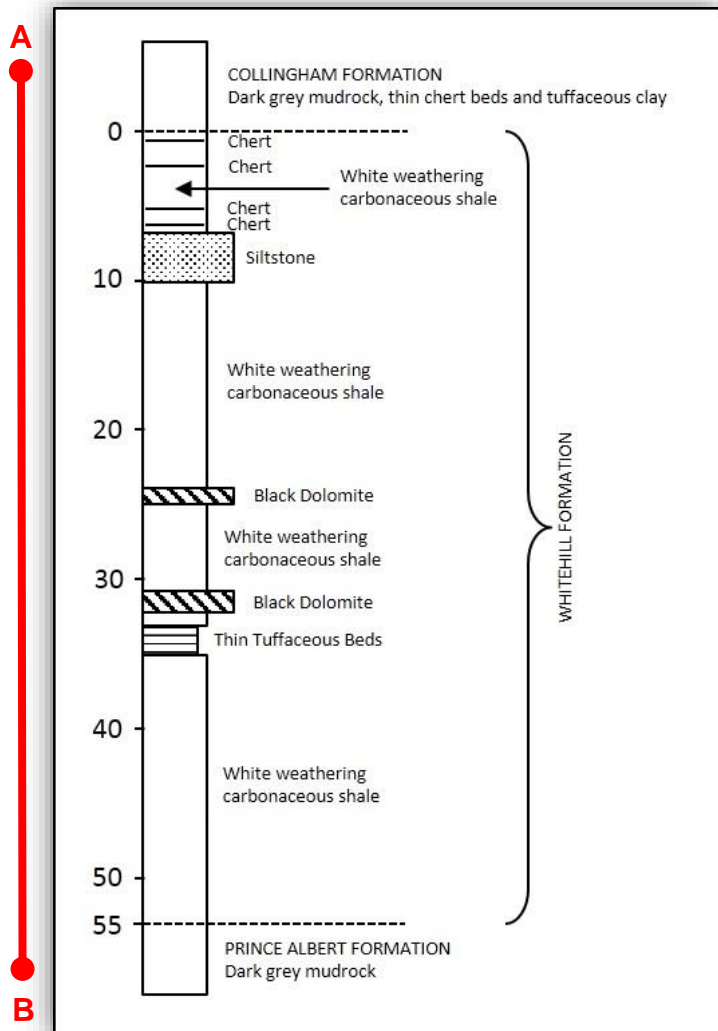
- *Higher carbon content*
- *Shell deposits – CaCO_3 – calcium rich*
- *Higher pyrite content – FeS_2*
- *Darker colour at depth*
- *Weathers white at the surface*



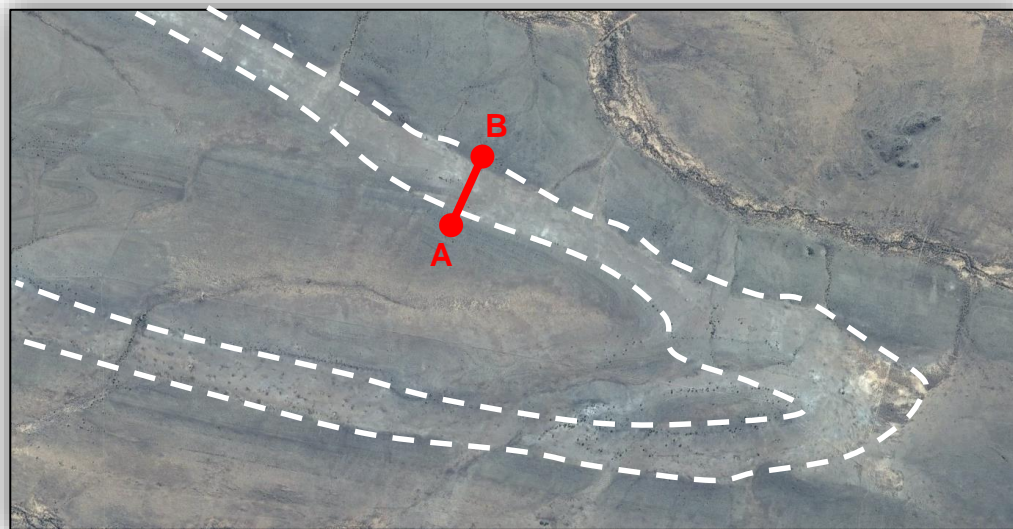
After Cole and Basson, 1991



WHITEHILL FORMATION



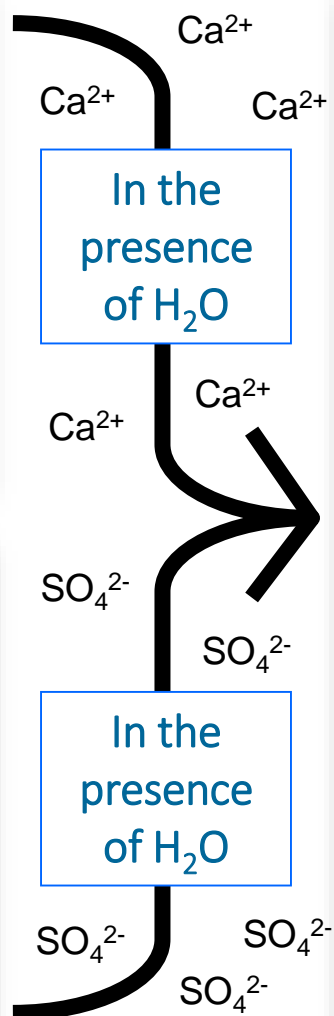
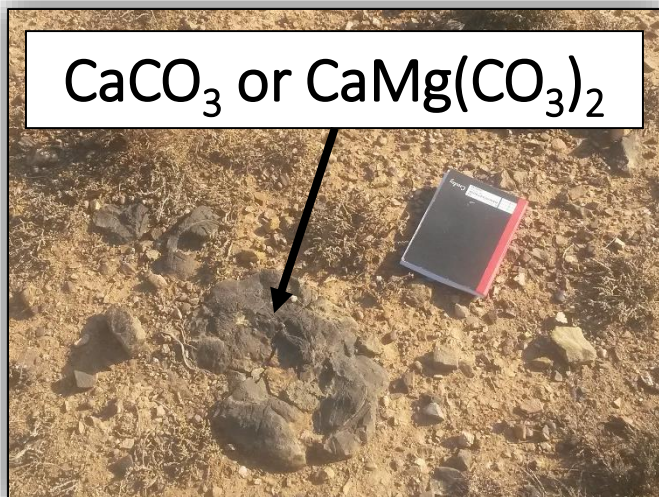
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After Cole and Basson, 1991

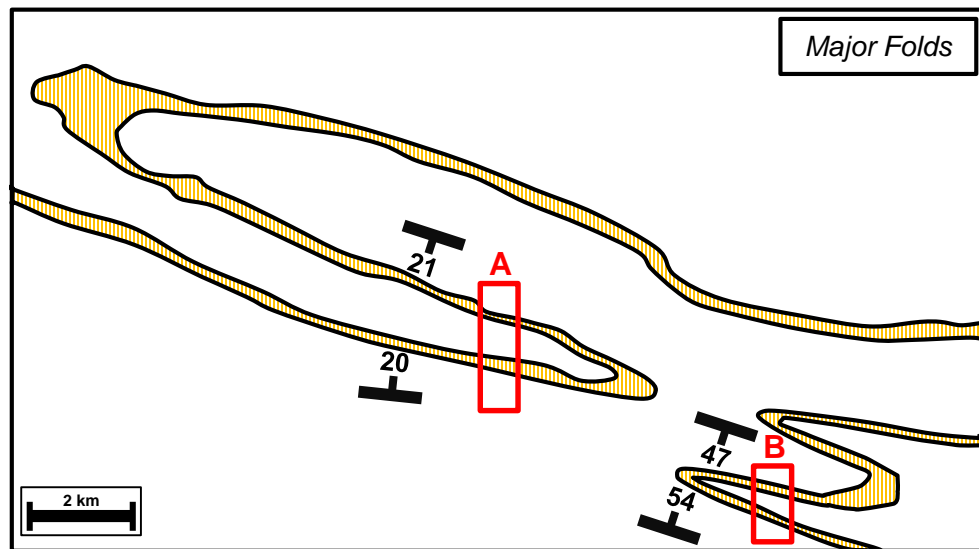
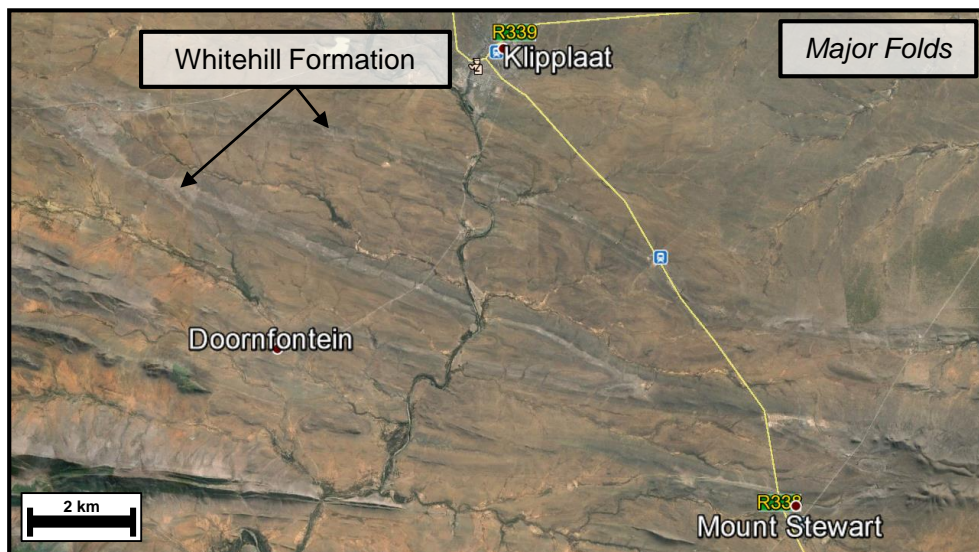


GYPSUM



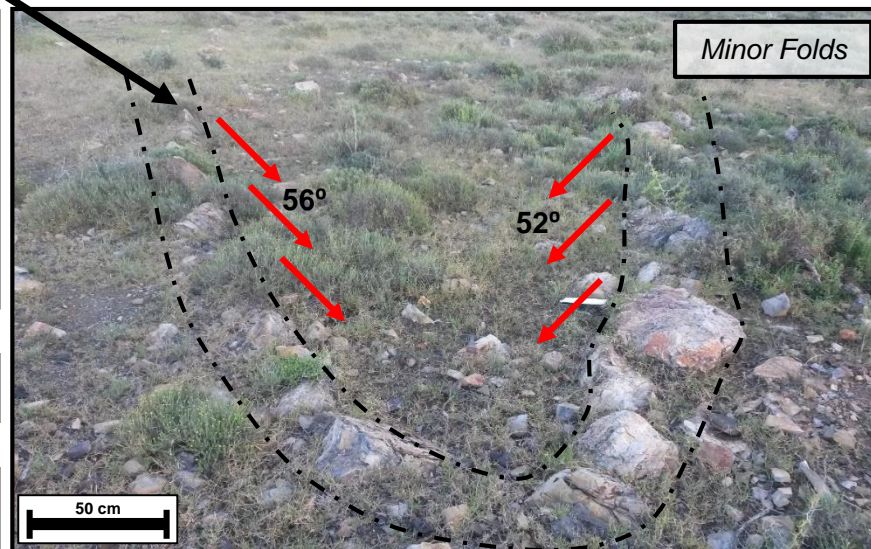
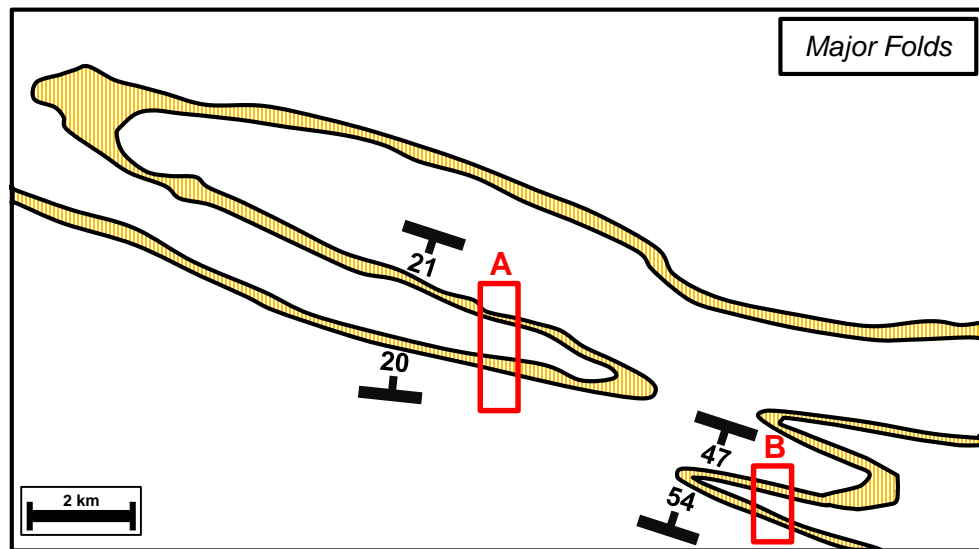
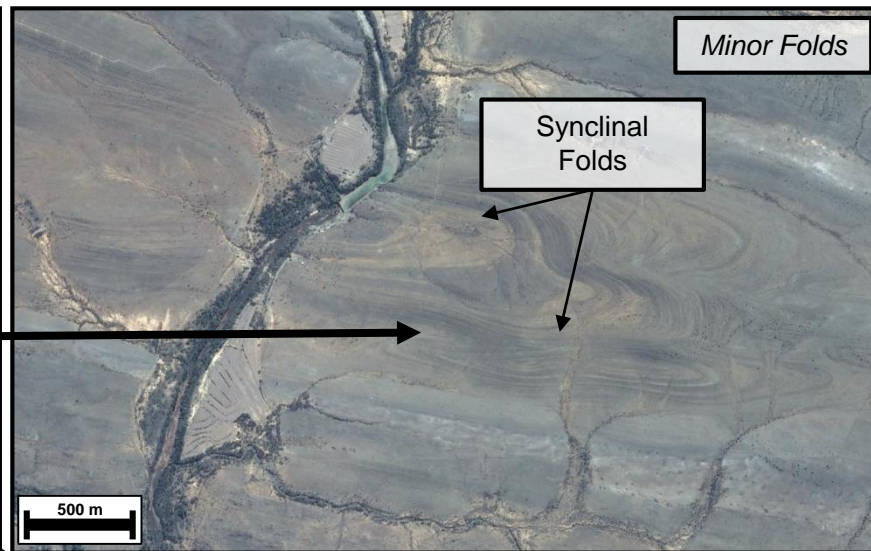
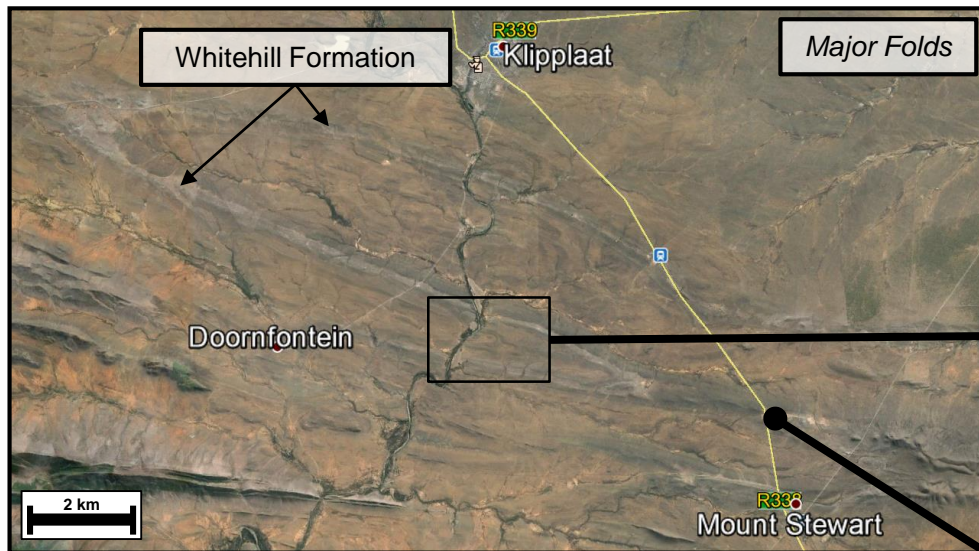


STRUCTURAL CONTROLS



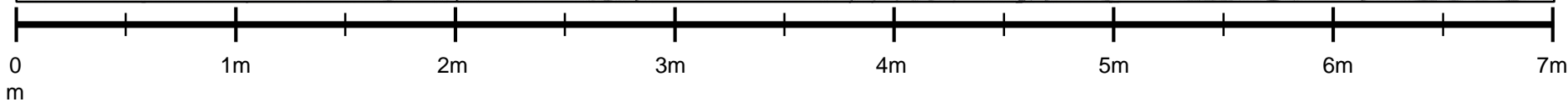
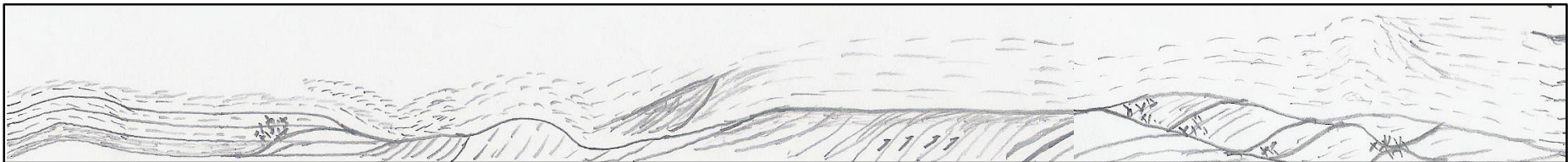


STRUCTURAL CONTROLS



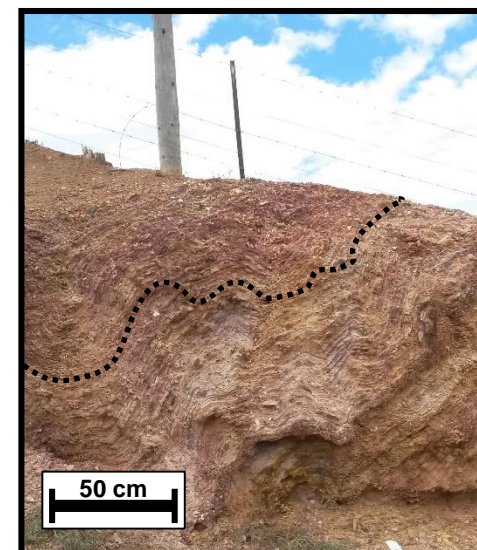
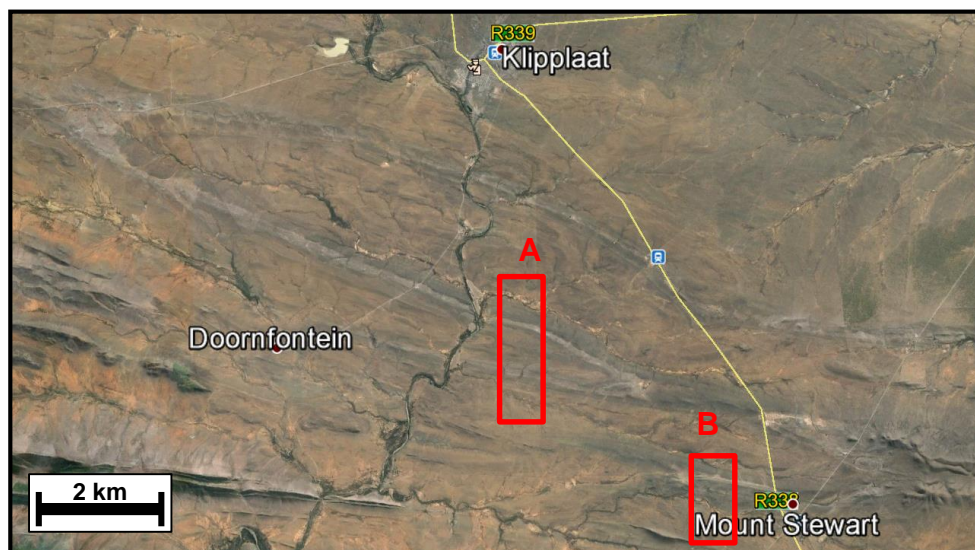
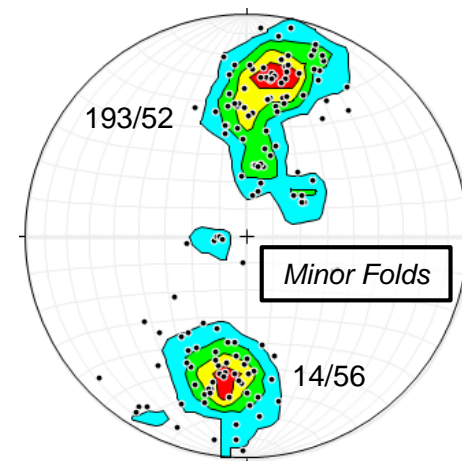
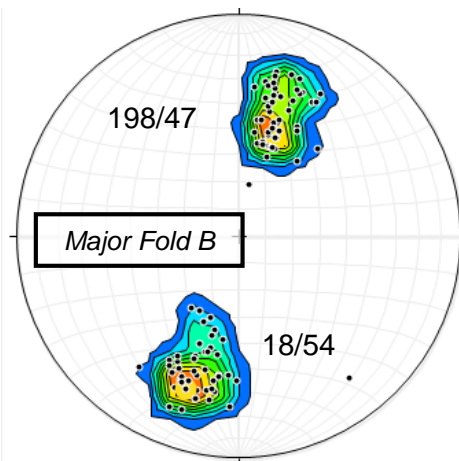
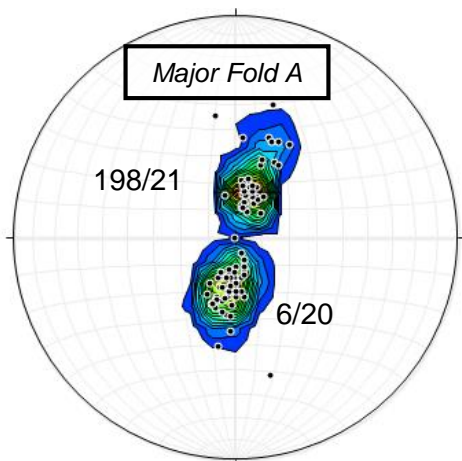


STRUCTURAL CONTROLS



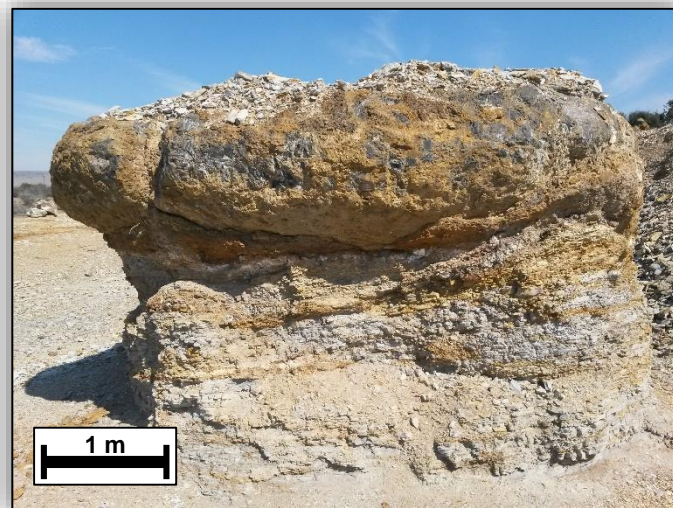
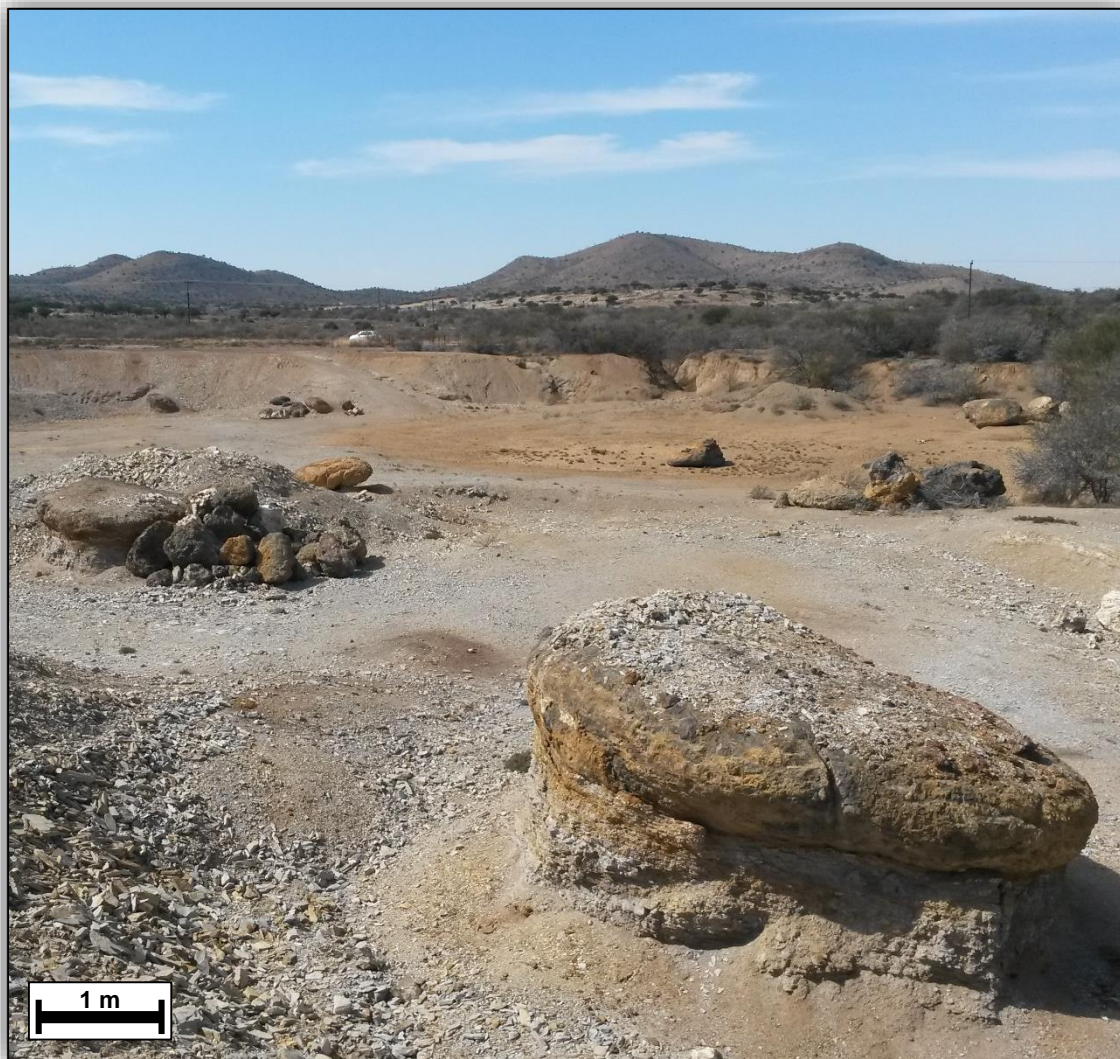


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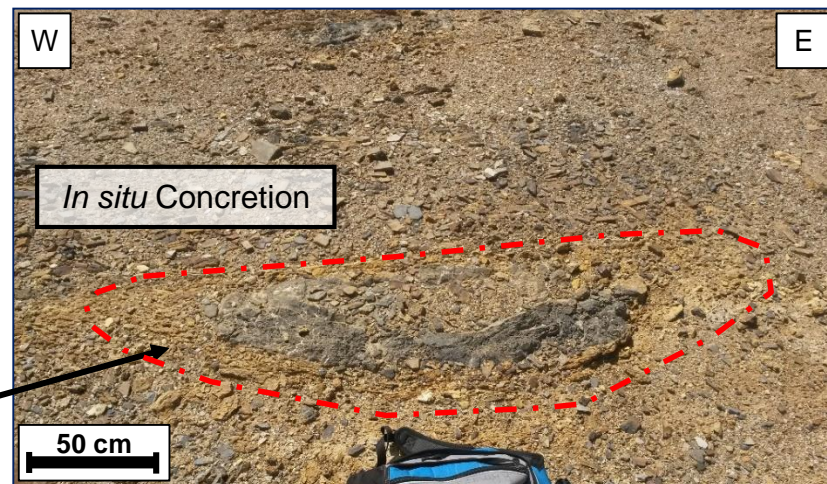
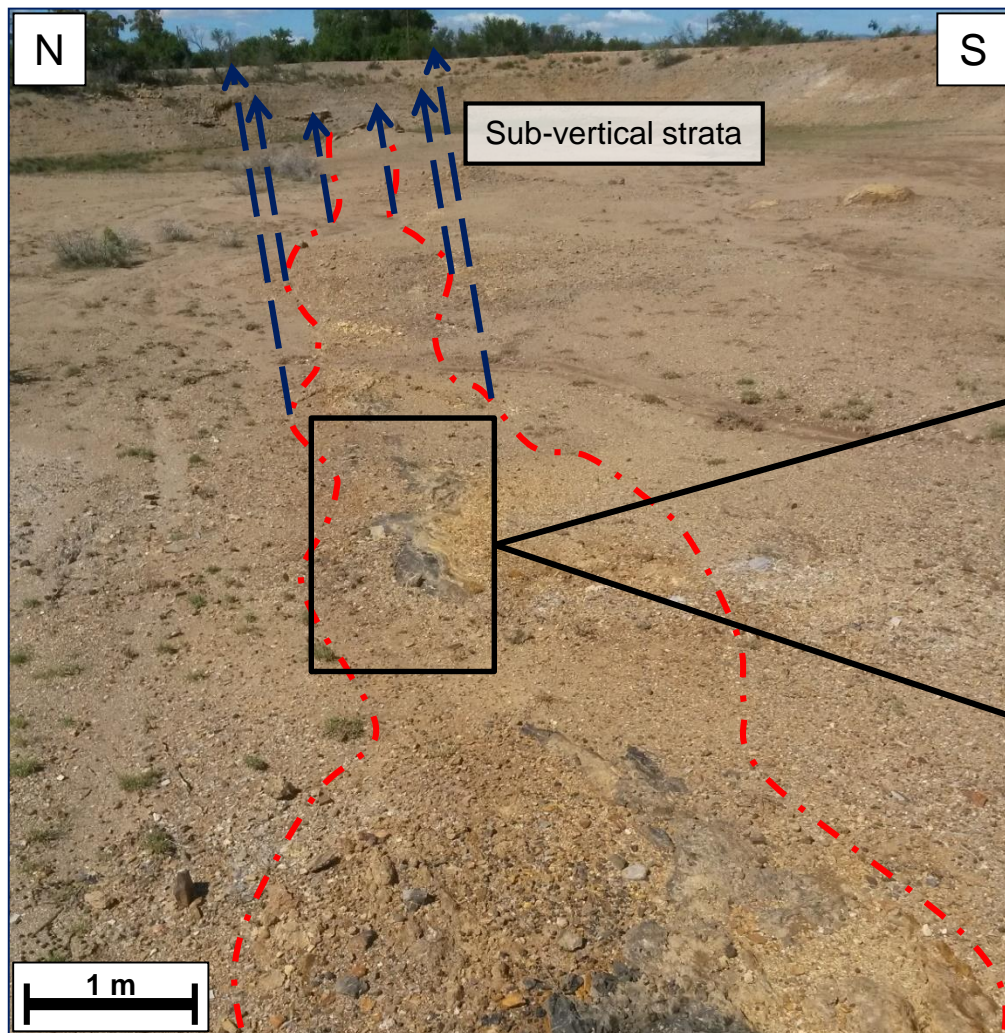


(CARBONATE) CONCRETIONS





CARBONATE CONCRETIONS





FURTHER STUDY



- *Prove/Disprove relationship between small and large folds – Cape Fold Belt-related deformation OR more recent ‘swelling’ of Whitehill Formation shale*
- *Relate small-scale faulting to the larger folds*
- *Compare gypsum deposits – PPC Mine & SA Lime future mine*
- *Relate pyrite content to gypsum deposits – petrographic & core analysis*
- *Consider concretions and relationship to gypsum AND shale gas*





QUESTIONS / COMMENTS

