

Manual for JunoCam image Processing software

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1) Installation:

- a) Ensure you have the latest Java runtime platform installed. You can obtain the latest Java runtime environment at: <https://www.oracle.com/technetwork/java/>
- b) Unpack the JunoCam.JRE file from the downloaded ZIP to chosen location on PC.
- c) Double click to run
- d) Optional: Install applet to support .IMG files (Refer to section 2 B for more information) by going to <https://github.com/PawelPleskaczynski/go-img-converter> and following instructions there.

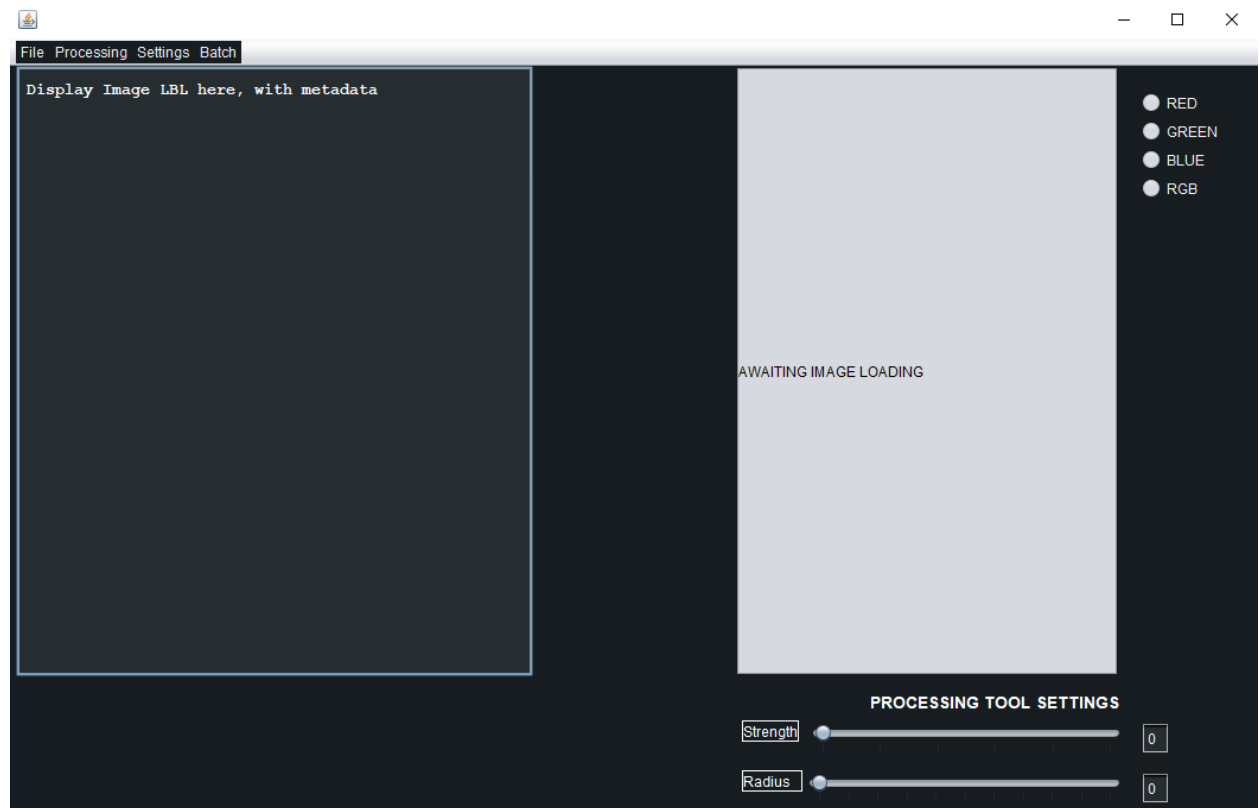
2) Supported file types:

Currently the software supports use of all standard formats used in Juno spacecraft mission for JunoCam instrument:

- a) .PNG files derived from RAW observations of JunoCam, that can be accessed at <https://www.missionjuno.swri.edu/media-gallery/junocam>
- b) .IMG files directly from NASA Planetary Data System archive and PDS Image Atlas, that can be accessed at: https://pds-imaging.jpl.nasa.gov/search/?fq=ATLAS_MISSION_NAME%3Ajuno&q=%3A*
.IMG support thanks to Paweł Pleskaczyński and his open source go-img-converter

- c) .LBL Label files from NASA Planetary Data System standard, containing spacecraft telemetry and image information. Auxiliary for .PNG format, necessary to allow for .IMG loading.

3) GUI Overview:



- A) File menu: Used to load and save file
- Load IMG/PNG: Opens a raw JunoCam image in either PNG or IMG format. For IMG file, ensure to first set Path to IMG converter and load a corresponding LBL file.
 - Load LBL: Open a LBL label file associated with the image to read spacecraft telemetry and image data
 - Save PNG: Save currently previewed image from the preview window to a PNG file at chosen location
 - Save R/G/B: Save each of RGB spectral channels from image to separate files at chosen destination
- B) Processing menu: Used to apply processing steps and image filters
- RGB Combine: After image is loaded, combine the spectral channels into a true colour RGB Composite
 - Auto color balance: applies a colour balancing filter from a pre-set model for JunoCam
 - Auto stretch: Applies a preset contrast and brightness filter
 - Sharpen: Applies a unsharp mask filter with parameters
 - Denoise: Applies a denoising filter
 - Reset: Reload image and reset all processing applied to it
- C) Settings
- Set Path to IMG Loader: set path to folder where .IMG loading software is located
 - CH4 Input: mark whether the input image is CH4 Methane Band image

D) Batch

- Set input/output path: Set path to folder for batch processing input/output
- Execute Batch: Run batch processing with framelet assembly and RGB compilation.

Standard procedure for processing a PNG File:

- 1) File/LoadPNG to select the JunoCam raw .PNG image from file selector.
- 2) Wait for file to load. This may take a few seconds.
- 3) Processing/RGB Compile to combine R,G and B images into true colour composite
- 4) Select RGB From button on right side of GUI to open the compiled RGB composite.
- 5) Processing/Auto color balance to correct colour balance
- 6) Processing/Autostretch to improve contrast
- 7) File/SavePNG to output the RGB composite