

### A FIREBALL AND AT LEAST THREE DISTINCT METEORITES ON THE BORDER BETWEEN BRAZIL AND URUGUAY

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On June 25, 1997 at 07:00 am, a large meteor was seen across the border Brazil-Uruguay. In March of 2003, a mass of 34 kg was found by Roberto Maciel while looking for Indian arrowheads, in the dunes along the Mirim Lagoon in the vicinity of Santa Vitória do Palmar city at Rio Grande do Sul State. During the following weeks he found two others small masses of 4.34 kg and 1.57 kg each. The findings however, correspond to a heavily weathered meteorite possibly not related to the fall. In 2004 a new mass weighing 10.45 kg was found by Lautaro Correa, while looking for fossils. He recognized the object by the well developed regmaglypts. A sample of this meteorite was studied by Greshake [1] and described by Antonello & Zucolotto [2] and corresponds to an ordinary chondrite (L3), S3/4, W2, named: Santa Vitoria do Palmar.

Another mass weighing approximately 300 g was found at Balneário do Hermenegildo, 19 km away from Santa Vitória do Palmar and donated by Usvaldo Dutra to the Museum of Santa Vitória do Palmar. A sample of this mass was brought by the geologist Paul Martini to the Museu Nacional of Rio de Janeiro. This new mass showed a distinct structure and features of a petrologic type 3 (e.g., zoned olivine and pyroxene). However, EMP analysis confirm that this new mass is an H3, (Fa<sub>5-19</sub>) (Fs<sub>2.5-18.7</sub>) unequilibrated chondrite, less weathered (W0-) and could be possibly related to the fall of 1997. The proposed name is Santa Vitoria do Palmar (b).

On the other margins of Lagoa Mirim -on the Uruguayan side- near Cebollatti, another mass was found and seems to be a piece of the same fall of Santa Vitoria do Palmar.

Recently another meteoric mass, but in this case an iron meteorite, was found at the edge of a road by the son of J. M. Monzon. This siderolite is a medium octahedrite, which is actually under study.

Interestingly, at least seven meteorite masses of three distinct meteorites were found in the same region in a very short time, which is very rare in Brazil, and even rarer in Uruguay. We believe that this could be a combination of three factors: 1) the bright fireball of 1997 that increase awareness of inhabitants about meteorites; 2) the fact that this area is a large plain dominated by dunes and mainly free of rocks; and 3) the intense local search for fossils and Indian artifacts. Not even that the Chuy region is dominated by a subtropical weather and is located along the beach -all factors that will accelerate weathering of meteorites- the found pieces are not heavily altered.

Because of the uncommon number of meteorites recently found, it is possible that the border Brazil-Uruguay could turn out to be a promising site for systematic search of meteorites.

**References:** [1] Greshake, A., 2007. The Meteoritical Bulletin, No. 91; [2] Zucolotto, M.E. & Antonello, L.L., 2008. Arquivos do Museu Nacional, vol.66, n3-4, p 611-629.