The Development of the Flood Inundation Area Model in the Way Sekampung Sub-Watershed in Lampung.

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- **Abstract:** Flood disasters often occur in most areas in Indonesia. Floods are the most common disasters that cause losses and casualties. Flood disaster mitigation needs to be done to overcome and reduce the impact of losses. Mitigation of flood disasters will be helpful if you can predict in advance the potential for inundation caused by flooding, namely by modeling flood inundation. So far, research on modeling the area of flood inundation in Indonesia can be categorized as relatively rare. It is due to the many obstacles that surround it. The problem faced is the unavailability of complete data caused by limited funds and the complexity of most of the watersheds in Indonesia. The study aims to develop a flood inundation area model based on land use conditions and rain variables. It is done by maximizing minimal data and integrating empirical and 2D hydrodynamic modeling formulated with statistical models. The method used is to collect secondary data in the form of rain and land use data and primary data by conducting field surveys of flood inundations that have occurred. Then, it is followed by hydrological modeling to obtain flood hydrographs by integrating HEC-RAS, HEC-GEO RAS, and Arc GIS to generate variables to be modeled statistically using the Multiple Linear Regression approach. The modeling uses samples in some Way Sekampung sub-watersheds in Lampung Province, each with two rain time series data. The independent and dependent variables are the variables to be modeled where the independent variables are Watershed Area ($X1$), % Forest Area ($X2$), % Residental Area ($X3$), % Agricultural / Rice Field Area ($X4$), % Mixed Plantation Area ($X5$), % Other Area ($X6$), River Slope ($X7$), River Length ($X8$), Rainfall ($X9$), Flood Peak Time ($X10$), Flood Discharge ($X11$) and one dependent variable, namely Flood Inundation Area (Y)Four independent variables do not affect statistical modeling, namely X4, X6, X7, and X9. The model obtained is $Y = 150{,}442 -0{,}242\ X1 -0{,}412X2-0{,}515X3-0{,}241X5+ 2{,}050\ X8 -0{,}704\ X10+ 0{,}020\ X11$ 4. MAPE test results (Mean Absolute Percentage Error) The model equation shows a value of 4.672% of the data. Thus, the model is in the Class 1 category that is Very Accurate.
- **Keywords:** inundation, Flood disaster, Sekampung