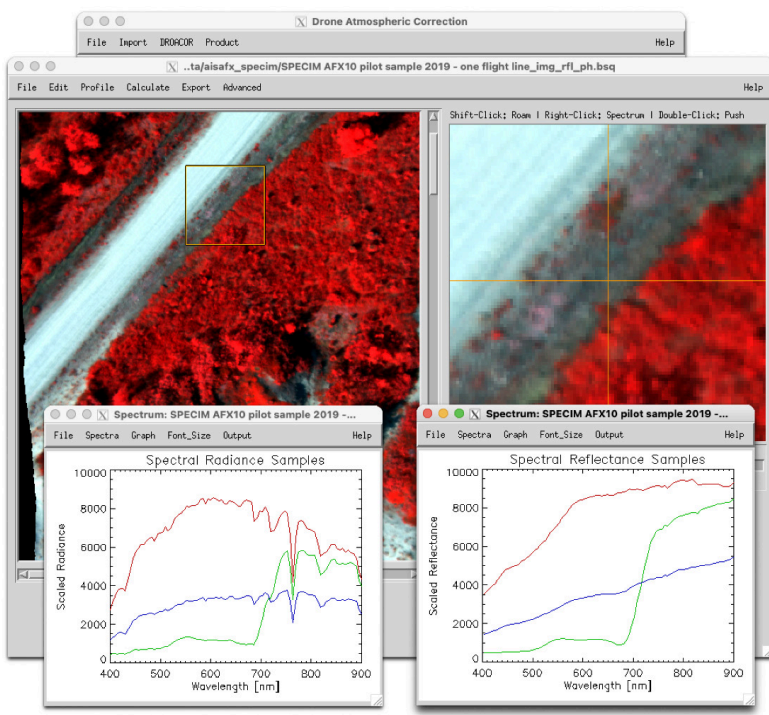


Drone Atmospheric Correction

A new generation for reflectance retrieval from UAV based imagery designed for hyper-spectral and multispectral instruments. Automatic directory based processing, fully physical self-adjusting calculation.



*DROACOR spectral reflectance retrieval from AISA FX imagery
(data courtesy of Specim Inc, Finland)*

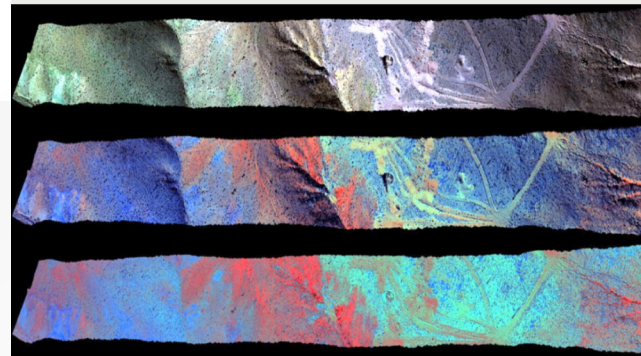
Fully Featured

- Automatic physical reflectance retrieval method,
- LibRadtran radiative transfer model based atmospheric parameters,
- Inflight radiometric calibration,
- Specific low flight altitude adjacency irradiance correction,
- Self-calibrating reflectance retrieval using image statistics,
- Spectral calibration for VNIR and SWIR using oxygen band positions,
- Water vapor retrieval by spectral fitting technique
- Aerosol optical thickness estimate by enhanced dark object method, and
- Adaptive atmospheric feature treatment and spectral polishing.



ADVANCED TOOLS

- Below-cloud reflectance retrieval,
- Ground based/horizontally acquired data correction,
- Mosaic cloud de-shading and BRDF correction,
- Multi-file multi-index vegetation index calculation,
- Spectral angle mineral mapping,
- Thermal Infrared data processing,
- Topographic illumination correction based on digital surface model input, and
- Built-in GLIMPS image analysis tool.



*DROACOR mineralogy results for Cuprite Nevada. NEO Hypspec Mjolnir
VS-620 scene - data courtesy of Echo Labs Inc, Canada.*

EASE OF USE

DROACOR® can be used out of the box for supported sensor systems (see below). The mostly automatic data import and pre configured atmospheric correction makes it usable without expert knowledge about atmospheric compensation.

SUPPORTED SENSOR SYSTEMS

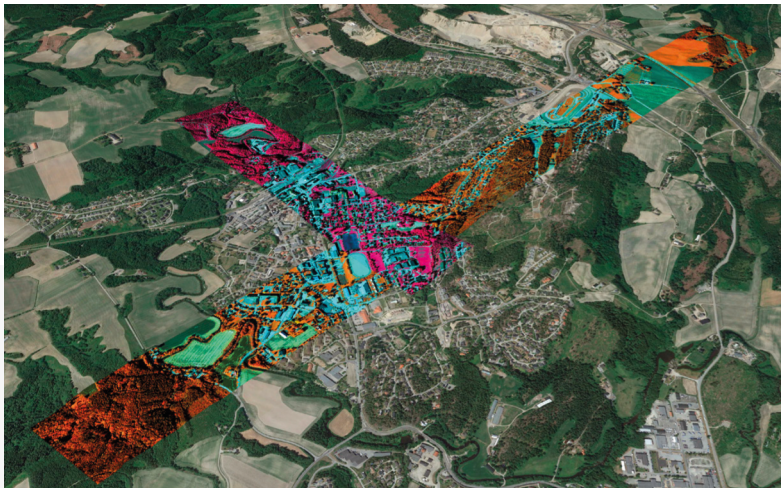
Automated data import and data processing is supported for:

- Hyperspectral: NEO Mjolnir, Specim AISA, Headwall Hyperspec, Reson Pika, Corning Shark.
- Multispectral: Micasense RedEdge, DB2 Laquinta, Standard RGB TIFFs
- .. more systems and thermal sensors upon request.



Orthorectification for Airborne Scanners

PARGE® is a direct geocoding and orthorectification software. It exactly reconstructs the scanning geometry for each image pixel using position and altitude of the airplane in conjunction with (optional) terrain elevation data. It is specially suited for the application with hyperspectral airborne line scanners.



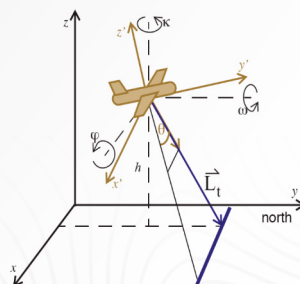
NEO Mjolnir boresight alignment experiment

Compatibility

- Consistent and open data structure optimized for airborne hyperspectral instruments,
- Support for NEO HYPSPEx and Mjolnir, Specim AISA Fenix/AFX-10/AFX-17, Itres CASI/SASI/TASI, Resonon Pika, Corning Shark Headwall Hyperspec, and more,
- Operating system independent operation,
- Based on IDL technology and calculation outputs to ENVI formats (NV5 Inc.),
- Orthorectified mosaics or 3D point cloud outputs, and
- Oblique and horizontal view data processing.

Accuracy

- Sub-pixel accurate geometric calculation and DEM intersection,
- Automatic boresight alignment of sensor system based on ground reference data,
- Optimized choice of resampling techniques.

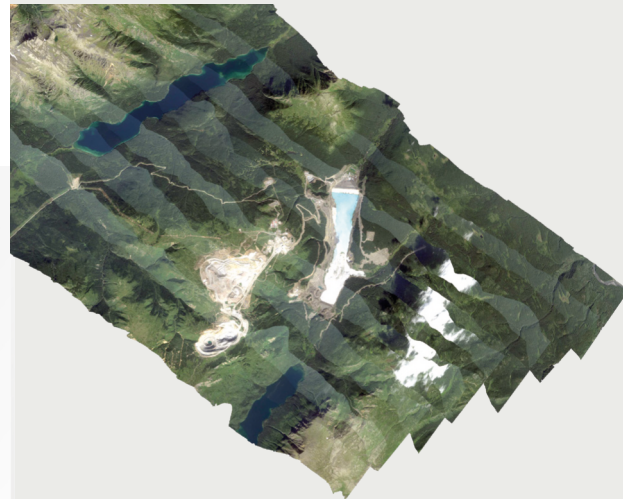


Scan Geometry



FLEXIBILITY

- Sophisticated graphical user interface for all functions with integrated on-line help system,
- Side output of pixel scan geometry for BRDF research and atmospheric correction,
- Tools for parameter filtering and correction,
- Support for complete directory based batch processing.



Hymap large scale fully automatic boresighting processing and mosaicking solution (Hyvista Corp. Australia)

SUPPORT AND CUSTOMIZATION

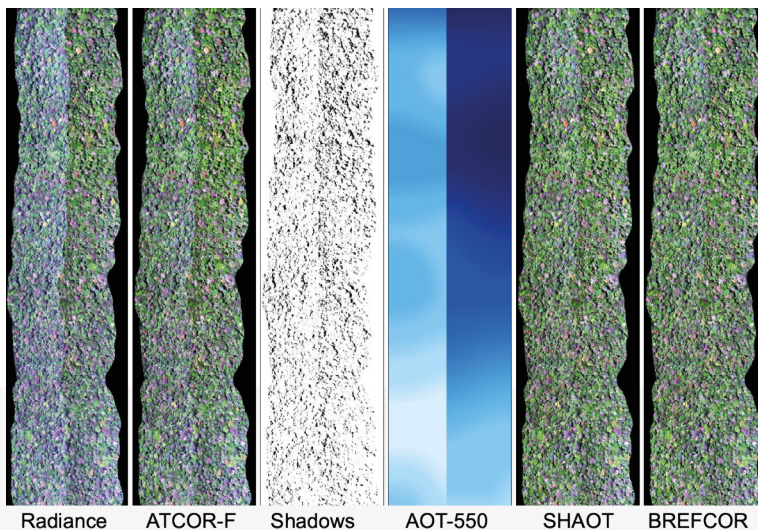
- Introduction of user specified sensors and data format is supported upon request,
- Detailed user manual includes full description of functionality, procedures, and internal data format.

TECHNICAL CONDITIONS

- Windows, Linux, or Mac OS X,
- RAM: min. 16 GB allocated to IDL,
- ENVI™ license recommended, but not a condition.

Atmospheric & Topographic Correction

The ATCOR® software family derives surface reflectance, emissivity, and temperature from calibrated images by atmospheric and topographic correction. The model is applicable to all optical remote sensing systems with special focus on imaging spectroscopy data.



ATCOR-4, aerosol scattering removal and BRDF correction.

Fully Featured

- Complete graphical interface for the atmospheric & topographic correction based on IDL (NV5 Inc),
- Based on ENVI™ file formats,
- Batch processing and logging capabilities for operational processing,
- Using high-accuracy MODTRAN® radiative transfer calculations,
- ATCOR-3 support for Landsat, SPOT, IRS sensors, MERIS, ASTER, ALI, DMC, Ikonos, Quickbird, Orbview, Worldview, RapidEye, THEOS, Sentinel, VENUS, and more,
- ATCOR-3 hyperspectral option for ENMAP, EMIT, PRISMA, and others,
- ATCOR-4 support for airborne multispectral, hyperspectral and thermal line scanner instruments.
- Automatic aerosol type and aerosol optical thickness retrieval,
- Flexible water vapor retrieval and correction,
- Removal of haze, cloud shadow, and cirrus clouds,
- Capability for in-flight vicarious radiometric and spectral calibration and validation,
- Sensor simulation tool for at-sensor radiance cube from reflectance imagery,
- Correction for spectral smile,
- Cast shadow correction with adaptive diffuse irradiance calculation, and
- Physical model based BRDF correction (BREFCOR method).

ATMOSPHERIC COMPENSATION

- ATCOR-3 for small and medium FOV satellite imagery, for rugged terrain, and
- ATCOR-4 for airborne imaging spectroscopy, multispectral scanner imagery, all terrain



ATCOR-3 correction and haze removal for Sentinel-2.

COMPLETE SOLUTION

ATCOR® is the major, state of the art software suite available on the market which includes the capability for radiometric correction in rugged terrain considering cast shadow and illumination calculations. It is based on the reliable MODTRAN® radiative transfer code and more than 30 years of research in physical atmospheric correction.

REQUIREMENTS

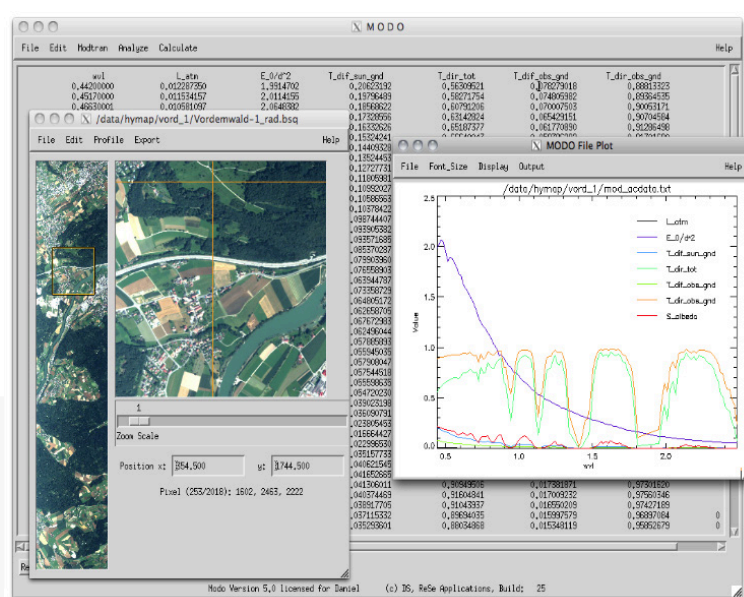
- IDL virtual machine provided with software distribution,
- Linux, Mac OS X, or Windows,
- RAM: min. 16 GB allocated to IDL,
- ENVI™ license recommended, but not a condition.

The MODTRAN® trademark is being used with the express permission of the owner, the United States of America, as represented by the United States Air Force and by Spectral Sciences, Inc. (for use outside of the USA). MODTRAN® software used in this product is licensed from the United States of America, as represented by the United States Air Force, under U.S. Patent Nos. 5,884,226, 7,433,806 and 7,593,835 B2.



MODTRAN®6 for Remote Sensing Research

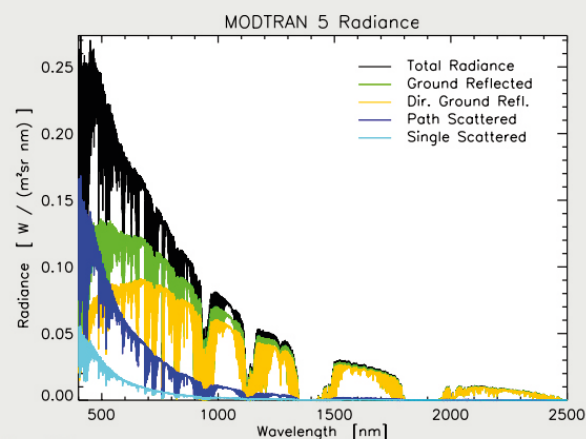
Scientific tool used to analyse signatures at various sensor systems, design hyperspectral instruments, calibrate and validate operational sensors, propagate surface reflectance signatures, learn about radiative transfer, and investigate atmospheric gases and aerosols.



EXPERT SYSTEM

MODO provides access to the MODTRAN® radiative transfer code through a graphical user interface. It has been designed for use by the remote sensing specialists and research applications.

Moreover, it is well suited to learn the use of MODTRAN® and for educational purposes.



Full Resolution Radiance

Fully Featured

- Graphical interface to the original MODTRAN® software developed by SSI/AFGL,
- Direct call of embedded MODTRAN®6 ,
- Import/export of MODTRAN® tape5 or json control files,
- Import/export of reflectance reference spectra,
- Support for ENVI® spectral libraries,
- Optionally includes original executable code and full license of MODTRAN® v6.0,
- Extraction of radiance/transmittance/solar flux components from original MODTRAN® output,
- Plotting of standard MODTRAN® outputs (tape7 / flux),
- Direct at-sensor radiance simulation for remote sensing systems,
- Broad collection of sensor response functions for airborne and spaceborne optical and thermal instruments,
- Sensitivity analysis by series of critical parameters,
- Helper functions for visibility determination and solar angles calculation,
- Simple atmospheric correction (SACO) module for ENVI® formatted imagery,
- ENVI® file display and extraction of spectra, and
- Complete, linked documentation.

TECHNICAL REQUIREMENTS

- IDL virtual machine provided with software distribution,
- Windows 10 or higher, Linux, or Mac OS X.
- 9 GB storage for complete MODTRAN® installation,

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