

Analyses of Sag Pond Stratigraphy to Assess the Disaster History along Lembang Fault, West Java, Indonesia

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Sag pond stratigraphy studies have a potential for the assessment of Lembang fault activity. Previous results have shown some indication of the earthquake-related process in the sag pond sedimentation record, but the level of confidence is uncertain especially for the events revealed by the recent Paleoseismological studies. This research conducted using the diatom analysis to see the fluctuation of sag pond water level and change in depositional environment, which is controlled by the Lembang fault movement. We analyzed Cihideung sag pond deposit from the playground in Graha Puspa Estate area, Lembang, Indonesia, which also used in the previous sag pond stratigraphy research. The diatom analysis was carried out combined with sediment characterizations, including water content, grain size measurement, organic matter, carbonate concentration, and biogenic silica analysis. We also provide radiocarbon ages to open the correlation with the estimated great earthquakes by present paleoseismology research of Lembang fault. We recognized the stratigraphy of ~5m core and classified into five sedimentary units which represent the sedimentation history of the Cihideung sag pond. We interpret sedimentation changes that could represent the earthquake-related process and classified based on the level of confidence. The event with highest level of confidence include three events that related to the humic sag pond formation and two great earthquake event in 15th Century and 1771-1537 BCE. However, this assessment still need improvement with better resolution and other additional analyses in the future to enhance the confidence in the reconstruction of paleoseismological events.

Keywords: Sag pond, Lembang fault activity