

Performance Evaluation of Two Neural Network-Based Models for Predicting Sea Ice Concentration

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Abstract: Artificial neural networks are computational models capable of solving complex problems through learning, or training, and then generalizing the network solution for other inputs. This paper examines the performance of two neural network-based models, which were developed for predicting the ice concentration in the Gulf of St. Lawrence in Eastern Canada. The first is a batch model which uses past ice information to predict future ice conditions, while the second model predicts the ice conditions sequentially. It is shown that the performance of the two models is almost identical, as long as no abrupt changes occur in the ice conditions. If, however, the ice condition changes suddenly, only the sequential model is proved to be capable of predicting the ice condition without noticeable accuracy degradation.