ABSTRACT

Weather is one of the important elements to shaping the climate on Earth. Today, weather changes cannot be predicted easily because of the extraordinary events caused by global warming that have caused the global climate to change dramatically. As a result of this incident, one of the impacts of climate change caused the proliferation of tropical cyclone growth on Earth. Based on this, to facilitate the classification process of tropical cyclone intensity accurately, a system based on artificial intelligence or machine learning are made.

This classification system of tropical cyclone intensity works through input data in the form of infrared images obtained from various weather satellites. This input data is commonly referred to as training data, because with the training data we can introduce the data to the algorithm that we will use to be able to recognize images with a particular class, in this case the tropical cyclone wind intensity that corresponds to the Saffir-Simpson hurricane wind scale. On the other hand, the test data is used as a comparative data to determine the accuracy of system predictions regarding the classification of tropical cyclone wind intensity on satellite imagery.

In the testing process carried out by extracting 14 GLCM features which combined a number of 3, 4 and 5 features. Then also changes SVM classification parameters on *coding design* OAO and OAA, each of which will be tested with the kernel *Gaussian*, *Linear* and *Polynomial*. From that, the system will carry out the classification testing process until the class predictions come out in accordance with *saffir simpson hurricane windscale*. So that in the end, a series of processes above will be applied to the Matlab-based GUI that can be used to classify tropical cyclone intensity in the form of infrared images with an accuracy rate of 88%.

Keywords: *machine learning*, *siklon tropis*, *GLCM*, *saffir simpson hurricane wind scale*, *SVM*