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Discussion

Further comment to "Reply to Comment on impact structures in Africa: A review (Short Note)" by Reimold and Koeberl [J. Afr. Earth Sci. 100 (2014) 757–758]

In a Comment on Reimold and Koeberl (2014a) to JAES, Acevedo et al. (2014) claimed an impact origin for Bajada del Diablo crater-strewn field (BdD), a remote locality in Central Patagonia. Such genesis had been denied by Reimold and Koeberl (2014a), who rejected its relationship to any impact-cratering process since, in their opinion, Acevedo et al. (2009, 2012, among other papers) had not found direct evidence of impact. Neither Professor Wolf Uwe Reimold nor Professor Christian Koeberl had visited the site nor contacted us before about the nature of our investigations. It would have been nice to exchange information with these researchers, before they so strongly criticized our work, particularly when they have used, unnecessarily, quite offensive and bellicose words, which we believe we do not truly deserve.

Indeed, so far, meteorite fragments have not been found there yet, though in its place Fe–Ni- and lawrencite-bearing microspheres were collected. Likewise, proof of shock metamorphism has not been observed, though some hints may have been unveiled. However, a new element of valid analyses for identification of possible astrobleme-strewn fields such as the case in question has been revealed: the fact that many similar, circular and problematic structures are discovered over contiguous but different geological environments. In the countless discussions proposed up to now concerning definitive evidence for impact origin of problematic structures it has never been taken into account that a multiple collision of a fragmented body could affect different environments, thereby providing in itself evidence for impact. That is what we think we have proven to have taken place in Bajada del Diablo.

In reply to our original Comment in JAES, Reimold and Koeberl (2014b) discarded for a second time the slightest possibility that BdD might be an impacted area because, in a few words, the new instance of impact identification does not appear within their own scheme of impact evidence (French and Koeberl, 2010; Reimold and Koeberl, 2014a; Reimold et al., 2014), ignoring that in the scientific world nobody should claim to be the unique owner of the truth. Nevertheless, this is an interpretation which merits being investigated, appealing to a presumption *iuris tantum,* in which incorrectness may be demonstrated only when enough appropriate data are provided.

Our research team that has studied this critical and remote locality has been the only one working *in situ*; at the least, we think that we should be allowed the benefit of doubt. Our multidisciplinary working group has provided a clear, field based, geomorphological record hitherto unknown in other astrobleme-strewn fields in places where neither fragments of meteorites nor other elements which may unquestionably prove the existence of impacts have been found: that is, the presence of craters which formed simultaneously over two different geological substrata and regional landforms such as basalt tablelands and piedmont gravels of clearly different age.

Arthur Conan Doyle used to say: "When you have eliminated the impossible, whatever remains…must be the truth". During our endless discussions, we have eliminated the impossible (e.g. volcanism, phreatomagmatism, ground subsidence, karst features, eolian deflation, biological origin, etc.). Thus, in scientific terms, it is reasonable to state that all bowl shaped depressions with raised rims and stony ejecta blankets at Bajada del Diablo (with a total of almost 200), which equally affected volcanic and sedimentary rocks are in fact impact craters. In other words, there is no need now to discuss which has been the impactor, either a dismembered asteroid or a comet, to recognize impact craters as such because no other known origin may be attributed to them. The fact that they are affecting two geological environments and regional landforms of different age makes them the result of a unique event, which is none other than an impact, unless Reimold and Koeberl have information about Bajada del Diablo that is unknown to us, which these authors are now reluctant to expose.

Therefore, we suggest that basic geological aspects (which should not be ignored particularly if one has not done *in situ* observations) should never be left aside when geological dilemmas like this need to be resolved. Likewise, we support that general and detailed studies of regional geomorphological features should not be overlooked in the study of astrobleme-strewn fields.

Finally, the last paragraph of Reimold and Koeberl (2014b) has wrongly quoted one of our comments, namely that "the absence of evidence is not evidence of absence" (Acevedo et al., 2014), not "the absence of evidence is absence of evidence" [*sic*] as they have paraphrased, which suggests an airily dismissive reading of our paper.

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