

Abstract

Predicting sea level rise is a crucial aspect of disaster risk mitigation in coastal areas, especially amidst the threats of climate change and global sea level rise. Padang City, as one of the coastal areas in Indonesia, is highly vulnerable to tidal flooding and seawater intrusion. In this study, a time series prediction of sea level height is modeled using a deep learning approach, specifically the Temporal Fusion Transformer (TFT), to perform univariate multi-horizon predictions (1, 3, 7, and 14 days). In this study, a technique is proposed for pre-processing historical data, particularly for anomaly and missing data, by manually removing outliers (values < 5) and filling in missing values with linear interpolate per hour. The data used in this study is sea level data from the Padang, Indonesia location. The results of the prediction modeling with the TFT model were also compared with other models, such as XGBoost, LSTM, and Transformer. The results showed that the TFT model had a significant advantage over the other models in terms of accuracy, with an RMSE of 0.001 and a CC of 0.999.

Keywords : *sea level prediction, time series forecasting, deep learning, Transformer, Temporal Fusion Transformer*