

**AGE CONSTRAINTS ON THE LUIZI STRUCTURE, A POSSIBLE NEW IMPACT STRUCTURE ON THE KUNDELUNGU PLATEAU, KATANGA PROVINCE, DEMOCRATIC REPUBLIC OF CONGO.** S. Master<sup>1</sup>, P. Dumont<sup>2</sup> and H. Ladmira<sup>2</sup>. <sup>1</sup>Impact Cratering Research Group, Dept. Geology, Univ. Witwatersrand, P. Bag 3, Wits 2050, Johannesburg, South Africa. 065sha@cosmos.wits.ac.za. <sup>2</sup>Honorary Scientific Collaborator, Dépt. Géol. et Minéral., Musée royal d'Afrique centrale, Tervuren, Belgium.

The 12.6 km-diameter semi-circular annular Luizi Structure, centred on 27°55' E, 10°10' S, occurs on the Kundelungu Plateau of Katanga Province, D. R. Congo (Figure 1), about 110 km NNE of Lubumbashi. The basin-like structure, at an elevation of about 1300-1386 m, has centripetal internal drainage into the east-flowing Luizi River, a tributary of the Luapula. It was first recognised as an amphitheatre-like depression by Grosse in 1918 [1]. The main rocks in the structure are thick-bedded quartzitic arkoses which strike concentrically, and have variable dips of 5-20° near the rim, and 60-90° centrally [1]. Its near-circular morphology was first identified on 1955 aerial photographic mosaics [2] by Ladmira in 1979, whose photo-interpretation was published by Dumont in 1990 [3]. Dumont and Ladmira [3, 4] first postulated that the structure was an astrobleme.

In May 1996, the senior author led an expedition from Lubumbashi which attempted a ground reconnaissance of the Luizi structure. The expedition's 4-wheel drive vehicle broke down some 30 km short of the Luizi Structure, which consequently was never reached. However, the sedimentary rocks (red unmetamorphosed sandstones and siltstones) of the Kundelungu Plateau, which are the country rocks around the Luizi Structure, were mapped and sampled. <sup>40</sup>Ar-<sup>39</sup>Ar dating of detrital muscovites from these redbeds [5] indicate a late Neoproterozoic (570±5 Ma) maximum age for the sediments of the Kundelungu Plateau, at the top of the Upper Kundelungu Supergroup of the Katangan Sequence [6]. Landsat imagery (Figure 1) shows that the Luizi structure is superimposed on NNW-SSE trending faults of the Lake Mweru-Luapula graben, which is part of the Cenozoic East African Rift System. Although the Mweru graben contains Permo-Carboniferous (Karoo) sediments [6], rift development in the Lake Mweru region started in the late Tertiary [7, 8]. Two kimberlite pipes of probable Cretaceous age [9] are found within the Luizi Structure [1], but their relation to the structure is unclear. The geological and geochronological data currently available indicate that the formation of the Luizi Structure postdates late Neogene rift faulting.

**References:** [1] Grosse, E. (1918). *N. Jahrb. Min. Geol. Pal. Beilage*, 42(2), 272-419. [2] Anon. (1955). Mosaiques aérographiques contrôlées au 1:100,000. Feuilles Lukafu NE et Kasenga NW. Institut Géogr. Milit., Bruxelles. [3] Dumont, P. (1990). *Bull. Soc. belge Géol.*, 99(1), 57-65. [4] Dumont, P. and Ladmira, H. (1996). Une structure annulaire, astroblématique? au Zaïre. Unpubl. MS, MRAC, Tervuren, 3 pp. [5] Master, S., Rainaud, C., and Phillips, D. (unpubl. data). [6] Dumont, P. and Hanon, M. (1993). *Rapp. ann. 1991-1992, Dép. Géol. Minéral., Mus. roy. Afr. centr.*, Tervuren, Belgique, 153-158. [7] Dixey, F. (1944). *Trans. Geol. Soc. S. Afr.*, 47, 9-45. [8] Mondeguer, A. et al. (1989). *Bull. Soc. Géol. France, ser. 8, 5(3)*, 501-522. [9] Kampata, M.D. et al. (1995). *Mineral. Mag.*, 59, 661-676.

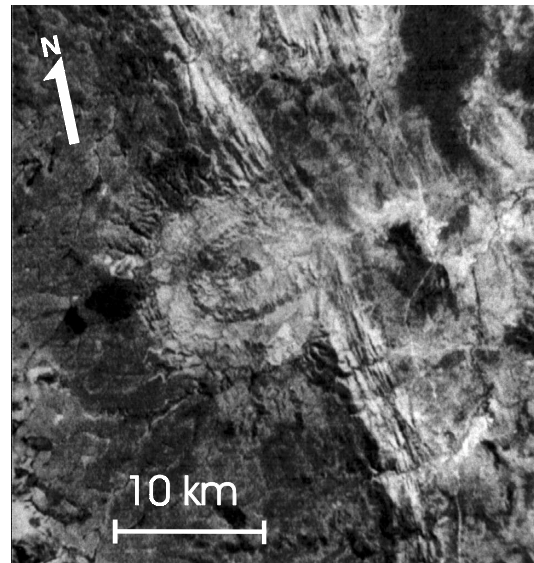


Figure 1: Detail from Landsat TM image (174-67), showing the 12.6 km diameter Luizi Structure on the Kundelungu Plateau. The structure is superimposed in the east on Cenozoic normal faults of the Lake Mweru graben.