

Prediction of Sea Level with Convolutional LSTM (ConvLSTM) dan Convolutional Neural Network – LSTM (CNN – LSTM) Methods, Case Study at Sebesi Station, Sunda Strait

Damarizki Sukma Triadi¹, Didit Adytia²

^{1,2}Fakultas Informatika, Universitas Telkom, Bandung

¹damarizki@student.telkomuniversity.ac.id, ²adytia@telkomuniversity.ac.id

Abstract

Forecasting sea level is essential as an observation and analysis of the impact on the surrounding environment. Sea level analysis is applied to predict the level of sea tides which has become an oceanographic phenomenon. In this final project, prediction of sea level is carried out using two deep learning algorithms, Convolutional Long Short Term Memory (ConvLSTM) and Convolutional Neural Network – Long Short Term Memory (CNN-LSTM) from sea level data on IDSL Sebesi, Tide gauge details IDSL- 301 for three months. 3, 5, 7, 10, and 14 days were carried out with different lookbacks in each test session. The evaluation of this test will be determined based on the model's performance that has been made. The test and evaluation results found that the CNN-LSTM method was better than the Convolutional LSTM in the 24-hour lookback scenario. The resulting CNN-LSTM mean accuracy value is the Correlation Coefficient of 0.98552, MAE of 0.06096, RMSE of 0.07368, and MAPE percentage of 8.760148%. However, at 48 hours lookback, Convolutional LSTM is superior to CNN-LSTM with a mean Correlation Coefficient.

Keywords: *Prediction, Sea Level, IDSL, Convolutional Long Short Term Memory, Convolutional Neural Network – Long Short Term Memory.*
