



## **Quality assessment of high resolution wind and temperature observations from Mode-S**

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In-situ observations of the upper air wind and temperature are routinely reported by radiosonde and the AMDAR (Aircraft Meteorological Data Relay) programmes (e.g., MDCRS, E-AMDAR). However, radiosonde observations are limited in space and time while not all aircraft are enrolled onto the AMDAR programme.

Two major programmes, NextGen and SESAR, intend to transform the daily operations within the aviation industry with the goal to improve further its safety, efficiency, effectiveness, economics and environmental footprint. Within these programmes the notion of the aircraft as an atmospheric sensor is promoted.

Using existing avionics that support Automatic Dependent Surveillance and Mode-S Secondary Surveillance presents the opportunity to collect routine air traffic management data from which in-situ wind and temperature is either reported directly or can be derived. Thereby the aircraft as an atmospheric sensor is realised. One advantage of the Mode-S data is high temporal resolution which leads to high spatial resolution.

The expected benefits of data obtained from suitability equipped aircraft are improvements to tactical operations and weather forecasts.

This paper presents a limited study that compares Mode-S data collected within the Southern region of the United Kingdom with corresponding AMDAR and Radiosonde profiles in order to characterise further the quality of this data.