Atmospheric Correction - for Rugged Terrain (ATCOR3)

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Pacific Island countries are surrounded by huge water areas and cloud build-up already with a few meters of altitude. In Fiji, digital image analysis in 1991 and in 2001 faced serious problems with local haze overlay and relief related atmospheric differences.

To overcome this, GIZ financed an atmospheric correction add-on software for ERDAS; the image analysis software that is being used at SOPAC GIS & RS section.

This paper describes ATCOR3, a method for the radiometric correction of satellite imagery over mountainous terrain to remove atmospheric and topographic effects to retrieve the physical parameters of the Earth’s surface. Furthermore, a Digital Elevation Model (DEM) is used to obtain information about surface elevation, slope, and orientation.

ATCOR3 was developed mainly for high spatial resolution satellite sensors with a small filed of view such as LANDSAT TM and SPOT HRV, and only the multispectral and panchromatic imagery can be corrected within ATCOR3. Pan-sharpened image data cannot be corrected however; a Haze Removal is only possible for multispectral data.

The result is that it produces sharp and brilliant satellite images and removes the shadow effect in mountainous terrain. Image interpretation improved for the forest change detection carried out for Fiji Islands.

SOPAC GIS & RS section is now able to enhance multi-spectral image data using ATCOR3 and provides its service for all SPC member countries.