MORPHOTECTONIC INDICATORS OF RIGHT-LATERAL - NORMAL SLIP IN THE RED RIVER FAULT ZONE (VIETNAM)

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The Red River Fault Zone (RRFZ) in Yunnan and North Vietnam is one of the main strike-slip fault zones in SE Asia which during the past 5.5 Ma has been showing right-lateral sense of motion. In North Vietnam, the RRFZ is subdivided into three principal branches (up to 300 km long), oriented roughly NW-SE. These are dextral and dextral-normal faults that show the southeastwards-increasing component of normal slip. Analysis of kinematic indicators of fracured Neogene pebbles within pull-apart basins shows that the area has undergone 2 to 4 episodes of brittle deformation, associated with: (a) N-S to NNE-SSW compression, (b) N-S extension, (c) N-S to NNE-SSW compression, followed by (d) N-S compression. All the brittle compressive stages are compatible with right-lateral motion along the RRFZ segments. The lack of fractured pebbles in Quaternary paraconglomerates in this zone suggests that fault creep must have been a dominating mechanism at that time. The right-lateral component of slip in Pliocene(?)-Quaternary times did not exceed 1500-2000 m, whereas that of normal slip (uplift) was greater than 150-200 m, at least in the young Quaternary. The lower boundary of young uplift rate can be safely calculated at some 80 m/1Ma, that of right-lateral motion probably not exceeding 800 m/1Ma.