

CHAPTER 1

INTRODUCTION

1.1 Background

Rain is one of the hydrological cycles which is a cycle of water rotation from the earth to the atmosphere and back to the earth continuously. High Rainfall may cause some areas that are in lowlands or those with low water infiltration systems will be very susceptible to flooding. For that it is necessary to have a system to classify weather data and rainfall in each city and district so the city that has high rainfall and extreme weather can be given special attention to prevent any natural disaster like flooding.

To make that system, then an algorithm is needed to classify rainfall and weather data. Rainfall can be classified into 6 types that is cloudy (0mm), light (0.5-20mm), moderate (20mm – 50mm), heavy (50mm-100mm), very heavy (100mm-150mm), and extreme (>150mm). With this classification, we can easily determine the district or city that need to be given special attention.

The collected data will be processed with *K-Means* algorithm to classify the cities or district that have low, medium, high, or very high rainfall data. In the *K-Means* algorithm the amount of *k* or *cluster* usually determined by randomly, on this project will be used a method that is *Elbow Method* to determine the value of *k* or *cluster* and *Silhouette Coefficient Method* will be used for testing the quality amount of a *cluster*. The data that will be used is the rainfall data from dataonline.bmkg.go.id at a certain period of time to be classified using the *K-Means* algorithm.

1.2 Problem Formulation

1. Are the *K-Means* algorithm can be used to classify rainfall data?
2. Are the cluster quality test results from Silhouette Coefficient is in accordance with Elbow Method on determining the value of optimal cluster?

1.3 Scope

The data that will be used in this project is rainfall data on January – May 2021 in the city of Semarang, Tegal, Cilacap, Jakarta, and Bandung

1.4 Objective

To make a system that can classify rainfall and helps to see the potential for areas affected by flooding by looking at rainfall.

