ESTIMATION OF RICE PRODUCTION AND FORECASTING OF AGRICULTURAL DROUGHT IN INDONESIA BASED ON MODIS DATA

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Abstract

Rice field is one of the important agriculture crops in Indonesia. In Indonesia large of rice field around 8.06 million ha or 4.2 % from total land use in Indonesia with total production around 65 million tons/year. In the last five years the average rice field area affected droughts. This condition may be caused by climate change and will continue in the next year. MODIS has been widely applied and has been recognized as a powerful and effective tool in detecting and monitoring of rice production and forecasting of agricultural draught. The objective of this research is to develop the method for estimation of rice production and to develop the method for forecasting of agricultural drought based on satellite data as early warning systems in Indonesia. The methodology is consisted of satellite data acquisition, preprocessing of satellite data, calculation of Leaf Area Index, estimation of rice production derived from Leaf Area Index, ground truth data, calculation of agricultural drought derived from Keetch-Byram Drought Index (KBDI), calculation for forecasting of agricultural drought derived from a Markov-Chain Model, analysis and visualization. Finally the result shows estimation of rice production every year in each province and forecasting of agricultural drought which can be used as an early warning to user or stakeholder for decision making.

Key words : MODIS, agricultural drought and rice production.