

SPACE OPERATIONS SYMPOSIUM (B6)  
Ground Operations - Systems and Solutions (1)

Author: Mr. Antonio Cassiano Julio Filho  
Instituto Nacional de Pesquisas Espaciais (INPE), Brazil

Dr. Ana Maria Ambrosio  
Instituto Nacional de Pesquisas Espaciais (INPE), Brazil  
Dr. Maurício Gonçalves Vieira Ferreira  
Instituto Nacional de Pesquisas Espaciais (INPE), Brazil  
Dr. Geilson Loureiro  
National Institute for Space Research - INPE , Brazil

THE AMAZONIA-1 SATELLITE'S GROUND SEGMENT - CHALLENGES FOR IMPLEMENTATION  
OF THE SPACE LINK EXTENSION PROTOCOL SERVICES.

**Abstract**

Amazonia-1 is the first Remote Sensing Satellite entirely developed at Brazil by National Institute for Space Research (INPE) and it is expected to be launched in 2018. Amazonia-1 is a polar orbit satellite that will generate images with a 5 days revisit period. To do this, has a wide sight optical imager, called Wide Field Imager (WFI), able to observe a range of 700 km with 70 meters of spatial resolution. Its rapid revisit feature will enable Amazon deforestation alert data to improve in real time by maximizing the acquisition of useful images in the face of cloud cover in the region. The Amazonia-1 will also provide frequent images of Brazilian areas, and may be useful in other environmental monitoring applications, such as the coastal zone, water reservoirs, forests of other biomes and natural disasters. The Amazonia-1 satellite is based on the Multi-Mission Platform (MMP), which was also developed by INPE and other Brazilian industries as a part of the National Program of Space Activities (PNAE), coordinated by the Brazilian Space Agency (AEB). The MMP is generic platform to 500 kg class satellites. With 250 kg mass, it provides the necessary resources, in terms of power, control, communication and others to operate, in orbit, a payload of up to 280 kg. The requirement of high rate of revisits and the need of controlling and data reception of other remote sensing satellites available in Brazil, for example, the CBERS (26 days to revisit) impose new challenges for the ground segment, related to control system of orbit and attitude and consequently in the reception, processing and distribution of data through the ground segment using the Space Link Extension (SLE) Protocol Services. The SLE protocol services establish activities, based on the Consultative Committee for Space Data Systems (CCSDS) for cross support recommendations, including Management Services for Data Transfer and SLE protocol services related to Telemetry and Telecommand. These services standards have been adopted by the different space agencies, such as: ESA, NASA, CNES, DLR, ASI, JAXA, INPE, to performing tracking and controlling of the spacecrafts. This paper presents an overview of the Amazonia-1 satellite's ground segment, its objectives, the satellite design based in the Multi-Mission Platform (MMP) and also the preparation of the ground segment for the operation with the SLE Protocol and allow for efficient operations with cross support.