

EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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HYPERSPECTRAL IMAGING WITH NANOSATELLITES

Abstract

The paper will report on a different approach for a nanosatellite carrying a visual and near-infrared hyperspectral sensor. Ensuring a new approach is important to underpin the utility of nanosatellites technology development for research and operational missions.

The mission concept for a nanosat carrying a visual and near infrared hyperspectral sensor in low Earth orbit is presented. Hyperspectral sensors are synonymous with large data volumes, high demands on signal to noise ratio and complex focal planes, which present various challenges when considering the limited space and excessive jitter of small satellites.

Microsatellites demonstrated operational hyperspectral imaging more than a decade ago i.e. the CHRIS instrument on Proba-1. The project under discussion seeks to take advantage of progress in sensor technology and the advances in nanosatellites to achieve a mission objective that would establish the basis for an operational hyperspectral mission with a constellation of nanosatellites.

The paper presents an innovative approach to hyperspectral data acquisition with a small satellite that has been enabled by new detector technology.

The paper discusses the following key drivers for mission success; the imaging payload, the attitude determination and control system, data handling, data downlink and post processing. The paper will conclude with a presentation of the mission concept for implementation.