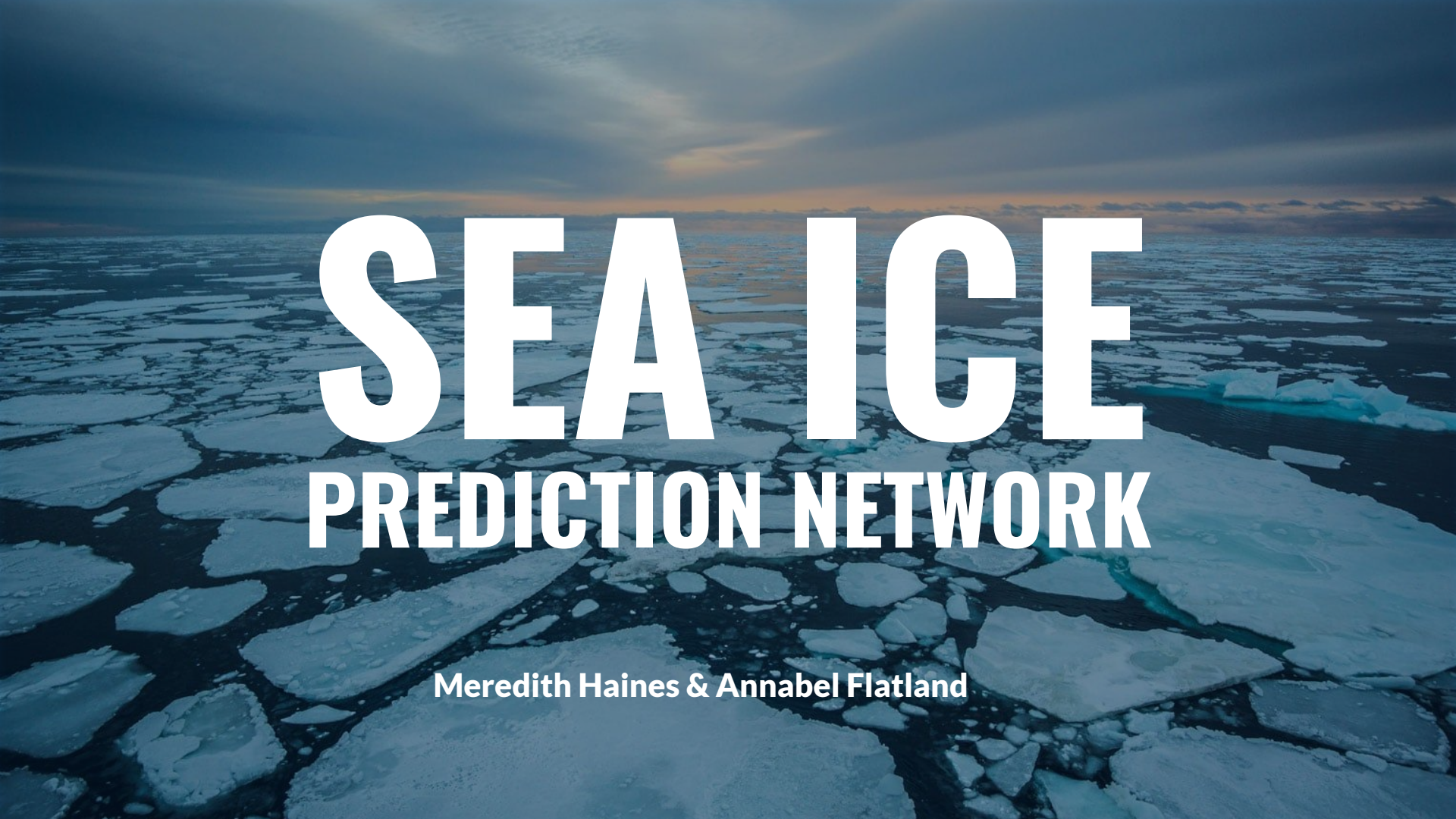


SEA ICE PREDICTION NETWORK

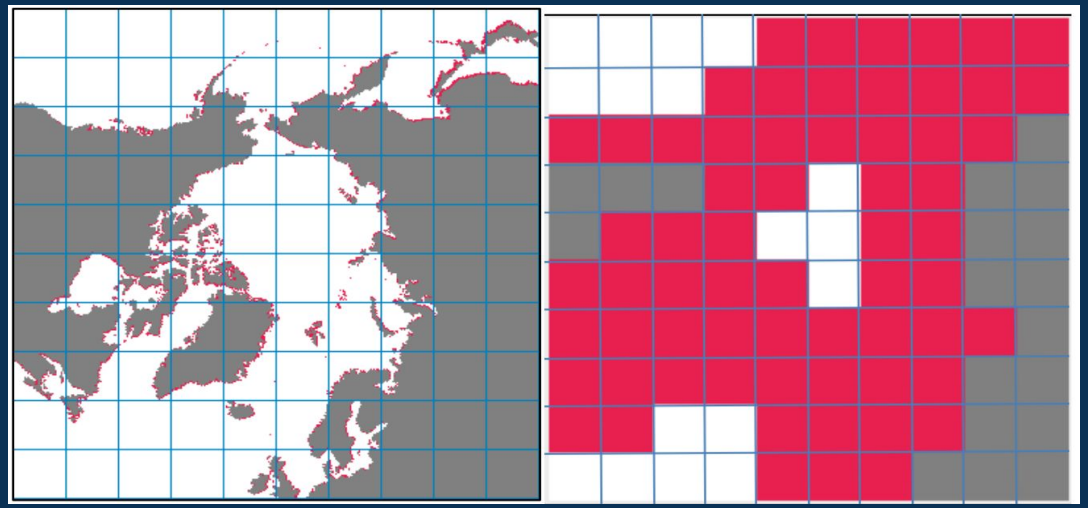
Meredith Haines & Annabel Flatland

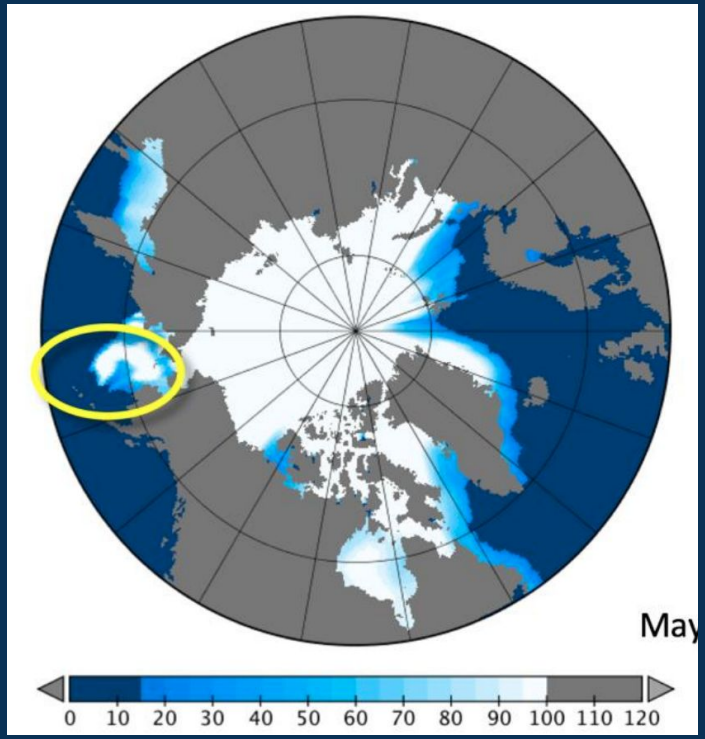
Background

- Climate change→ decrease in sea ice concentration at all times of the year
    - forecasting sea ice extent is becoming increasingly difficult
- Sea ice prediction network based on a CNN
    - binary classification on ice concentration data to forecast sea ice locations in the Arctic

Dataset

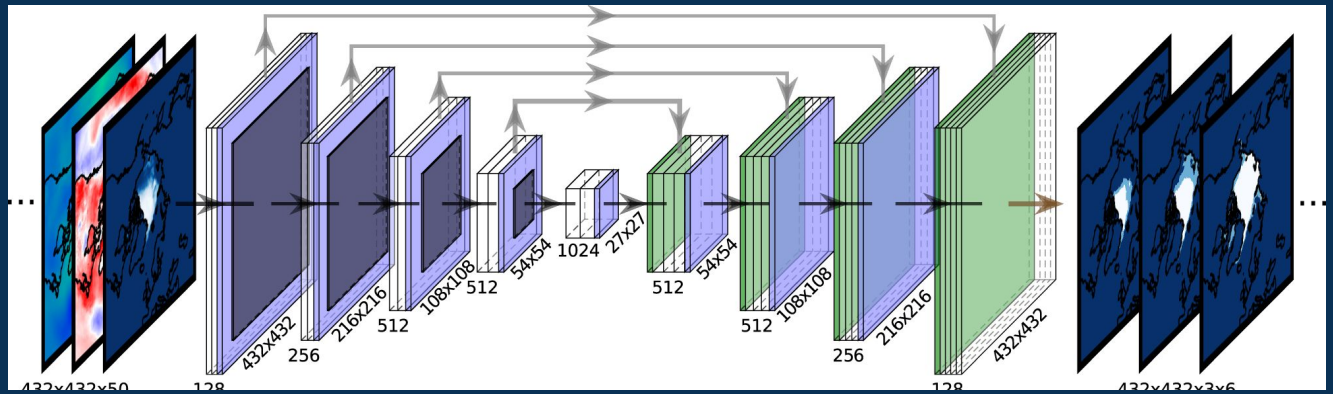
- Sea ice concentration data and satellite imagery 1997-2007
- 240 x 1140 grid of the Arctic- pixels between 0-100
  - Concentration ≥ 15 = sea ice
  - Concentration < 15 = open water





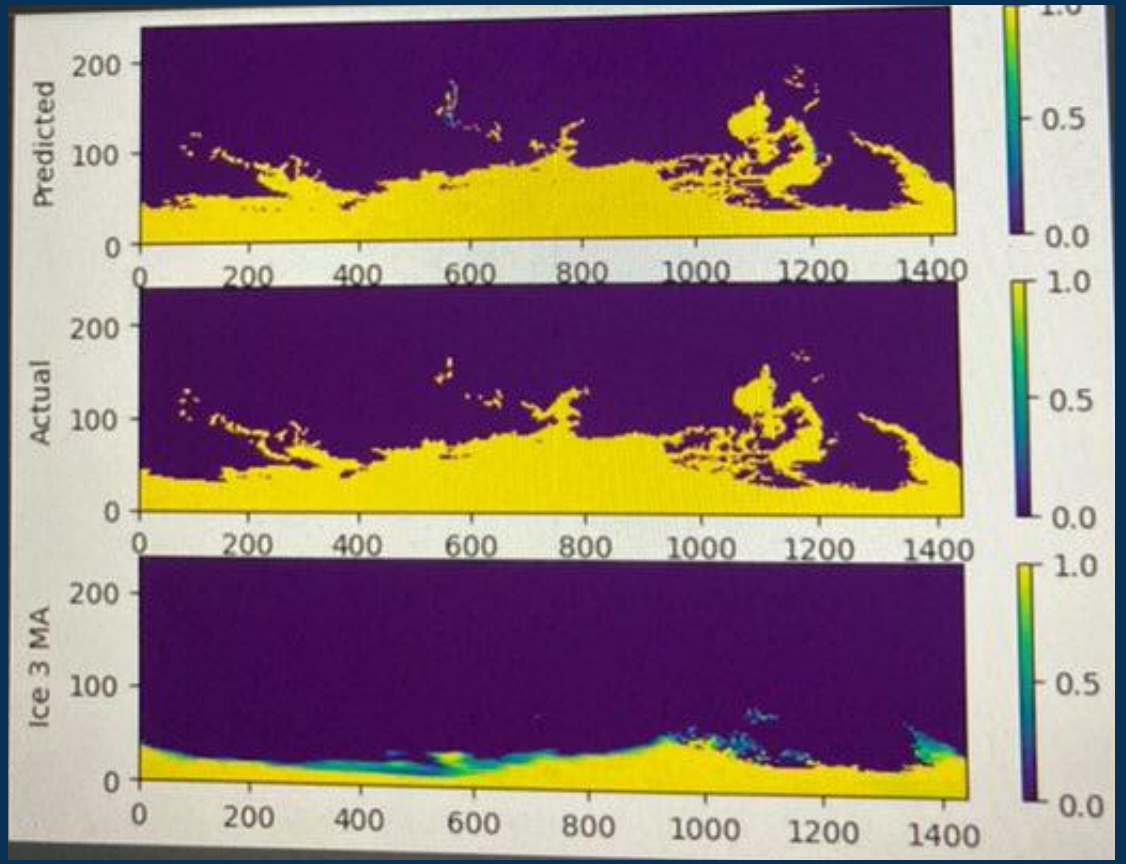
Method

- CNN trained on dataset
  - Learns the spatial and temporal patterns of sea ice movement and concentration
  - Makes accurate predictions
- Evaluation Metrics: Accuracy, Precision, Recall, and F1 Score
  - Predicted ice locations compared with actual locations in test dataset



Results

- The CNN achieved an accuracy of 98% in predicting sea ice locations



Impact

- Feasibility of utilizing CNN-based approaches for improving sea ice prediction capabilities
  - Further research required to enhance the accuracy and performance
- CNN aids in Arctic weather forecasting, climate modeling, and resource management
  - better understanding of the Arctic environment