

This project is aimed at developing a supervised model for predicting daily maximum temperatures in urban areas, with a specific focus on Manchester. The model utilises data simulated across multiple scenarios, each generated from different initial conditions. Despite the dataset's coarse resolution and limited spatial coverage, which inherently restricts predictions to a maximum of one day ahead, efforts were made to explore the potential of extending forecasts.

To address these challenges, a deep neural network model was developed, incorporating all available variables to allow the model to uncover potential relationships and, optimistically, enhance its predictive scope beyond the one-day limit. The initial results showed that the model performed reasonably well, significantly surpassing the baseline established by the persistence model.

Interestingly, the model demonstrated an ability to produce accurate forecasts several days ahead, despite the limited information available, particularly in scenarios characterised by strong winds. This success might be attributed to the model's capability to simulate seasonal variability, which was a prominent and regular feature in the dataset.

The methodology employed reaffirms the efficacy of modelling as a valid approach to prediction, even when faced with substantial data limitations. Utilising multiple ensemble members for training proved to be a crucial strategy in enhancing the model's performance. However, when extending the forecast into the future, the model's accuracy diminished, likely due to its inability to adapt to the changing climatic conditions represented in the RCP8.5 scenario.

Overall, the project offered a valuable opportunity to compare different scenarios and assess the effectiveness of using multiple ensemble members in training the model. This experience has highlighted both the potentials and the boundaries of current modelling techniques in climate prediction under constrained data conditions.