

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: Concepts and Operations (7)

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TOROGOZ SOUNDING ROCKET FOR EL SALVADOR

Abstract

The Torogoz Sounding rocket is a project that involves university students, industry professionals and private individuals from El Salvador into developing critical technologies for gaining access to space. The project involves the design, fabrication, testing and flight of a composite solid propellant sub orbital rocket capable of launching a scientific payload beyond the Kármán line. This payload consists of sensors to measure pressure, temperature and ozone and a multispectral imaging system in the visible and near infrared spectrum to provide data to assess the level of deforestation in El Salvador which is considerably high due to overpopulation, but there hasn't been an accurate measurement yet. The first part of this paper details the design and test work of the rocket that has been achieved to date. Rocket work includes the fabrication of propellant, the characterization of propellant, namely Mg/NH₄NO₃ and AL/NH₄CLO₄, the fabrication of a subsonic wind tunnel, the design of a supersonic wind tunnel, the development of codes to simulate internal ballistics and rocket trajectory, the test of small rockets and finally the conceptual design of the rocket. The second part of this paper develops the rationale for the multispectral imaging sensor, its design, its supporting subsystems and expected results. Work with the payload has been limited to the development and testing of a microcontroller based command telemetry subsystem that is incorporated in the test of small rockets and the conceptual design of the multispectral imaging sensor and the supporting sub-systems.