

**STRUCTURAL DOME AT SAO MIGUEL DO TAPUIO,  
PIAUI, BRAZIL**

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About a dozen known or suspected meteorite impact structures (astroblemes) have been suggested for Brazil (Romano & Crósta, 2004). The largest of these is the 40 km diameter Araguainha dome, of about 245 Ma. Among the suspected impact structures is the dome of São Miguel do Tapuio (e.g. Mariano et al., 2004). Field and laboratory investigations of the structure of the dome were undertaken to evaluate its possible origin by meteorite impact. The dome is defined by a pattern of concentric ridges and depressions approximately 21 km diameter, with a center near 5° 37.6' S, 41° 23.3'W. The surrounding country rocks are mainly sandstones of the Cabeças Formation. The dominant lithologies within the structure are quartzose sandstones and quartz-pebble conglomeratic sandstones. Field investigations included several days of examination of outcrops in several transects across and around the structure. Petrographic studies of thin-sections of the sandstones and of quartz pebbles isolated from the conglomeratic sandstones were made. These revealed few planar fractures (PFs) and no planar deformation features (PDFs), following the usage of Grieve et al. (1996). These observations are contra-indicative of an origin by meteorite impact. Consistent with these observations are the 1) the general absence of breccias or breccia-dikes, 2) the absence of shatter-cones, 3) the absence of shock-melt products in outcrop or thin-section, and 4) the absence of other shock-metamorphic indicators. Taken together, the lack of shock features does not support an origin by meteorite impact. Moreover, there are no clear indications of rim-faults or annular half-grabens. What, then, might account for this feature? Although no igneous rocks were found exposed within the structure, evidence of hydrothermal dissolution occurs near the core of the structure. It is possible that heating at depth, perhaps associated with deep-seated intrusion, could mobilize these quartzose strata in a diapiric fashion, resembling that of the Richat structure, Mauritania (Matton et al., 2005), a larger structure at 40 km diameter, for which an association with a deeper alkaline complex has been hypothesized.

**References:**

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