



## Ocean Surface Current Prediction in Bali Strait with Deep Learning: A comparison study

This paper presents a novel approach for predicting ocean surface currents in Bali Strait using comparison of various deep learning method, namely Long Short-Term Memory (LSTM), Convolutional Long Short-Term Memory (ConvLSTM), Recurrent Neural Network (RNN) and Gated Recurrent Unit (GRU). Ocean surface currents play a vital role in various oceanic activities such as shipping, oil spills, and search and rescue operations. Accurate prediction of ocean surface currents is essential for the effective management of these activities. In this study, we utilized ocean surface current data derived from the HF Radar that installed in Bali Strait as input features for our prediction model. We also applied data pre-processing techniques such as data interpolation, data decomposition, data normalization to ensure optimal model performance. The model was trained and evaluated using the root mean square error (RMSE) metric and correlation coefficient (R2 Square). The results showed that our model outperformed several baseline models. In general, our proposed method achieved slightly better performance compared to several RNN model for all configuration of the dataset. The findings of this study suggest that our proposed model can be a valuable tool for accurately predicting ocean surface currents, which can be utilized for various oceanic activities.

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