

# Evidence of the material transformation along slip zones of shallow surface ruptures

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Recent surface ruptures that displace strath terraces and which slip surfaces are composed of the "clay gouge" ranging in thickness from few millimeters to several centimeters, rarely up to few tens of centimeters. The original host rocks are represented by granite, metamorphosed sandstone and schist, quartzite. These "clay gouges" can be divided into two main types. The first type is represented by real clay gouge with well-expressed mylonite texture composed at a large extent by clay minerals not presented in the host rock. Slip surfaces of the second type are composed of micro-breccia - intensively crushed fragments of crystals that form the host rock. Data on clay gouges' grain-size composition and on their variations depending on samples' preparation are presented. The fact that ruptures in question displace alluvial deposits of river terraces indicates, first, that last rupturing events were quite recent, and, second, that host rock transformation into "clay gouge" associated with the formation of new minerals took place close to the daylight surface, i.e. without overall high temperature and without high lithostatic pressure. It is assumed that such transformations can occur just during fault slip that could be accompanied by intensive shattering and local heating due to friction. Case studies of intensive fragmentation, up to nano-particles, in the lower parts of large rock avalanches, where significant shearing took place, are presented as well.