THE JARAU STRUCTURE, SOUTHERN BRAZIL: AN ASTROBLEM?

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Introduction: In the late 60's an anomalous drainage with an eliptic pattern was identified in the Cerro do Jarau region, a circular feature with 10 km of diameter, located in the southwest part of Rio Grande do Sul State, Brazil. It was interpreted as a dome of tectonic origin formed after the deposition of Botucatu Formation (Latter Jurassic) and before the basaltic flows of Serra Geral Formation (Early Cretaceous) [1].

In the 80's an impact origin was sugested based on the analysis and interpretation of remote sensing products (aerial photographs 1:10.000, orbital images of medium spatial and spectral resolution of RADAR and LANDSAT-MSS) and field checking [2], [3], [4]. This hypothesis was based on four mapped morphological units: the isocline crests and hogbacks; the Nhanduvai Basin Depression; mesas and cuestas of Quaraí-Mirim Basin; and alluvial plains. The isocline crests and hogbacks, one of most important units, have a semi circular shape and correspond to fault lines with a drainage of a centrifugal radial pattern. Furthermore, the Nhanduvai Basin Depression (the central portion of the area) is surrounded by brecciated and silicified sandstones, showing a drainage with a centripetal radial pattern. However, until the present moment there is no cientific evidence that supports an impact origin.

Current Investigation: Recently, new studies have been reconducted in this area in order to find these evidences. The investigation has been carried out with the following approach: 1) analysis and interpretation of ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) remote sensing products with both high spacial and spectral resolution in 14 spectral bands from visible to thermal infrared region of eletromagnetic spectrum; 2) detailed geological mapping; 3) petrographic analysis to look for shock metamorphic features; 4) geophysical profiling (magnetics and gravity); and 5) thermocronology by apatite fission track analysis.

References: [1] Grehs **S. A.** 1969. 3º *Congresso Brasileiro de Geologia.* p.256-265. [2] M. T. Schuck & Lisboa N. A. 1987. *Revista Pesquisas.* [3] Lisboa N. A. et al. (1987) *III Simp. Sul-Bras. De Geologia.* p. 319-332. [4] Hachiro J. et al. (1995) *An. Acad. Bras. Ciências*. 67, 4.