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CALIBRATION AND VALIDATION OF THE PRE-OPERATIONAL HYPERSCOUT 2 DATA.

Abstract

In this paper we report on data that were acquired with HyperScout 2 during the ESA FSSCat and PhiSat-1 mission and will be distributed within the Copernicus framework through the Deimos data portal.

HyperScout is a miniaturized hyperspectral imager with 50 spectral bands over a spectral range from 450 till 950 nm. HyperScout 2 is an enhanced version of the instrument, equipped with an additional thermal infrared spectral channel and a Vision Processing Unit for advanced Artificial Intelligence applications.

The calibration and data processing for such a small instrument are challenging due to the lack of on-board calibration equipment. An in-flight calibration based on vicarious calibration and cross-calibration with institutional satellites as Sentinel-2 MSI for the visible near infrared (VNIR) spectral channel and Sentinel-3 SLSTR for the thermal infrared (TIR) spectral channel is presented. Geometric processing and geo-referencing is based on a processing chain employing machine vision techniques.

With co-registrated VNIR and TIR data the mission targets a diversity of applications as flooding, fire prediction, detection and monitoring, Urban Heat Islands, vegetation and crop status, water quality, change detection, soil moisture. During this talk an overview is provided of the acquired data made available, the in-flight calibration activities, and the achieved radiometric and geometric quality of the Level-1C data product.