



Comparative Analysis of Fog Prediction Algorithms via Use of WRF Model over Istanbul

Merve Gokgoz, Yasar Burak Oztaner, Alper Unal, and Tayfun Kindap

Istanbul Technical University, Eurasia Institute of Earth Science, Department of Climate and Marine Science, Istanbul, Turkey
(gokgozmerve@gmail.com,oztaner@itu.edu.tr,aunal@gmail.com,kindap@itu.edu.tr)

Information on atmospheric visibility can be critical for fields including aviation industry. In order to predict visibility, forecasting fog is essential. However, literature review suggests that there is no silver bullet solution but rather several algorithms exist to forecast fog. These algorithms' results vary over space and time. The objective of this study is to investigate the capacity of the selected algorithms to forecast visibility over Istanbul's Atatürk International Airport (LTBA) and Sabiha Gokcen International Airport (LTFJ). For this purpose, Weather Research and Forecast (WRF) model was used to simulate the time period between February 19th to February 21st 2014. This period was selected as ground observations suggest that this was one of the most important episode where visibility levels went down as low as 200m. The low visibility conditions stayed almost the entire day on February 20th. The modeling domain included 54, 18, 6, 2 km resolutions. Additionally, visibility observations were obtained from METAR reports for LTBA and LTFJ for the selected episode period. Simulated visibility, which was predicted using WRF outputs, and observed visibility were compared for the selected algorithms separately. Statistical tests were applied to evaluate performance of each algorithm. This paper will present the findings of different algorithms and discuss the advantages and disadvantages.