OVERBERG GEOSCIENTISTS GROUP

OGG Breakfast Meeting & Presentation

Large scale structures & geodynamics of Western Gondwana interpreted from satellite data

by

Dr Sue Winkler (Private Consultant)

Thursday 7th May 2026 – Onrus Manor Activities Hall & Online

(Coffee 09h30, breakfast 10h00, presentation 11h00)

Zoom Link: https://us02web.zoom.us/j/82172892738?pwd=M1NWUkJFYzhqdTJ2Qk0yZ3BrV2srZz09

Dr Katherine Susan "Sue" Winkler is a prominent South African geologist who completed her PhD studies at the Africa Earth Observatory Network (AEON), a trans-disciplinary research institute based at the Nelson Mandela University (NMU), in 2025.

Her PhD doctoral research and PhD titled '*Geodynamics of Southwestern Gondwana with focus on Southern and Central Africa using Landsat8 Operational Land Imager Imagery'* explored the Geodynamics of southwestern Gondwana. It focused on the integration of geological and geophysical data with short-wave infrared satellite imagery to interpret the geodynamics and geology of the region.

Sue's presentation provides an alternative application for shortwave infrared satellite imagery to define and interpret large scale geological structures. This perspective of the geology on the surface of Western Gondwana, and a new context in which geological structures occur, as we know them. The impact of the Pan-African-Brasiliano Orogeny on the syn-tectonic and older geology of Africa and eastern South America (south-western Gondwana) is explained and expanded on with further reference to the large-scale settings in which some well-known gold, Cu and base metal occurrences occur. The link below highlights this recent work: https://authors.elsevier.com/sd/article/S0191-8141(26)00064-7

Her background and previous areas of geological study include alteration and stratigraphy of the globally significant Witwatersrand gold deposit, accumulated knowledge from her past in-depth practical geological fieldwork, and spectral interpretation and the integration thereof with geophysical, geological and geochemical datasets for mineral deposit target generation undertaken over many years with the previously active Anglo American Base-Metals and AngloGold Ashanti groups.

Sue gathered further perspective on data interrogation from her studies at the University of Cape Town Business School (now the UCT Graduate School of Business). This contributed to her pursuing different technologies for exploration and led to further understanding and interpretation of the geodynamics and crustal-scale geology of Western Gondwana.

Figure 3.7 Original physically matched satellite image collage covering Africa and eastern South America brought into 500Ma Gondwana configuration.

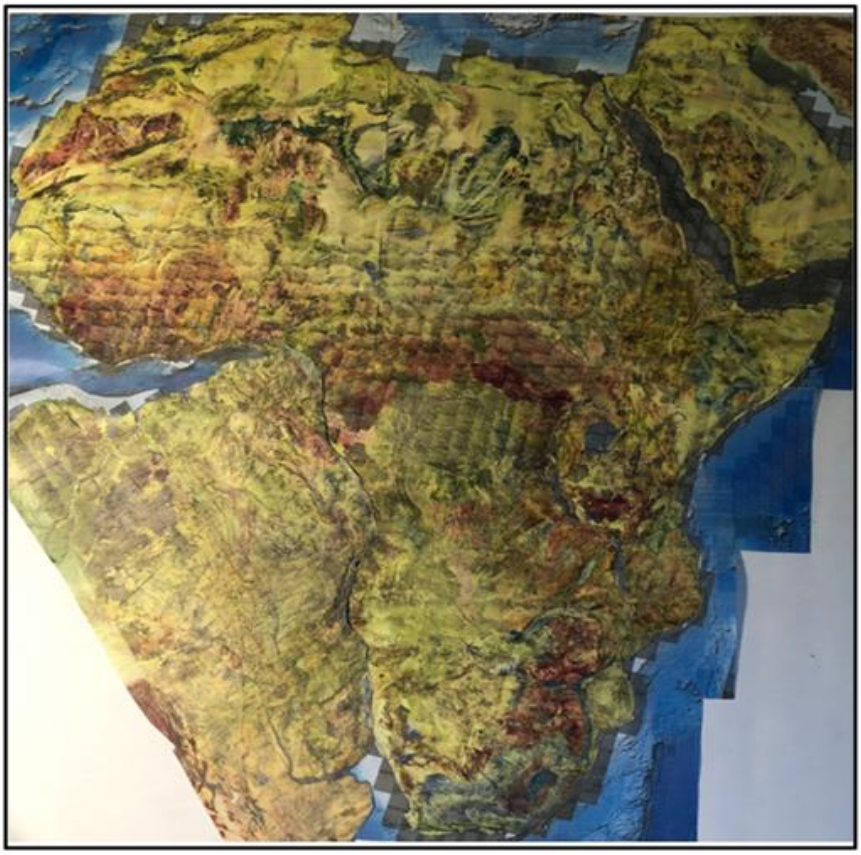

Figure 5.21 50% transparent 1:15mil Tectonic map of South America and the 1:10mil brgm Geological map of Africa on LSAT8 satellite image collage, physically brought together. Continuity of mega-scale geological structures are visible across the Atlantic Ocean coastline. This is contributed from LSAT8 satellite images.

Africa Earth Observatory Network (AEON) @ NMU

AEON was founded in 2013 as a transdisciplinary entity focused on earth stewardship science, to integrate the study of geology with other disciplines. It was a great privilege to be accepted to do my PhD at AEON under the supervision and leadership of the late Maarten De Wit, followed by Moctar Doucoure, and now headed by Bastien Linol.

The experience of studying with a group of diverse, mainly South African individuals, researching very different topics and applying integrated, multi-disciplinary approaches to data collection and interpretation, was immensely beneficial. Notable in this respect, was the recent graduation of MSc graduate Cameron McLaren, and PhD graduates Debbie Claassen and myself. Previously, Ms. Sinazo Dlakavu contributed an important study of small diamond mining in South Africa via a similar integrated, on the ground research approach.

These successful graduates and researchers are testimony to the varied groups and approach at AEON and the widely different aspects of geological research that we embarked on.

Cameron McLaren, Debbie Claassen and Sue Winkler, geologists from AEON at Nelson Mandela University supervised Dr Bastien Linol, and graduated with an MSc (cum laude) and PhD's respectively.

Dr Sue Winkler
Johannesburg, 30 March, 2026