

Estimation of average right-lateral strike-slip rate of the Hinagu section, Hinagu fault zone at north of Sabagami Pass, Kumamoto Prefecture

*Yoshiki Shirahama¹

1. Advanced Industrial Science and Technology, Geological Survey of Japan, Research Institute of Earthquake and Volcano Geology, Active Fault Research Group

At north of Sabagami pass, the NNE-trending Hinagu section of the Hinagu fault zone, having a predominantly right-lateral strike-slip component, crosses some terraces which formed after 90 ka. East-flowing small gullies incising into those terraces form terrace risers, which have recorded the cumulative lateral offset due to repeated faulting since their formation. I investigated an offset of each terrace riser and its formation age to estimate the averaged right-lateral slip rate of the Hinagu section. As a result of topographic classification, a right-lateral offset of 41 m was recognized at a terrace riser along a small gully that incises a formerly closed depression (terrace cd). Geological cross-sections oriented perpendicular to the trend of the fault were generated by arrayed boring surveys across the terrace cd and the incised gully. The geological structure as revealed by the cross-section strongly suggests that the closed depression was originally created as a pull-apart graben by the repeated movement of the faults that delimit the western and eastern margins of the depression. Detailed observations of sediments suggest that the sedimentary environment in the terrace cd changed from wetland to dryland in response to the gully incision that brings into the formation of the terrace riser. Radiocarbon dating and tephra analyses for the sediments indicate that the terrace riser that offset right-laterally by 41 m probably formed during 17487-24029 cal yBP. The average right-lateral slip rate of the Hinagu fault zone was estimated to be 1.7-2.3 m/kyr.

Keywords: Hinagu fault zone, strike-slip fault, tectonic geomorphology, arrayed boring survey