

南部アフリカ・リンポポ岩体の砕屑性ジルコン年代からみた新太古代～古 原生代大陸衝突イベント

Detrital zircon geochronology of the Limpopo Complex, southern Africa: Implications for Neoproterozoic to Paleoproterozoic collisional events

上原 妙子¹、*角替 敏昭^{1,2}、Basupi Thembiso¹、堤 之恭³

Taeko Uehara¹, *Toshiaki Tsunogae^{1,2}, Thembiso Otladising Basupi¹, Yukiyasu Tsutsumi³

1. 筑波大学、2. ヨハネスブルグ大学、3. 国立科学博物館

1. The University of Tsukuba, 2. University of Johannesburg, 3. National Museum of Nature and Science

We report new detrital zircon ages of quartzites from the Central Zone of the Limpopo Complex, which corresponds to the collisional suture within the Kalahari Craton. The Central Zone has been subdivided into several units: Beit Bridge Complex, Phikwe Complex, and Motloutse Complex. The Beit Bridge Complex occupies the dominant part of the Central Zone in Zimbabwe and South Africa, and is composed of supracrustal rocks including pelitic gneiss, meta-BIF, marble, quartzite, and metabasites that underwent high- to ultrahigh-temperature metamorphism (e.g., Tsunogae and van Reenen, 2011). Cores of detrital zircons from quartzites show magmatic ages of 3.6-3.0 Ga, suggesting that the zircons were probably derived from proximal sources such as the basement gneisses in the Zimbabwe Craton and the Kaapvaal Craton. The ages are also comparable with the inferred collision age of the Zimbabwe and Kaapvaal Cratons (ca. 2.7 Ga), suggesting that the quartzites deposited between 3.0 and 2.7 Ga.

In contrast, detrital zircon ages of the Phikwe and Motloutse Complexes in Botswana are significantly younger (2.9-2.4 Ga), suggesting that the quartzites from the complexes deposited after 2.4 Ga. Therefore, although Beit Bridge, Phikwe, and Motloutse Complexes are correlated based on the occurrence of similar supracrustal lithologies, the quartzites in the Botswanan side of the Central Zone might have formed after the Neoproterozoic “Limpopo Orogeny”. The timings of protolith formation and high-grade metamorphism in the Phikwe and Motloutse Complexes could be related to the Magondi Orogeny that affected the western part of the Zimbabwe Craton at ca. 2.0 Ga.

References

Tsunogae, T. and van Reenen, D.D. (2011) High-pressure and ultrahigh-temperature granulite-facies metamorphism of Precambrian high-grade terranes: Case study of the Limpopo Complex. *Geological Society of America Memoir*, 207, 107-124.

キーワード：リンポポ岩体、砕屑性ジルコン年代、変成作用、マゴンディ岩体

Keywords: Limpopo Complex, detrital zircon geochronology, metamorphism, Magondi Belt