

BAJADA DEL DIABLO IMPACT CRATER-STREWN FIELD, PATAGONIA, ARGENTINA: THE LARGEST CRATER FIELD IN THE WORLD?

R. D. Acevedo, J. Rabassa, M. J. Orgeira, C. Prezzi., H. Corbella, J. F. Ponce, O. Martínez, M. González, C. Vásquez and M. Rocca. Conicet (Argentina) and National Geographic Foundation/Waitt. Email: acevedo@cadic.gov.ar

Introduction: Almost two hundred of enigmatic dish-shaped structures with diameters up to 400 meters are still recognizable on the surface at Bajada del Diablo (BdD), Chubut Province, Patagonia, Argentina (42° 46'-43° S; 67° 24'-45'W). They form perhaps the largest impact crater field known in the world [1]. These structures are simple craters, which display bowl shaped depressions with raised rims, as high as 50 m in those craters developed on basalts and only a few meters high in those impacts on pediment gravels. Only a third of the craters are fully preserved due to active erosion processes.

In BdD, the geological field data prove their indubitable impact origin, since different rocks have been affected, including Miocene basalts and Pliocene sedimentary rocks underlying Pliocene–Early Pleistocene pediment gravels. The craters have been eroded by Late Pleistocene fluvial processes. Most of the material ejected from the crater was deposited within a few crater radii.

Geophysical studies: In order to characterize the geophysical signatures of impact craters in the Pliocene conglomerates, ground magnetic and electromagnetic surveys were conducted. Our results indicate that the Pliocene conglomerates are absent in the crater floors. On the contrary, the crater rims exhibit high-amplitude, localized magnetic anomalies and higher apparent electrical conductivities, which would be related to the anomalous accumulation of basalt boulders and blocks which have been remanently magnetized, probably due to shock and heat effects. The fact that such high-amplitude anomalies are not present out of the surveyed craters supports this hypothesis.

Conclusion: The BdD impact occurred most likely during the Middle Pleistocene, between 760 and 130 ka ago, based on the youngest geological unit impacted and the erosional processes that affected the craters, respectively. At least, a total of 189 craters have been observed and mapped. According to this amount, this would be the largest impact crater-strewn field in the world.

References: [1] Acevedo, R.D. et al. 2009. *Geomorphology* 110 (3-4): 58-67.