

Neural Network based Convection Indicator for Pre-Tactical Air Traffic Flow Management

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Abstract— A main objective of Air Traffic Flow Management is matching airspace and airport capacity with demand. Being able to accurately predict unexpected disruptions to the air traffic network, such as convective weather is essential in order to make better informed decisions and improve performance of the system. In this paper we demonstrate how machine learning can improve prediction of convective areas at time horizons necessary for the pre-tactical phase of ATFM. Data from numerical weather prediction forecast are merged with storm cell observations from satellite and used to train a neural network model to identify convective areas at time horizons up to 45 hours. Results show the neural network model outperforms an existing convection indicator in predicting thunderstorms.