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ESTIMATION OF RADIOMETRIC CALIBRATION COEFFICIENTS OF EGYPTSAT-1 SENSOR

A. H. Nasr, B. M. El Leithy, H. S. Badr, and J. Centeno
National Authority for Remote Sensing and Space Sciences, 23 Joseph Broz Tito St., El-Nozha El-Gedida, P.O. Box: 1564 Alf-Mascan, Cairo, Egypt

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Abstract. Sensors usually must be calibrated as part of a measurement system. Calibration may include the procedure of correcting the transfer of the sensor, using the reference measurements, in such a way that a specific input-output relation can be guaranteed with a certain accuracy and under certain conditions. It is necessary to perform a calibration to relate the output signal precisely to the physical input signal (e.g., the output Digital Numbers (DNs) to the absolute units of at-sensor spectral radiance). Generic calibration data associated with Egyptsat-1 sensor are not provided by the manufacturer. Therefore, this study was conducted to estimate Egyptsat-1 sensor specific calibration data and tabulates the necessary constants for its different multispectral bands. We focused our attention on the relative calibration between Egyptsat-1 and Spot-4 sensors for their great spectral similarity. The key idea is to use concurrent correlation of signals received at both sensors in the same day (i.e., sensors are observing the same phenomenon). Calibration formula constructed from Spot-4 sensor is used to derive the calibration coefficients for Egyptsat-1. A brief overview of the radiometric calibration coefficients retrieval procedures is presented. A reasonable estimate of the overall calibration coefficient is obtained. They have been used to calibrate reflectances of Egyptsat-1 sensor. Further updates to evaluate and improve the retrieved calibration data are being investigated.

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