ABSTRACT

ANALYSIS DATA HOTSPOT FOR DROUGHT CLUSTERING USING K-MEANS ALGORITHM CASE STUDY RIAU

By

EKKI RIZKI RAMADHAN

NIM : 1202160200

Drought is a disaster that is often experienced in Indonesia. This disaster happened because of Indonesia's geographical location which is on the equator. Therefore, Indonesia only experiences two seasons, dry season and rainy season. Indonesia finds sun throughout the year. This can trigger a drought, El Nino. El Nino is a natural phenomenon that occurs with increasing surface water temperature, causing a decrease in average rainfall in one season.

Seeing this, drought has a negative impact on the community such as crop failure, forest fires, soil damage, the appearance of epidemics, to the extinction of animals and plants. Based on data dari the Ministry of Environment of the Republic of Indonesia, 2019 was a year that experienced many hotspots. These hotspots can indicate that an area is experiencing anomalous weather or excessive heat. In 2019, the hotspots reached 27579, while in 2018 the hotspots only reached 8459. The peak of the hotspots occurred in September 2019 which reached 16178. In the distribution of these hotspots, Riau province was quite unique. It is said so, because in this distribution, Riau has increased in every February and March as many as 277 and 248 hotspots in the last two years, between 2018 and 2019.

To anticipate the drought that occurred in Riau, the grouping of drought-prone areas was carried out based on the analysis of hotspots data. This grouping of vulnerable areas is done by the K-Means algorithm. This algorithm is quite suitable in grouping drought-prone areas. To determine the number of drought prone groups, the elbow or elbow method is used as a preliminary determinant of the number of groups. The results of these methods will be analyzed by the silhouette coefficient method. Dari these results it will be obtained with certainty the category or group in the determination of drought prone.

Keywords: K-Means, drought, elbow technique, silhouette coefficient, hotspot.