Mengmeng Han (Bureau of Meteorology)

Session 7: Innovations in using observations

Title: MultiSiteBoost: Applying XGBoost to Site-specific Weather Forecast

Site-specific weather forecast is essential to accurate prediction of power demand and consequently is of great interest to energy operators. However, current numerical weather prediction (NWP) models lack the fine resolution needed for localised weather forecast and instead provide the averaged weather information within each gridbox (usually km in size). In this study, we are investigating the feasibility of narrowing this discrepancy by adopting the popular machine learning model: gradient boosting decision tree. Regression trees have been trained with historical NWP and site observation data as training data, aiming at predicting temperature and dew point at multiple site locations. A working ML framework, named 'multiSiteBoost' has been established and initial testing results show a significant improvement compared with the raw grid value from NWP models.