

A NEW, IMPROVED MAP OF THE ARAGUAINHA DOME IMPACT STRUCTURE, CENTRAL BRAZIL.

N. Hauser¹, E. Guimarães¹, M. Velicic², D. Do Carmo¹, T. de Almeida¹, J. Garnier¹, L.C. Vieira¹, G.C.F. Valadares¹, M.V. Brandão¹, R.R. Adorno¹, M.C. de Araújo¹, M.G. Pereira¹, A. Guerra¹, S. Cunha¹, K.S. Silva¹, M.G. Rocha¹, A. von Glehn¹, T. Araújo¹, J. Carneiro¹, D.E.M. de Oliveira¹, R.T.P. Citon¹, R. Dantas¹, L.V.R. Ferreira¹, E. Yokoyama¹, W.U. Reimold^{3,4}.
¹Geosciences Institute-University of Brasilia-Brazil (UnB) E-mail: nataliah@unb.br. ²Campinas University-Brazil (UNICAMP). ³Museum für Naturkunde Berlin, Germany. ⁴Humboldt Universität zu Berlin.

Introduction: Araguainha Dome, of at least 40 km diameter, is the largest impact structure known in South America. It is localized in the northwestern part of the Paraná basin, straddling the boundary between Goiás and Mato Grosso states. The target stratigraphic sequence comprises the Neoproterozoic schist of the Cuiabá Group and Ordovician alkali granite forming the basement, which is overlain by the Paleozoic supracrustal sequences of the Paraná Basin. The structure comprises a central uplift and surrounding ring structures of upturned, overturned and strongly deformed supracrustals. In 1982 [1] combined remote sensing to do a geological map and [2] made a detailed petrographic description. [3] presented a map of the central uplift, identifying polymict and monomict breccia, impact melt rocks, and the granite. Recently, [4] updated the contacts of these units and improved the petrographic description. In 2012, as part of the annual 5th year UnB students' final mapping course, fifteen undergraduate students of Brasilia University remapped the Araguainha impact structure.

Methods: Eight groups of students covered approximately 40 km², and, thus, mapped the total structure over 20 days with special emphasis on the central uplift. The field observations and sample description were summarized in a 1: 25,000 integrated map for the total structure, and a more detailed 1:15,000 map for the central uplift area.

Results: Main differences between the previous maps and the UnB students' map of the central uplift are: a) the occurrence of the Cuiabá Group is more extensive in the southern part than previously thought; b) the Ivai Group (Ordovician-Silurian) was mapped in the northwest and south part for the first time; c) impact melt rock exposures were mapped in detail in terms of spatial occurrence, and some new outcrops were delineated and compositionally defined; d) the extent of the polymict breccia occurrence in the northwest had to be reduced, and it was possible to differentiate suevite outcropping in the northern and southern parts; Finally, e) in the southeastern part, monomict breccias were identified overlying Cuiabá Group metasediments. The new, thus improved map and improved petrographic descriptions will be presented at the conference.

References: [1] Crosta A. P. 1982a. *Dissertação, Instituto de Pesquisas Espaciais, São José dos Campos*. [2] Theilen-Willige B. *Geologische Rundschau* 71:318-327. [3] Von Engelhardt W. V. et al. 1992. *Meteoritics* 27:442-457. [4] Yokoyama E. et al. 2012. *Earth and Planetary Science Letter* 331-2:347-359.