

Land Subsidence Mapping in Jakarta Indonesia and its surrounding regions Performing Persistent Scatterer InSAR Technique

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The investigation of land subsidence in Jakarta has been performed in different studies. There are adjacent regions of Jakarta experiencing different rates of land subsidence. This study investigates a spatiotemporal variation, the possibility of causes, and the long-term impact of the land subsidence in different locations of Jakarta, and its nearby. 125 sentinel 1A in ascending and descending images were used to calculate the land subsidence rates performing the Persistent Scatterer Interferometric Synthetic Aperture Radar (PS-InSAR) technique. A similar rapid land subsidence rate also occurs in two densely populated regions near Jakarta, which are Tangerang (belongs to Banten province) and Cikarang (belongs to West Java province) up to 70 mm/year. Near the coast, due to the rapid of the land subsidence, the seawater overflowed onto the land specifically at penjarangan, north Jakarta called as tidal flooding. The combination of land subsidence and Sea Level Rise (SLR) cause a greater expansion of the flood area along the coast Jakarta and its adjacent regions. Due to of this circumstance, the infiltrated sea water has polluted the aquifer water at a depth of 0-40 m at some areas near the coast.

Keywords: land subsidence, PS-InSAR, Sea level Rise (SLR), groundwater quality.