

Case study: Predicting fog at London Gatwick on 28th December 2024 using machine learning

Conclusion

In this study, we developed a machine learning (ML) model aimed at predicting fog conditions at London Gatwick with a focus on the fog incident on 28th - 29th Dec 2024. Our approach involved leveraging 12-years' worth of METARS data at the runway. Through extensive testing and validation, we found that while the XGBoost and random forest models demonstrated promising good overall performance as presented by the receiver operating characteristic (ROC) curve analysis, relying solely on timelagged METARS proved insufficient for the case study considered due to the transient nature of fog at runways. Future work should focus on exploring different ML models that excels at handling timeseries data and incorporating additional input data that feeds into the ML model. For instance, instead of using just the fog fraction and visibility forecasts from the UKV model, incorporating relevant forecast fields from the UKV such as dew point temperature, temperature, pressure, and wind speed & direction is expected to improve the performance of the ML model.