

23rd IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Small Earth Observation Missions (4)

Author: Mr. Carsten Tobehn
European Space Agency (ESA), The Netherlands

EMSA/ESA SAT-AIS INITIATIVE – NEXT GENERATION PAYLOAD FIRST RESULTS AND
MICRO-SATELLITES STATUS

Abstract

Satellite-based Automatic Identification System (SAT-AIS) provides AIS data from low Earth orbits, allowing for the identification and tracking of ships on global scale and therefore make the Sea Safer¹⁷ by filling the “blue gaps” on the Earth map. The ship’s identity and position contained in AIS messages are picked up by low-orbit satellites then send back down to Data Processing Centres. SAT-AIS is able to assist European entities and institutions in law enforcement, fisheries control campaigns, customs, defence, maritime border control operations, maritime safety and security issues including marine pollution response, search and rescue and anti-piracy. The European Space Agency (ESA) and the European Maritime Safety Agency (EMSA) are cooperating to maximise the provision and use of SAT-AIS data and have demonstrated several new SAT-AIS data services. EMSA and ESA have implemented a SAT-AIS Data Processing Centre (DPC) under a joint project team which is currently being integrated into the Integrated Maritime Data Environment (IMDatE) at EMSA to enhance the operational maritime services. Within ESA’s Telecom Programme the next generation SAT-AIS receiver payload for the Norwegian NORSAT 1 mission has being developed and delivered to the Norwegian Space Centre as mission prime. The NAIS receiver features advanced in-orbit signal processing of up to 4 antennas and 6 AIS channels, still being suitable for nano- and micro-satellites resources (1.5 kg, 5W). NORSAT-1 launch and first results are planned for 2016. Through another project, a new generation of SAT-AIS micro-satellites is developed, within a Private Public Partnership with exactEarth as the customer, operator and service provider and LuxSpace as the satellite prime. The microsatellites will feature advanced antennas, signal processing and will downlink also the raw data received from ships to perform computing intensive processing on ground. The Satellite PDR was held end 2015 and phase C/D will proceed in 2016. With these projects, ESA’s SAT-AIS programme boosts the identification and global tracking of ships with cutting-edge space and ground technology. The status and first results of the on-going SAT-AIS activities are presented in this paper.