FAVORISEN R. LUMBANRAJA. Development of Parallel Programming Models on the Calibration of RegCM3 Data for Reconstruction of Rainfall Data (Case Study: Rainfall of Indramayu District). Under direction of AGUS BUONO (chair), HENDRA RAHMAWAN (member).

In the field of climatology with the long-term period, the Regional Climate Mode version 3 (RegCM3) is a model of spatially oriented and able to produce regional-scale information that can be used to forecast rainfall. However, the data RegCM3 is a model of mathematics and physics and not based on real observations. Therefore, it is necessary to calibrate the model RegCM3 based observation points to reconstruct the rainfall data. Because of the large number of RegCM3 and observation points, the process requires a large number of resources for computing and computational time also. Therefore we need a technique to reduce computational time. One way to solve this problem is to use parallel programming. The purpose of this study is to develop a system to reconstruct the rainfall (rainfall forecasting) using data RegCM3 based observation points using parallel programming approach to accelerate the process of computing. The scope of research is the rainfall data from Java and rainfall observation data Indramayu to observe the performance of accuracy and computation time are done in parallel. The highest accuracy performed by the system is 89.14%. The overall system using parallel programming is faster than serial program for large-sized data. This is showed by the value of speedup which is above 1.

Keywords: Rainfall, RegCM3, PCA, Linear Regression, Parallel Programming