

ATMOSPHERIC CORRECTION METHODOLOGY FOR ASTER, RAPIDEYE, SPOT 2 AND LANDSAT 8 IMAGES WITH SOFTWARE ENVI FLAASH MODULE

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ABSTRACT:

The atmospheric correction process is applied to digital images in order to remove distortions induced by aerosols and intrinsic radiance present in the atmosphere and reflected in an image as consequence of the interactions between the sensor and the atmosphere. This paper describes the atmospheric correction process, using ENVI's software FLAASH module, applied to data collected by four different satellite sensors: Aster, RapidEye, Spot 2 and Landsat 8. For Aster and Spot 2, atmospheric correction is shown for orthorectified GeoTIFF data that does not enclose the associated wavelength components, therefore the process includes the setting of these values in the image. Moreover, for RapidEye and Landsat 8, the process is applied to orthorectified GeoTIFF data that enclose the wavelengths components attached to the metadata for each image. To develop the methodology described above a literature review was carried out and the formulas required for the atmospheric correction process were determined for each sensor; several tests were performed to find the values that were not detailed in the bibliography. This methodology is a key tool for remote sensing in Costa Rica, since the subject of atmospheric correction has not been covered in large-scale investigations, in part, by the lack of knowledge of the procedure. This research has been proposed as a methodological contribution to environmental remote sensing applications that use satellite images from the four sensors in study. This work is currently under review for publication in an indexed journal and seeks to show national developments in remote sensing to the international community through the symposium.