

SMALL SATELLITE MISSIONS SYMPOSIUM (B4)
Small Satellites Potential for Future Integrated Applications and Services (4)

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DATA COLLECTING MICROSATELLITE (MCD) - FEASIBILITY STUDY

Abstract

This paper addresses a Data Collecting Microsatellite (MCD) feasibility study, which is being developed by the Brazilian private company Orbital Engenharia Ltda, with the financial support from The Sao Paulo State Foundation - FAPESP. The MCD is intended to provide environmental data collection from ground data collecting platforms (PCDs) spread over the Brazilian territory, to provide on board data storage capacity and to transmit the data to a Ground Receiving Station during a convenient orbit passage over it. The data will be received in UHF frequency and be transmitted to ground in S-Band frequency. The MCD will make use of just one S-Band transponder to receive telecommand and to transmit the payload data as well as its service telemetries, thus saving one UHF payload transmitter. The MCD UHF and S-Band radioelectric frequencies interfaces have being specified to be full compliant with the ground segment of the already existing Brazilian Environmental Data Collecting System, which was created and have been operated by the Brazilian National Space Research Institute – INPE. The MCD is the first satellite system being proposed and designed by the private sector in Brazil. It is intended to be a natural candidate to replace the Brazilian Data Collecting Satellites SCD-1 and SCD-2, respectively launched in 1993 and 1998, which are still operational in orbit. The feasibility study being developed comprises from one side the determination of the best possible low earth orbit (between 700 km and 800 km) orbital constellation configuration to provide one hour or less satellite visibility for any ground platform located in the Brazilian territory. Other places on the globe having a maximum of 30 deg latitude will potentially be covered by the MCD constallation. From another side, the feasibility study comprises both the microsatellite mechanical and electrical architecture configuration. The MCD basic mission and system functional requirements are also addressed.