SUMMARY

Rini Febriyanti, Department of Water Resources Engineering, Faculty of Engineering, University of Brawijaya, May 2016, *Drought Analysis Using Palmer Drought Severity Index (PDSI) Method in Babak Sub Basin, Central Lombok, Province of West Nusa Tenggara*, Academic Supervisor: Donny Harisuseno and Ussy Andawayanti.

Drought is one of many natural disaster types that simultaneously occurs in both slow and prolonged way. Drought has a relation between balance of needs and water supply for various purposes. The purpose of this research is to serves a reference for estimating the emergence of drought disaster.

The observed-location is in Babak Sub Basin, Central Lombok, Province of West Nusa Tenggara (NTB). The monitoring and drought prediction that used in this research is Palmer Drought Severity Index (PDSI) Method. PDSI uses a two layers of soil, top layer and bottom layer. The required data of this research consists of; rainfall, air temperature, map of rainfall station, map of land use, map of watershed's boundary, administrative map, and map of soil type. The calculation of potential evapotranspiration in this research is using Thornthwaite Mather Method, afterwards, analyzing the soil moisture, calculating the drought index by using Palmer Drought Severity Index (PDSI) Method, then analyzing the distribution of the drought by interpolating the result of IDW method in *ArcGis* 10.2. The drought index then be compared to ENSO phenomenon and discharge of the observed-location, the result of the comparing is used to finds out the congruence between drought index, ENSO phenomenon, and discharge.

From the calculation, the drought occured from July to October with a value of X = -6,243 to X = -13,177. Based on the analysis of drought distribution using IDW interpolation method in software of ArcGIS 10.2, it can be shown the drought was occurred in July to October. From the distribution map of drought by administrative regions, the villages that had experiencing drought highest in 20 years are Kebon Ayu, Parampuan, Bagik Polak, Gapuk, Banyu Mulek, Telagawaru, Montong Are, Bengkel, Rumak, Sembung, Kediri, Tanak Bea, Lembuak, Peresak, Selat, Murbaya, Sepakek, Sedau, Sesaot, Pemepek, Teratak, Aik Bukaq and Waja Geseng. Comparation between analysis drought index Palmer with events of El Nino have a good agreement with percentage of 75%. The results of drought also compared with the Lantan Daya discharge in 1994-2013. The conclution is between discharge and Palmer drought index has a maximum value of 91,667% in 2003 and a minimum value of 16,667% in 2011. Comparison between discharge with a value of Palmer drought index with percentage of >50% have good agreement as many as 14 years and the percentage <50% also have a good agreement as many as 6 years. The average comparation between discharge and Palmer drought index has a value of 60,833%. It shows that between water discharge with Palmer drought index value has a good agreement. It can concluded that calculation results of Palmer Drought Severity Index method can be applied to estimate the drought.

Keywords: Drought Index, Distribution of Drought, Palmer Drought Severity Index, Thornthwaite Mather.