

## **ABSTRACT**

Sea level prediction is essential information for citizens who live in the coastal area and plan to build structures, especially in the construction stage around the inshore and offshore locations. The statistical method and tidal harmonic analysis have been used to predict the sea level but require long terms historical sea level data to achieve reasonable accuracy. This paper uses Transformer deep learning approaches to predict sea data levels. This paper uses only four months of data in Pangandaran, Indonesia. We use the sea level dataset obtained from the Inexpensive Device for Sea Level measurement (IDSL). The model is trained to predict 1, 7, and 14 days. We also study the sensitivity of the model in terms of lookbacks. The performance of the Transformer was compared with two other popular deep-learning methods; RNN and LSTM. To forecast 14 days, the Transformer model results in a higher coefficient correlation (CC) of 0.993 and a lower root mean squared error (RMSE) value of 0.055 compared to the other two models. Moreover, the Transformer has a faster computing performance than the other two models.

**Index Terms:** Sea Level Prediction, tidal, Transformer, RNN, LSTM.