



Geomorphic evidence for recent uplift of the Fitzcarrald Arch (Peru): a response to the Nazca Ridge subduction

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The 400 000 km²-wide Fitzcarrald Arch constitutes a wide topographic high of the Amazon Basin against the central Andes. In order to constrain its formation mechanisms and in particular to test its relationships to the Nazca ridge subduction, a quantitative geomorphology analysis of the Arch is performed using hypsometric integrals, elongation and azimuths of 7th- and 5th-order catchments. They all express a trend from high maturity to low maturity from NW towards SE. This maturity gradient coupled with the local drainage direction demonstrate that the Fitzcarrald Arch is not a 'classical' alluvial fan, since its apex is located 100 km east to the Subandean Thrust Front and the corresponding sedimentary pile is lacking. Nor is the Arch the superficial expression of an inherited transfer zone, because its geomorphic shape is radial and it does not diverge from a symmetry axis; moreover, such a reactivated structure is not found at depth on seismic profiles. In addition, our data show that underlying geomorphic control on catchment initiation and development has progressed from NW to SE, which in combination with the observation of crustal doming by Espurt et al. (2007) suggests that this relief is caused by the eastward sliding of the buoyant Nazca ridge beneath the South American lithosphere.