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THE FIRST UAE MULTI-DISCIPLINARY SPACE PROGRAM - A CUBESAT TO MONITOR VEGETATION AND DEMONSTRATE NEW TECHNOLOGY

Abstract

In 2015 Yahsat, the Masdar Institute of Science and Technology, and Orbital ATK established the first Master's level, advanced space studies program in the Gulf Cooperation Council (GCC) region. An integral part of this program is for the students to design and build a CubeSat in order to expose them to the broader issues related to systems engineering, and provide them with invaluable experience that they can utilize to expand the UAE's aerospace industry.

For their first spacecraft, the students at Masdar have selected a vegetation monitoring payload. Vegetation in the UAE faces a number of unique challenges due to a desert environment, high temperatures, poor soil conditions, and rapidly expanding human impact. Utilizing commercially available technology the CubeSat will identify and locate areas of vegetation, track changes in those areas, and determine the health level of the green areas. In addition to its primary mission, the Masdar CubeSat will also flight demonstrate a unique Lithium-ion battery currently being developed by researchers at Masdar Institute.

Although this paper will primarily focus on the earth observing mission of the CubeSat we will also highlight some of the challenges and successes encountered during the first year of this innovative project.