Abstract

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Geometric and radiometric evaluation of Razaksat medium-sized aperture camera data

Razaksat, a high-resolution Malaysian remote-sensing satellite, was launched on 14 July 2009. It carries a medium-sized aperture camera (MAC) with one panchromatic and four multispectral bands, of 2.5 and 5 m spatial resolution, respectively. The satellite was placed in a near-equatorial orbit with a low inclination angle of 9° to enable an optimum 14 overpasses per day over the equatorial region (i.e. 9° N to 9° S) as compared to only three daily passes over Malaysia for near-polar orbiting satellites. This article reports on evaluation of the panchromatic and multispectral images of MAC: (i) a geometric evaluation of the panchromatic and multispectral MAC images (ii) a radiometric evaluation, focusing particularly on the noise level and sharpness of the MAC images (iii) an evaluation of the MAC panchromatic data for updating planimetric topographic features and (iv) a classification of MAC multispectral data for land-cover mapping. The noise level within the image set was found to increase with the intensity, while the sharpness of edges tested on the images in all non-homogeneous targets was relatively marginal. However, the outcome of the analysis showed the utility and potential of high-resolution panchromatic and multispectral bands of the Razaksat as stipulated in the system mission for terrain mapping.