# *ABSTRACT*

*This research was done based on existing problems in the field related to hydrotopography changes at the tidal swamp land in West Kalimantan. After experiencing the process of developing a swamp area about 40 years, the level of agricultural productivity remains low. The low level of productivity is thought to be caused due to the low capacity of irrigation due to changes in land hydrotopography tidal swamp area. Hydrotopography is one of the aspects that influence the success of tidal irrigation. Hydrotopography shows how often a piece of land has been overwhelmed by fresh water, so hydrotopography strongly influenced by changes in river flow, sea level rise (SLR), and land subsidence. Previous research suggests a change in hydrotopography type, the change is due to the occurrence of land subsidence on tidal marsh area, that is the extent of hydrotopography types A and B were increased, but the extent of hydrotopography type C and D were decreased. How the hydrotopography changes due to the decline of flow regime and the rise of sea level is still unclear, so it is necessary to do this research. Therefore, this study aims to analyze the changes in the discharge from upstream rivers and sea level changes and their effect on the condition of land's hydrotopography in the tidal swamp area.*

*The study was conducted by modeling the terrain's tidal marsh area of Pinang Luar, Kubu Raya district, West Kalimantan Province. The model used is a numerical model by using software that is relevant to the purpose of research. The variables to be reviewed are the amount of discharge of water from upstream rivers and sea level. The simulation was based on several types of hydrotopography scenarios, namely (1) the condition of channel dimensions according to plan in 2008 and the dimensions of the channel in field conditions (existing), (2) the boundary condition that differ in the value of water flow from upstream, high tides and adding value to high tides with and without sea level rise (SLR). The boundary conditions, the flow of water used in accordance with the amount of discharge during the rainy season, dry season, and the average water discharge that occurs in the upstream Kapuas River.*

*The results showed that there have been changes in the flow regime of the river upstream, ie a decline in the trend of daily discharge in Kapuas River. The decrease is due to a decrease in hydrotopography type of flow regime of the river. The extent of hydrotopography's variations on channel dimensions according to plan in 2008 are hydrotopographytipe B and C decreased by 3,5% and 25,2%, and the D-type hydrotopography was increased by 28,7%. Reduction of hydrotopography type B and C in the field conditions channel by 30% and 38,1%, whereas hydrotopography D-type increased by 68,1%. The changes of hydrotopography type are a result of sea level rise of 0,76 cm per year,on channel dimensions according to plan in 2008, the hydrotopography B-type and C-type have increased by 1,5% and 14%, while the D-type has decreased by 15,5%. The changes of hydrotopography in the field conditions channel, the hydrotopographyB-type and C-type have increased by 0,8% and 2,8%, while the D-type has decreased by 3,5%.*

*The changes of hydrotopography alteration are due to a decrease in the flow regime and the water level rise occurring altogether, channel dimensions according to plan in 2008, the changes of hydrotopography B-type and C decreases by 1,1% and 25%, and hydrotopography D has increased by 26,1%. The changes in the field conditions channel of hydrotopography B-type and C decreased by 4% and 25,8%, whereas hydrotopography D-type increased by 29,8%.*

*Changes in hydrotopography will cause modification to operation and maintenance of tidal wave irrigation. The land, originally a hydrotopography B-type turned into hydrotopography C-type or C-type turns into D-type, causing the arrangement of water level on land will change accordingly. The changes in hydrotopography also cause modifications in the facilities and the infrastructure which have to be provided.*



*Key words: flow regime, sea level rise, hydrotopography, tidal marsh.*