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City growth and inundation area in Palembang City: Flood events and its causes

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Abstract: Flood is an irreversible condition where improper planning of land development will be causing inundation and flash flood. This paper presents one decade of urban growth in Palembang City, where the expansion of the built-up area showed a correlation to flood and inundation. Remote sensing data from cloudless composite scenes of Landsat 7 and Landsat 8 were used. Selected training area for supervised classification of land cover has conducted in Google Earth Engine (GEE). The processed images were analysed separately to overlay them with the historical flood events locations. The analysis found that the accuracy of training and classification processes was good, with more than 90% accuracy. It is found that, in one decade, 33% of the built-up area incremented, 38% reduction of a water body and the bare land area were significantly increased with more than 3100 ha. There is a correlation in spreading locations of flooded areas in which 2019, at least four new locations were subjected to inundation.

Keywords: Urban growth, inundation, built area, remote sensing, Google Earth Engine