SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
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AICRAFT MONITORING BY THE FUSION OF SATELLITE AND GROUND ADS-B DATA

Abstract

The Automatic Dependent Surveillance – Broadcast (ADS-B) system is today a standard equipment on civil aircraft, transmitting periodically data packages containing information on key data such as aircraft ID, position, altitude and intent. It is designed for terrestrial based ground station to monitor air traffic flow in certain regions. Space based ADS-B is the idea to place sensitive receivers on board satellites in orbit, which can receive ADS-B packages and relay them to the relevant ground stations. The terrestrial ADS-B receiver has been widely applied for airport information system, help monitor and control traffic flow, etc. However, its coverage is strongly limited by available ground stations. Space based ASD-B signals can have a much wider coverage and not limited by sea or mountain conditions. This paper first introduce the CubeSat mission, then will discuss the integrated application of ADS-B data received from ground stations and from satellites, analyse their characteristics with statistical results of comparison, and explore the technologies to fuse these two different data resources for an integrated application. The satellite data is based on a Chinese CubeSat, STU-2C, being launched into space on Sept 25th 2015. The ADS-B data received from two different resources have shown a good complementary each other, such as to increase the coverage of space for air traffic, and to monitor the whole space in a better and complete way.