Review of Urban Water Resilience in Java Island, Utilizing CHIRPS Data Modeling

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Abstract: More than half of Indonesia's population lives in Java. Most of which is concentrated in urban areas that are growing due to development and population growth. The growth of a city is followed by a high demand in water. The increasing water demand in urban areas, has lately been under pressure due to the effects of climate change. This paper has two objectives, the first is to apply the CHIRPS data utilization model for monthly rainfall estimation, at the island level. The second is reviewing the water security of the 5 main cities in Java. The cities selected are: Tanggerang, Bandung, Semarang, Yogyakarta, and Surabaya. The basic data used are the 30-year CHIRPS time series data (1989-2018), population statistics, and Java geospatial information. The analytical methods are statistical analyses, combined with spatial distribution maps using Geographic Information. The variables involved are: potential volume of rainwater, volume of population water requirements, status of water availability, population density, population growth, urban growth patterns, and landscape characteristics. The results show that such a review could develop the use of CHRIPS data for evaluation of urban water sector. Then, it would indicate that the pattern of water resilience in urban areas can be influenced by different landscape characteristics, so that the results of this review can be the inputs in consideration of sustainable urban water management and re-orientation towards water security.

Keywords: Urban, Climate Change, Water Resilience, CHIRPS, Water Security