Analysis Ready Data (ARD) Tools

Add-on package for image preprocessing for multi-temporal analysis

Rigorous scientific preprocessing

A new industry leading set of tools specifically designed to produce geometrically and radiometrically corrected data at scale. The ARD Tools package provides you with the capabilities to generate standardized illumination conditions and surface reflectance products to perform meaningful multi-temporal analysis through new big data architectures such as the Open Data Cube.

Why Analysis Ready Data?

- Consistent and reliable multi-temporal analysis
- Meets the geometric and radiometric standards for the Open Data Cube (ODC)
- Automated preprocessing for management of large volumes of data for analysis
- Emphasis on analyzing the where, how much, and what:
  - Where: is phenomena being observed spatially
  - How much: radiation is reflected from the Earth's surface
  - What: thematic information can be generated from relating reflectance to the landscape

Automatically preprocess large volumes of data

The Analysis Ready Data Tools was developed to leverage the built-in automation available across the Geomatica platform. Through the Geomatica Python API, users can deploy workflows to automatically and rapidly preprocess large volumes of data, building deep temporal imagery stacks over their areas of interest.

Module Prerequisites

Analysis Ready Data Tools is an add-on to Geomatica.

The pre-requisite for this package at a minimum is Geomatica Core (GEO) or Geomatica Prime (GTA). However, the following add-ons are also recommended:

- To script fully functional workflows users will need Geomatica Prime which includes EASI/Python.

- To fully implement some of the workflows, users will also need the Pan Sharpening and Atmospheric Correction packages.

Functionality

The ARD Tools package provides users with the following capabilities:

- Support for reading and writing metadata
- Radiometric normalization techniques
- Spectral pre-classification
- Topographic normalization

Radiometric Normalization

The ARD Tools package provides a series of functions that can be used to normalize radiometric values in Satellite data. These include:

- Solar and Sensor View Angles derivation

  Computes solar and sensor geometry for each image on a per-pixel basis, which provides information for radiometric calibration and to properly characterize reflectance for further corrections and illumination conditions for topographic normalization

- Radiometric calibration

  Functionality is provided to converts data from any unit to scaled reflectance or radiance

Spectral Pre-Classification

The ARD Tools package provides functionality to automatically generate a multilevel classification from optical data. This provides:

- Quality band to drive radiometric and geometric processing
- Multi-sensor support
- Good classification of cloud, shadow, and water

Topographic Normalization

Topographic normalization methods account for differential illumination conditions of slopes to reduce or eliminate topographic bias and provide:

- Enhanced analysis of satellite imagery characterized by high-topographic relief
- Enables the normalization of ground reflectance for imagery covering high-topographic relief regions

Analysis Ready Data (ARD) Tools Functions

With a license for the ARD Tools package the following functions can be executed either independently or sequentially via an EASI™ or Python™ script. They may also be available in the Algorithm Librarian in Geomatica Focus and the PCI Modeler.

- DN2RADIANCE - Calibrate an image in reflectance or digital numbers to radiance
- DN2REFLECTANCE - Calibrate an image in radiance or digital numbers to reflectance
- QLTY2MASK - Create a mask from a quality image
- SOLVIEWZAZ - Calculate per pixel the solar and viewing geometry of an image
- SPECLASS - Perform multilevel spectral pre-classification on an image in reflectance
- TOPOSOLNORM - Apply topographic normalization to illumination conditions that vary due to relief, solar geometry, or both

For more information, contact

PCI Geomatics
90 Allstate Parkway, Suite 501
Markham, ON L3R 6H3
Canada

Phone: 1 905 764 0614
Fax: 1 905 764 9604
Email: info@pcigeomatics.com
Web: www.pcigeomatics.com

〒 101-0021
東京都千代田区外神田6丁目2番8号 松本ビル
TEL: 03-3833-8201　　FAX: 03-3833-8203
E-mail: product_info@infoserve.co.jp
URL: http://www.infoserve.co.jp