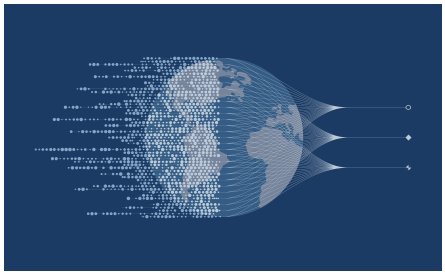

ID: **P1.2-147** Type: **E-poster**

Earthquake Scenario from the Northernmost Fault in the Aceh Region, Sumatra: Preliminary Hazard Assessment

The northernmost region of Aceh contains an active fault capable of releasing energy with significant magnitudes. The magnification energy released along this fault can trigger significant and destructive earthquakes. This is evidenced by the seismic history of the Seulimeum Fault (the northernmost fault) in 1964 (Setiyono et al., 2019), which recorded a magnitude of M 6.5. The earthquake caused severe damage, particularly in Banda Aceh, the capital city of the Aceh Province, and in districts intersecting the Seulimeum Fault. Analyzing significant earthquake scenarios is essential to developing a better understanding of initial earthquake hazard assessment, the seismotectonic setting. The seismic scenario this study uses parameters derived from the 1964 destructive earthquake in the same fault zone. This approach is based on determining seismicity levels (Gutenberg and Richter, 1956) and general geo-structural density (Fossen, 2016). The findings suggest the potential recurrence of significant earthquakes along the northernmost fault, with an estimated maximum magnitude of M ≥ 7. This energy release is spatially projected as a distribution of earthquake-induced ground shaking, modeled using the shear wave radiation impact from the earthquake scenario (Boore and Atkinson, 2008; Wald et al., 2005) and converted into an intensity scale for ground shaking scenarios (Worden et al., 2018).

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Session Classification: P1.2 The Solid Earth and its Structure

Track Classification: Theme 1. The Earth as a Complex System: T1.2 The Solid Earth and its Structure