This study comprises an integrated regional structural interpretation of sub-equatorial Africa, using merged aeromagnetic and gravity data sets as well as geological mapping. The disposition of Archaean and younger cratons is mapped, and major geological features which have a geophysical expression are shown, e.g. Witwatersrand Basin, intrusive complexes, and Phanerozoic rift basins. Interpreted structures are classified for simplicity into three geophysically observable types, i.e. major faults, broader structural lineaments including larger continental scale lineament zones, and ring structures. An important observation from other studies by the author is that major fault zones that have always been assumed to be specifically pan-African or Kibaran in age clearly have been active in the Phanerozoic, and even in Recent times, e.g. the continental scale Opuwo Lineament, Omaruru Lineament Zone and Trans-southern African Lineament Zone extend offshore as the Rio Grande, Walvis and Vema fracture zones, reflecting activation during the Phanerozoic.

A number of ring structures, not generally observed in southern African geology, are also interpreted and presented in this study. They may be either localised, of small scale less than 50km, or regional in extent. Possible origins of the observed ring features include: those arising from ring fracturing associated with the cooling of intrusions (localised); those associated with thermal variations in the mantle (regional scale); those associated with meteorite impact; and, craton scale features possibly associated with craton rotation during polymetamorphic deformation of the surrounding mobile belts. This study demonstrates the importance of regional structure for targeting mineralisation, including kimberlites.