Estimation of earthquake magnitude from apparent slip and slickenline on a trench section in Danguri site along the Yangsan ~~F~~ffault, Korea.

Yeji Hong, Jinhyun Lee, Sowreh Rezaei, Young-Seog Kim*

Active Fault and Earthquake Hazard Mitigation Research Center~~,~~

*Corresponding Author: ysk7909@pknu.ac.kr

Abstract:

A trench was opened~~constructed~~ to understand the characteristics of the northern part of the Yangsan fault in the vicinity of the Byukg~~G~~ae f~~F~~ault, ~~Gangdong,~~ Gyeongju~~, Gyeongbuk~~. The fault~~s~~ discovered through this trench was~~ere~~ named ~~the~~ as Dangu fault~~s~~. The Dangu fault~~s~~ run~~s~~ parallel to the Yangsan fault ~~system~~, and it is~~they are~~ assumed to be a branch fault of the Yangsan fault zone~~network~~. ~~These s~~TwoS small trenches were excavated in the east-west direction across the fault~~, due to site conditions, due to size constraints~~ but we failed to obtain true displacement~~s~~ due to the site condition. Therefore, we estimated~~calculated~~ the true fault displacement from the apparent displacement ~~of the fault~~ exposed in the trench based on the~~using relational expression~~suggested equation (Xu et al., 2009) and also estimated the magnitude of the earthquake from the empirical relationship (Wells and Coppersmith, 1994). ~~The fault strike is N15 ° E / 76 ° SE, slickenfault line at the fault plane is 15 ° / 019 ° and the pitch is 15 ° N. It is similar to the previously reported ByukgGae fFault, which strikes N11 ° E / 80 ° SE and slickenline is 08 ° / 011 °. It is interpreted as a strike-slip fault from the, using slickenline data, but there is also some reverse component of slip. The color of the fault gouge is composed of two blue and dark blue bands, which we interpret to mean that the fault has been activated~~indicating at least two times ~~of~~ movement along the ~~exposed fault plane. The Quaternary fluvial layer is cut by the fault. This means this fault was active during Quaternary period. Based on age dataing of the cut Quaternary fluvial layer, the last movement of the fault is interpreted to have occurred within the last couple of hundred thousand years. The data obtained from the trench logging was substituted into the empirical equation (St=Sm*sin(φ+β)/sin(γ+β)) to obtain the truenet displacement of the fault. In this expression, the pitch value(β) is 0°, and the value of the line of observation(φ) was calculated as St=Sm/sin(γ), assuming 90°. The uppermost layer's fictitious displacement (Sm) is 66cm, and pitch of the striation(γ) is 15°. (* 분량이 너무 많으니 요약에는 이 내용이 없어도 될 것 같은데…)~~ Based on these relationship~~data~~ the inferred displacement of the fault was calculated to be around 2.5m. If~~When~~ the data is substituted into the empirical relationship ~~Wells and Coppersmith(1994)'s~~ between ~~Experimental Equations of~~ *Earthquake Displacement-~~Rupture~~Separation~~ Length*, the calculated earthquake rupture is about 50 ~ 80km. Also~~,~~ ~~and~~ if it is substituted into the r~~R~~elationship between ~~*Wave*~~*Rupture*, *Length-Moment* *Magnitude*, ~~*Scale*~~ ~~to~~ the estimated m~~M~~oment magnitude~~earthquake size~~ is about 6.6 ~ 7.2. However, this value is calculated based on the assumption that the ~~current~~ vertical apparent drop was~~is~~ formed by a single event~~last fault~~, where ~~and may be~~

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~~affected by~~ various other factors such as cumulative~~redundant~~ fault movement and drag folding may be involved~~such as redundant fault movement and drag folding~~. Therefore, more data should be collected to improve this estimated values.

Acknowledgement : This research was supported by a grant(2017-MOIS31-006) of Fundamental Technology Development Program for Extreme Disaster Response funded by Ministry of Interior and Safety(MOIS, Korea).

~~Reliability of this data set should be improved.~~

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