ABSTRACT

Earthquakes are vibrations that occur on the surface of the earth due to the release of energy from within. The tool to activate an earthquake is a seismometer by providing information about seismic signals that indicate the strength of an earthquake in an area. Seismic signals that are needed only provide information in the form of a signal, but nevertheless contain something else that is not information called noise. Noise is one of the interference signals or random signals that can destroy most of the information on the signal, therefore it is necessary to conduct research related to overcoming the noise that exists in the seismic signal with a noise handling system. This system can help overcome the noise of seismic signals by reducing the noise that exists in the seismic signal so that it is expected to produce seismic signals without noise. This study aims to create a noise handling system in overcoming noise in seismic signals so that signals produce accurate information. To overcome the noise in seismic signals, a time-frequency method is needed to reduce noise using the Discrete Wavelet Transform (DWT) technique, which requires a signal that has noise to be reduced and gives rise to a signal with reduced noise. The results showed hard thresholding with Signal to Noise Ratio (SNR) of 39.909 dB and Mean Square Error (MSE) of 0.000008. The results obtained are quite good in accordance with the SNR and MSE calculations.

Keyword *: Earthquake, Seismic Signal, Noise Handling, time-frequency analysis, DWT.*