



The rectangular and oriented lakes in the Bolivian Amazon are not tectonic, and now what?

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The presence of hundreds of rectangular and oriented lakes is one of the most striking characteristics of the Llanos de Moxos (LM) landscape, a seasonally flooded savannah which constitutes the Central Andean foreland basin. Besides being rectangular and oriented at about 45 degrees north, these lakes are characterized by being very shallow and having a flat bottom. Many different mechanisms have been proposed for their formation including subsidence resulting from the propagation of bedrock faults through the foreland sediments, scouring caused by large-scale flooding, paleo deflation combined with wind/wave action and human agency. This wide range of hypothesis responds to a lack of field data and to the very limited number of studies on the matter. Nevertheless, amid this diversity of hypothesis, the most commonly accepted cause of lake formation to date has been tectonics. Thanks to our recent discovery of a paleosol below mid-Holocene fluvial sediments in the south-eastern LM, where several lakes are found, it is now possible to test the tectonic hypothesis. If lakes were formed by local subsidence induced by bedrock faults, we should find the paleosol at a greater depth below the lake than in the area surrounding it. Stratigraphic profiles from transects that cut across the borders of three lakes show otherwise: the depth of the paleosol is the same. Hence, tectonics, as the mechanism behind the formation of the lakes, can be ruled out. The origin of the Moxos rectangular and oriented lakes is still very much unresolved.