

Mesoproterozoic Kibaran Orogenic System of Africa and Rodinia Supercontinent Evolution.

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Rodinia Supercontinent reconstructions were done using Mesoproterozoic crustal blocks reworked during Neoproterozoic and Phanerozoic orogens. Most of Africa has been stable since the Palaeozoic and preserves one of the longest Mesoproterozoic orogenic systems of the world.

The Kibaran orogenic system includes three main branches: Northern branch (E-Congo D.R., Burundi, Rwanda, Tanzania, Uganda and Central Africa Republic), Southern branch (Angola, Botswana, Namibia, South Africa) and Eastern branch (Zambia, Zimbabwe, Malawi and Mozambique). The triple junction is located in the border zone between Angola, Botswana, Congo and Zambia. The three branches have several features in common, e.g. widespread 1.25-1.0 Ga igneous rocks, abundant 1 Ga tin-granites and scarce metasedimentary carbonate rocks when compared to the adjacent Neoproterozoic basins. They also display significant differences. Geochemical characteristics of 1.2-1.0 Ga granitoids from the Southern branch indicate an extensional collapse setting synchronous with a collision-related crust thickening in the Northern branch. Early Kibaran (1.4-1.3 Ga) granitoids (mainly I-type) are well developed in the Northern branch, whereas they are rare in both Southern and Eastern branches. A large volume of 1.3-1.25 Ga mafic-ultramafic igneous rocks has only been documented in the Northern Kibaran branch. The differences recorded in the different branches of the Kibaran orogenic system result from temporal and spatial variations of regional tectonic setting within a broad subduction-collision belt. The Kibaran orogenic system is an important benchmark during the assembly of Rodinia between ca. 1.4-1.0 Ga.