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Images Time Series Analysis for Land Deformation and Mapping Shallow Landslides based on SENTINEL - 1 and Optical Satellite Images Data: Case Study on Batam Island, Indonesia

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As a growing city, Batam Islands has an immense potential to become one of the strategic positions in Southeast Asia. However, as the city developed, it also followed with the deformation and potential areas which has prone to shallow landslides. Using 32 Sentinel-1A Satellite Images Data and 17 years of Optical images data, analysis of time series is conducted using Persistent Scattered Interferometry method and mapped for landslide events in the Islands. As a result, several regions impacted 4 - 10 mm/year of velocity deformation in the center part of the island and several locations simulated to be prone to shallow landslide. So, by coupling method of SAR data and optical images, has giving prominent possibility for detecting and predicting hazard potential in this island.