

METEOROLOGICAL OBSERVATIONS AND ESTABLISHING A BASE FOR FUTURE MARS MISSIONS

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Introduction: This study based on the ideas about investigation of characteristic of the Mars' atmosphere with around 25 CanSATS. CanSAT is a can size satellite that consists of task oriented sensors with quite simple subsystems to provide communication and power exigence. CanSATS are commonly used systems for atmospheric research. The advantages of CanSAT are ease to use and low cost design. They have some of the fundamental systems that big satellites have; however, practical.

Method: It is proposed that a group of CanSATS that are able to observe the atmosphere, scan and collect its data such as pressure, temperature etc. Besides, collected data will be transferred to a satellite placed already in-orbit. CanSATS will be carried by a spacecraft that is a hybrid entry vehicle to the orbit of the Mars. CanSATS placed in this spacecraft will enter the atmosphere. It is important to be simulated the attitude determination and control of RV that have been designed. Entry vehicle will measure Mars air flow conditions, such as hypersonic and supersonic regime before the departure of the first CanSAT. Satellites carrying the entry atmospheric science instruments will depart at different altitudes as from the spacecraft reaches the subsonic regime. They will send the atmospheric data to main spacecraft for creating an atmospheric profile of the Mars. After the CanSAT mission, main spacecraft will turn into a platform/base, with opening its wings, compatible with solar panels connecting to the battery. It also has at least two weather stations in different locations at the platform to measure winds, storms, and weather changes.

Conclusion: As a conclusion of our study, data indicating the characteristic of Mars's atmosphere and reentry conditions will be collected more detailed up to date. This data will be used as a guide for design of future missions to the Mars. Thus, information obtained about instant ground atmospheric changes via platform/base and stored energy on its batteries can be used for the future manned Mars missions, such as Mars colony.

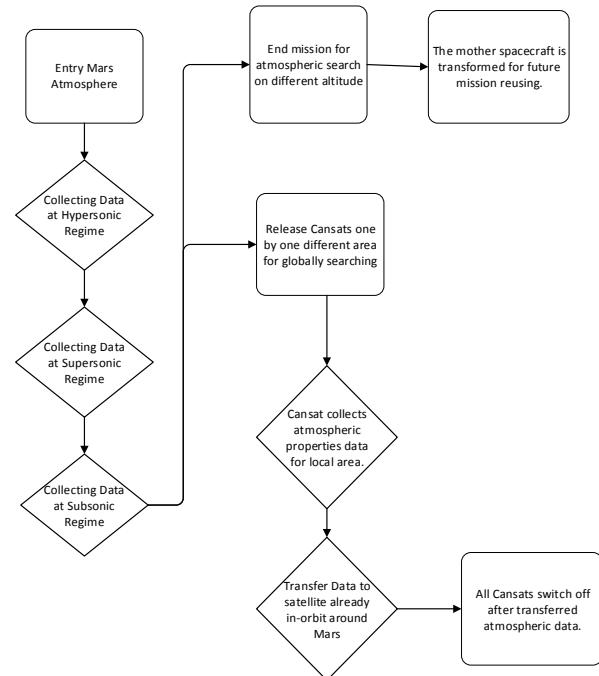


Figure 1 . Mission Flow Chart

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