



ATCOR

Atmospheric Correction of
Satellite Data

PRODUCT DESCRIPTION

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Atmospheric Correction (ATCOR) is an add-on module to the ERDAS IMAGINE® product suite that eliminates atmospheric and illumination effects. As earth-observing satellite sensors map the Earth's surface properties, haze influences the recorded signal. In addition, in rugged terrain, varying illumination conditions (sunny and shady hills) modify the "true" spectral behavior of surfaces. The ATCOR module was originally developed at DLR, the German Aerospace Center and integrated by ERDAS' German distributor GEOSYSTEMS GmbH for ERDAS IMAGINE. ATCOR consists of ATCOR2 and ATCOR3. ATCOR2 is used for atmospheric correction in flat terrain. ATCOR3 is used for atmospheric correction in rugged terrain by integrating a DEM.

Benefits

- Produce sharp and brilliant satellite images.
- Reduce the shadow effect in mountainous terrain.
- Obtain better classification results by using real reflectance values.
- Enables multi-temporal and multi-sensoral comparisons.
- Take advantage of the wealth of hyperspectral imagery.
- Calculate value added products such as LAI, albedo or net radiation.

Applications

- Multi-temporal and multi-sensoral land cover classification
- Forest damage monitoring
- Surface temperature mapping
- Harvest estimations
- Erosion monitoring

Key Features - ATCOR2

Atmospheric Parameters, Atmospheric Database, Atmosphere Models

- Calculation of images with either spatially constant or spatially varying atmospheric conditions.
- Determine atmospheric parameters (aerosol type, visibility) individually within the SPECTRA module.
- The atmospheric database includes a wide range of pre-calculated radiative transfer runs for different weather conditions and sun angles employing the MODTRAN-4 code.

Thermal Bands

- Generation of surface (brightness) maps for thermal band sensors.
- Improved calibration of thermal bands.

Image Data Sources

- Landsat-4/5 TM, MSS
- Landsat-7 ETM+
- SPOT
- IRS-1A/-1B LISS-2
- IRS-1C/-1D LISS-3
- IRS-1C/-1D WiFS
- IRS-P6 LISS-3
- IRS WiFS
- IKONOS
- MOS-B
- Resurs MSU-E
- ASTER
- QuickBird
- OrbView

- Cartosat
- ALOS AVNIR-2

Improved GUI

- Default parameters accessible through sub-menus.
- Enhanced GUI for atmosphere selection.
- SPECTRA module: Frame extent adapts to screen size.

Sensor Specifications

- Sensor specifications are stored in ASCII-files. This allows an easy update at www.atcor.de.

Haze Removal

- Statistical haze removal.
- Generation of haze mask with user-specified thresholds.

Value-Added Products

- Calculation of several value-added products in a separate file (16 bit integer):
 - Vegetation index SAVI (Soil Adjusted Vegetation Index)
 - LAI (Leaf Area Index)
 - FPAR (Fraction of Absorbed Photosynthetically Active Radiation)
 - Wavelength-integrated albedo
 - Absorbed solar radiation flux
- Calculation of surface energy fluxes for thermal band sensors:
 - Net radiation
 - Ground heat flux
 - Latent heat of evaporation
 - Sensible heat flux
 - ATCOR3 includes all capabilities of ATCOR2

Key Features - ATCOR3

Modeling of Height Variability of Atmospheric Effects

- A DEM for the area of interest is necessary.

Calculation of Derivative Products:

- SKYVIEW: Sky view factor calculation with a ray tracing program to determine the proportion of the sky hemisphere visible for each pixel of the terrain.
- SHADOW: Cast shadow calculation depending on solar zenith and azimuth angle employing a ray tracing program.

Product Packaging and Sales Information

ATCOR2 and ATCOR3 are both add-on modules for ERDAS IMAGINE and require IMAGINE Advantage® or IMAGINE Professional®. ATCOR3 is an upgrade to ATCOR2. ATCOR3 includes all capabilities of ATCOR2 and cannot run without ATCOR2. ATCOR is distributed worldwide by GEOSYSTEMS, and by ERDAS' distributors in their specific regions. In the United States of America, ERDAS is the only reseller for ATCOR.

Hardware and OS Requirements

ATCOR needs an ERDAS IMAGINE license with IMAGINE Advantage minimum. ATCOR is compatible with ERDAS IMAGINE 9.1 and is currently supported on the Windows platform only.



IKONOS - Dresden, Germany (Credit: GeoEye)



IKONOS enhanced with ATCOR2. Processing by IÖR, Dresden

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