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Constraints on recent Lesser Himalayan deformation from new apatite fission-track data along a North - South transect (Central Nepal).

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We study the recent dynamics of the Himalayan orogen in central Nepal with the specific goal of quantifying the onset of activity as well as the deformation history recorded by the different thrusts. Here, we focus on the possible reactivation of the footwall of the MCT, which is marked by a strong topographic transition in the Nepalese Himalaya. We report 14 new apatite fission-track (AFT) ages collected along the Trisuli river and through the Palung granite (Langtang to Terail North - South transect).

The topographic transition corresponds to an AFT age transition, with very young ages to the north (<1.5 Ma), and much older ages to the south (up to 10 Ma). This transition is too sharp to be interprated as a simple consequence of erosion. Therefore, other mechanisms, such as out of sequence thrusting (Hodges et al., 2004) or underplating over a major crustal ramp (Bollinger et al., 2006) have to be considered. We perform numerical thermal-kinematic modelling, using a modified version of the PECUBE code (e.g. Braun, 2002), to quantify the respective roles of underplating and out-of-sequence thrusting in the shortening of this part of the Himalayan range. In these initial models, we assume a simple steady-state between tectonic accretion and surface erosion. Future model will incorporate physical erosion laws to study potential transient effects.