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ODIN - TEN YEARS IN ORBIT: OUTPERFORMING THE DESIGN LIFETIME WITH A FACTOR OF FIVE

Abstract

Odin remains a Swedish-led, scientific, 3-axis stabilised, fine-pointing, small satellite with two payloads that provides high quality spectroscopy data in the optical, mm and submm regions. End-users are atmosphere and astronomy scientists in Canada, France, Finland and Sweden. The satellite may with favour be regarded as the second stage in a three-stage rocket of increasingly precise astronomy research in the submm wavelength band. It started with NASA's Submillimeter Wavelength Astronomy Satellite, SWAS (1999-), continued with Odin (2001-) and will end with ESA's Herschel satellite scheduled for a launch in 2007. After 10 years in orbit, the main interest is in the atmosphere science mission and the satellite is now a continuous atmosphere observation mode interrupted only for calibrations and observations of occasional comets and other irregularly occurring astronomical objects. Routines have settled and the behaviour of the spacecraft is well known and operations are now performed by a minimum of staff validating, monitoring and commanding the satellite. During 55000 orbit revolutions, over 10 years in space, Odin has outperformed its design lifetime with a factor of five. Scientists are now hoping that Odin will collect atmospheric data continuously over a full solar cycle. After ten years Odin has to be operated more carefully but this has little impact on the quality of scientific data. Occasional hiccups occur. These are efficiently analysed and problems are resolved by a team of engineers that can be called in on short notice. The paper summarizes Odins 10 years in space with highlights of important milestones.