February 10, 2025

RESOLV – the Superior Solution for Atmospheric Correction

The Need

Until now, automated surface reflectance correction methods were based on radiative transfer (RadTran). Though logical, RadTran-based methods are too complex to work in near real-time, experience severely limited accuracy in conditions of moderate to heavy aerosol loading and fail for regions of low dark-to bright spectral diversity. These limitations constrain application to new satellites, especially smallsats, and hamper intelligence, surveillance and reconnaissance. This constrained reproducibility and accuracy limits all applications.

The Solution

A new, superior atmospheric correction method, Closed-form Method for Atmospheric Correction (CMAC) is now available that is no less theoretical nor more empirical than RadTran, but better in all metrics: accuracy, efficiency, and applicability. CMAC is based on an observable phenomenon formulated into a conceptual model with precedence from a prestigious 1985 remote sensing paper. Compared to the LaSRC software of NASA, CMAC is simpler and more robust, with demonstrated greater accuracy and reliability using only image statistics without the need for ancillary data. Three papers that describe and evaluate CMAC provide extensive verification that include image lists, spreadsheets and shapefiles for the interested reader (Journal Paper Links).

The Application

RESOLV applies CMAC technology in software-as-a-service supporting surface reflectance conversion for Earth observation images. RESOLV provides convenient outsourcing to standardize reliable output and considerable cost savings compared to supporting such a program in house. RESOLV delivers the software with calibration files that are monitored and updated to maintain the data from each sensor within specs. RESOLV can reside at the end of the image process flow to deliver customized products, for example, as application-ready bundles of surface reflectance with a quality raster to guide reliable application.

RESOLV Versions

Two versions of RESOLV software are available and applicable to 4-band VNIR satellites: RESOLV-t for terrestrial application, and RESOLV-w for the ocean. Though RESOLV supports 4-band VNIR currently, it can be adapted for any added bands within this spectral region, eventually including hyperspectral sensors.

Our Promise to You

RESOLV was developed to standardize robust and reliable surface reflectance image conversion for the Earth observation industry. We promise that RESOLV application will be simple, seamless and customized for your image processing workflow. Permanent licensing for CMAC technology will be made available after several years of SaaS application. Special pricing is available for early adopters.