



ImageMapper Program

ImageMapper is a geocoding and file format conversion program developed by DaedalusScanners for preprocessing imagery from DaedalusScanners Imaging Systems. Geocoding is a method of deriving map coordinates for each image pixel. ImageMapper generates files compatible with ENVI and other image processing and GIS Software. ImageMapper also performs user selectable processes including:

- Conversion of MWIR and LWIR image pixels to radiometric temperature
- Conversion of visible, NIR, and SWIR image pixels to radiance
- Conversion of raw imagery to geo-coded imagery.

The user has selectable options for the following parameters: Output Pixel Size; Use of flat earth projection or DEM; Hole Filing; Channel Selection; Cryo Filtration. ImageMapper runs on a Windows based PC.

ImageMapper Input Files

Depending on the processing to be performed ImageMapper requires certain input files:

1. Raw Image File, also called a “bin” file. All ImageMapper processes require a bin file. Bin files are created by the scanner “record” function. In addition to the raw imagery, bin files contain radiometric calibration information and the scanner command and status log.
2. Navigation File, also called a “DAT” or “CSV” file. The Geocoding process uses the information in the navigation file to compute the pixel geocodes.
3. Elevation File, also called a DEM (Digital Elevation Model), DTM (Digital Terrain Model), or NED (National Elevation Dataset). Elevation files are used by the Geocoding process to define the point where pixel vectors intercept the terrain. Where a DEM is not available, ImageMapper can create and then use a Flat Earth Elevation File.

ImageMapper Output Files

ImageMapper can create (write) up to 12 files which are described below. Files are generally created in pairs with differing extensions, where the second file in the pair contains information related to its (same name) image file. In the list below, files 1 and 3 contain sensor imagery. Files 2, 4, 5 and 6 contain ancillary data associated with the images. Files 7 through 12 (not listed) contain information from ImageMapper operations and under normal circumstances are not of interest to the user.

1. **ImageMap_ *nnn* _YYYYMMDD_HHMMSS.bip** – Orthorectified image file in Band Interleaved by Pixel (BIP) format where *nnn* is the file number, and YYYYMMDD_ HHMMSS is the date and time that this file was created (by ImageMapper).
2. **ImageMap_ *nnn* _YYYYMMDD_HHMMSS.hdr** – Header file for the corresponding image file.
3. **ImageFileR_ *nnn* .bip** – Scanner image file in BIP format. This file may have been spectrally calibrated but has not been spatially resampled.
4. **ImageFileR_ *nnn* .hdr** – Header file for the corresponding Img file.
5. **Geo_ *nnn* .igm** – A (two band equivalent) file that corresponds to the ImageFileR. The file contains UTM coordinates for each spatial pixel in the ImageFileR.bip file. The first pixel is the X coordinate and the second is the Y coordinate
6. **Geo_ *nnn* .hdr** – Header file for the corresponding Geo file.

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ImageMap files (2 files) are created when the “**Start Processing**” button is executed. This is the default operating mode for ImageMapper. In this mode, ImageMapper creates North-up orthorectified output images; one pair of output image files is written for each “bin” input file. These output images are *always* rectangular with square pixels. The output image rectangle contains sensor pixels (recorded by the scanner system) and “filled” pixels. Filled pixels are inserted, to “fill out” the rectangle, where there are no sensor pixels, such as beyond the sensor swath or field of view. If the calibration boxes are not checked, filled pixels are assigned a value of zero or NAN.

Image and Geo files (4 files) are created when the “**Retain Intermediate Files**” box is checked. Compared to ImageMap files, these images are *not* North-up, *not* orthorectified, there are *no* filled pixels and the pixels are *not* resampled. Un-resampled pixels may be preferred for subsequent analysis of the imagery, such as processing algorithms that perform per pixel spectral mathematical operations. The spatial coordinate information derived by ImageMapper for each pixel in this file is contained in the corresponding **Geo ~ .igm** file. The Geo ~ .igm file with its associated header file is compatible with ENVI. The default ImageMapper operation is to NOT create these files.

ImageMapper GUI

ImageMapper operations are set up and controlled from a Graphical User Interface (GUI). The screenshot below is an example of the GUI as it appears after an **Output Folder** has been selected using the **Browse** button. Areas the operator must complete are shown in color. ImageMapper will not start until all “colored” fields are resolved and displayed with a gray background.

