



## **How is the Altiplano affected by the Rio La Paz drainage system?**

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It has been proposed that focused incision might initiate elastic and/or non-elastic rebound in association with an increase in the depth of dissection. Uplift is then localized and recorded as permanent deformation, which in turn, exerts a positive feedback on erosion. The Eastern Cordillera of the Bolivian Andes represents such a situation of focused erosional unloading. The Altiplano is an almost closed basin with a distinct watershed defined by the Western Cordillera and Cordillera Real. However, the Rio La Paz drainage basin with a total area of 4850 km<sup>2</sup> is the only prominent system that is sourced on the Altiplano. The Rio La Paz cuts across the Cordillera Real south of the 6438 m-high Illimani, connecting significant portions of the Altiplano with the Amazon Basin. Newly dated 8 - 10 Ma Apatite fission track ages from the Nevada Illimani, indicate that major exhumation occurred during the Quechuan phase of deformation (11 - 5 Ma). The Rio La Paz system removed approximately 3950 km<sup>3</sup> of rocks. We anticipate that focused erosion in this particular situation must modulate the general pattern of rock uplift where the Rio La Paz cuts the Cordillera. We use morphometric data in combination with channel morphologies to illustrate and quantify feedback mechanisms between focused erosion and rock uplift. This feedback explains why all drainages beyond the watershed disperse their waters to the Altiplano. It also explains the presence of the highest peaks adjacent to the location where the Rio La Paz cuts across the Cordillera Real. However, it remains unclear through which process, and at what time, the La Paz drainage system breached the formerly internally drained Altiplano basin initiating these feedback mechanisms.