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# Case study of fault survey based on drainage system analysis in Uljin area of Korean Peninsula

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DEM (Digital Elevation Model) produced by digital topographic map and satellite image have been utilized for geologic survey. This study aims to clarify the relationship between a knickpoint and faults in Namdae stream by the analysis of the digital elevation model. Namdae drainage basin is divided into three subbasins of S1, S2 and S3 of which knickpoints extracted from the digital elevation model developed on the middle to mid-upper region of the subbasins. Relative steepness Ks depending on deepening rate and concavity $\theta$ of basins is higher in S1 region than S2 and S3 regions. I assume the deepening rate caused by active erosion is resulted from the several faults crossing the basins rather than difference of rock types. The knickpoint of the NamDae drainage area which included low-ranking branch is all 77, 24 of which are on the main river system S1, S2, S3. 27 of 77 knickpoints are matched the faults (38%), and 13 knickpoints from three basins corresponds with the faults (54%). It indicates the knickpoints on the basins are closely connected with the faults. For example, relative steepness Ksn is 38.8 on average, but is $42.99 \sim 43.39$ in the overlapping area of Samdang and Duchun faults , even considering the elevation above sea level. We suggest the faults cause the knickpoint of high Ksn like as a geomorphic deformation. As comparing the knickpoints and rock boundaries, there are little evidence of relationship between them, while 54 % of the knickpoints distribute on the subbasins S1, S2, and S3. We conclude the knickpoints of a drainage basin the fault movement results in are one of the geomorphological deformations and useful for survey of the Quaternary faults or for extension of the faults.