Paper ID: 70892
oral

IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Interactive Presentations - IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (IPB)

Author: Mr. Jens Hampe
DLR, German Aerospace Center, Germany, jens.hampe@dlr.de

# RETROSPECTIVE EVALUATION OF THE PROBA-V MISSION AND ITS FUTURE IMPORTANCE FOR ADS-B OVER SATELLITE

**Abstract**

The Automatic Dependent Surveillance-Broadcast (ADS-B) is seen as an important technology to improve Air Traffic Surveillance (ATS) and Air Traffic Control (ATC) capabilities. Today, ADS-B is an established technology, globally and widely used in continental airspace. Since 2008 the German Aerospace Center (DLR) started to prove that 1090ES ADS-B signals broadcasted by aircraft can be received on board of low earth orbiting (LEO) satellites. This was validated in 2013 by world's first in-orbit demonstration of a space-based ADS-B system, hosted on the ESA satellite PROBA-V.

PROBA-V launched on 7 May 2013, is a miniaturized ESA satellite tasked with a full-scale mission to map land cover and vegetation growth across the entire planet every two days. After more than seven years in space - and despite the satellite still being in excellent condition - ESA's PROBA-V operational mission ended on 30 June 2020, due to suboptimal illumination for the instruments and the availability of Sentinel-3 data. As an in-orbit demonstrator, the PROBA-V platform also flies five technological payloads, one of them is the Automatic Dependent Surveillance Broadcast (ADS-B) receiver, demonstrating potential air traffic surveillance from LEO satellites. PROBA-V continued in an experimental phase from 1 July 2020 until 31 October 2021 and the ADS-B Data can still be received and analyzed.

The existing ADS-B data of the PROBA-V mission have been analyzed in the context of a KDD-Process (Knowledge Discovery in Databases) with respect to its future importance for ADS-B over satellite missions and applications. This paper shows the results of the retrospective evaluation.