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Paleoseismic evidences of historical earthquakes from the southern segment of the Ulsan Fault in SE Korean

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Due to lack of surface-rupturing earthquakes during the instrumental earthquake recording time, the Korean peninsula has not been considered as seismically active country. Although there are several historic records of seismic damage, especially along with the southeastern part of the Korean Peninsula, the locations and sizes of most of these earthquakes are not well constrained. The southeastern part of the Korean peninsula has experienced several damaging earthquakes including the recent 2016 Gyeongju and 2017 Pohang earthquakes. Since Pliocene, this area is under the compressional tectonic regime, which resulted in the formation of Yangsan-Ulsan Fault System. The Yangsan Fault has relatively clear geometry and well preserved morphological feature, and more studies have done along this fault than the Ulsan Fault with more complex structural characteristics. Furthermore, most of the paleoseismic studies along the Ulsan Fault are confined in the central part of the fault, and thus very few paleoseismic studies have been carried out along the southern segment of the fault. The present paleoseismic study reveals a Quaternary repeated earthquakes history along the southern segment of the Ulsan fault near Hwabong-dong close to Ulsan city. On the exposed trench wall, we observed six fault strands, where the hanging wall side is composed of metasedimentary rocks whereas footwall is composed of Quaternary deposits. The strike and dip of the fault strand showing most recent faulting event are N18˚W and 74˚NE. This trench wall shows evidences of three Quaternary earthquakes. Two distinct colluvial wedges in this trench log might indicate penultimate and most recent events capped by undeformed young channel-fill deposits. Though this is a preliminary result, after age dating this will help us to understand the past seismicity along the southern segment of the Ulsan Fault, one of the most potentially dangerous faults in Korea.