



**PixelWrench2  
User Guide**

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## Purpose

The purpose of this user guide is to introduce the basic functions of PixelWrench2 to all users, especially first-time users. As such, this guide is not intended to be comprehensive; rather, it is written in a straight-forward, step-by-step way, so that users can familiarize themselves with the software and be better equipped to handle more specific, advanced features of the software as the need arises.

This user guide is also set up to help users access it efficiently: the Table of Contents contains hyperlinks to all the sections, and the top right of the header of this document contains a hyperlink back to the Table of Contents.

If you have any specific questions about PixelWrench2 not covered in this guide, please refer to the PixelWrench Help section under the Help menu of the software or email [support@tetracam.com](mailto:support@tetracam.com). You can also access specific sections of the PixelWrench Help by clicking the blue question mark in most windows of the software, and you can refer to the [PixelWrench2 FAQ](#) located on our website.



If you would like to provide feedback regarding this user guide, feel free to email [support@tetracam.com](mailto:support@tetracam.com).

## Prerequisites to Using PixelWrench2

### System Requirements

The system requirements of PixelWrench2 are the following:

Any Microsoft Windows 32 bit or 64 bit operating system that has Microsoft .NET Framework 3.5 installed. You can retrieve Microsoft .NET Framework 3.5 from your installation CD included with your camera system or by searching for it online, if it isn't installed on your computer already.

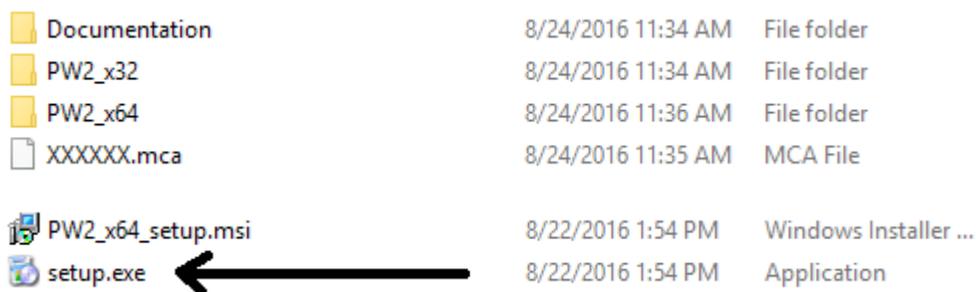
The latest version of PixelWrench2 is always available here: <http://tetracam.com/PWversion.htm> Please be sure to have the latest version of PixelWrench2 installed on your computer; PixelWrench2 is updated continually at that URL. You can also check for updates by clicking the Help menu in PixelWrench2 and clicking *Check for Updates*.

## How to Install PixelWrench2

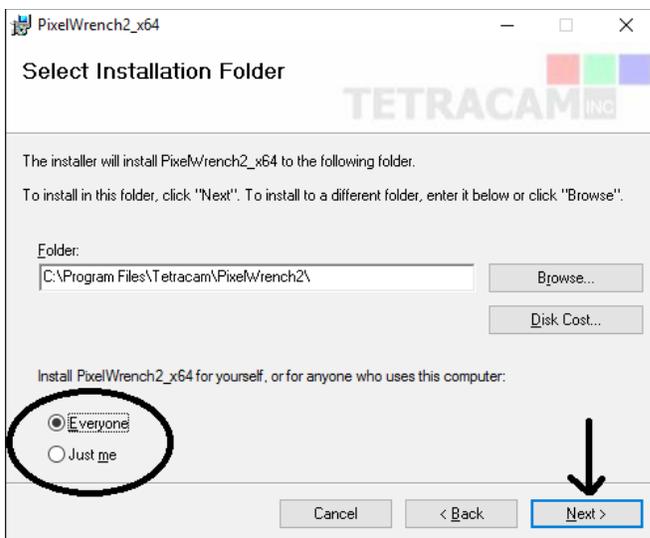
### Setup Procedure

The process for installing PixelWrench2 is straight-forward. The following illustrates the process:

1. Insert the Tetracam installation CD that came with your camera system into your PC's CD/DVD drive.
2. If you have a 32 bit PC, open the PW2\_x32 folder; otherwise, open the PW2\_x64 folder.
3. Double-click the setup.exe file.



4. Click *Next* in the first window that appears.
5. After choosing what users you want to install PixelWrench2 for, click *Next*.

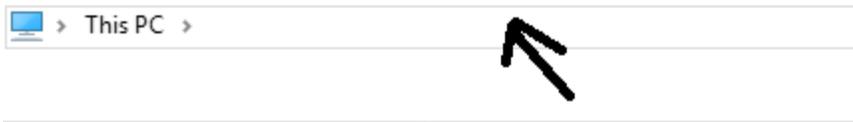


6. Click *Next* to start the installation.
7. A dialog box will appear asking for Administrator permission to continue. Click *Yes* on this box.
8. Click *Close* when the installation is completed.

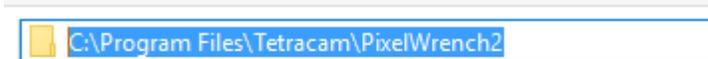
### Copying Your CPF or MCA File to the Support Folder

In addition to the process illustrated above, Tetracam recommends, at this point, to copy the CPF or MCA file from your Tetracam installation CD to the Support folder of the PixelWrench2 directory that was created during the installation. To do so, follow this procedure:

1. If you have installed PixelWrench2 in the default directory and your system architecture matches the version you installed, it is located at C:\Program Files\Tetracam\PixelWrench2. However, if you have a 64 bit PC and you installed the 32 bit version of PixelWrench2, the default directory is C:\Program Files (x86)\Tetracam\PixelWrench2.
2. Open a Windows Explorer window, and click on the Address Bar of the window.



3. Copy and paste the PixelWrench2 directory address into the Address Bar, and press *Enter* on your keyboard.



4. Now, double-click the Support folder now that you are in the PixelWrench2 directory. Keep this window open.



5. With your Tetracam installation CD inserted, open another Windows Explorer window. In this window, navigate to the CD/DVD directory. Inside the root folder of this directory, there is either a CPF or MCA file, depending on whether you have an ADC or MCA series system.

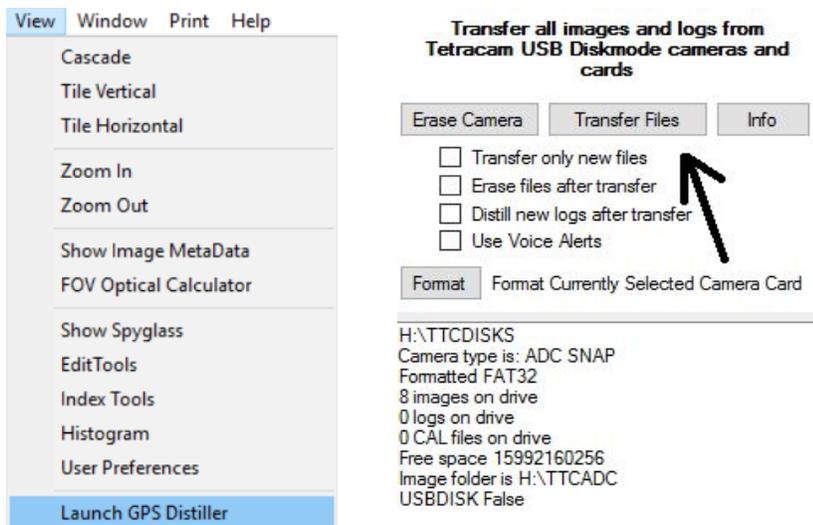
6. Now, copy and paste the CPF or MCA file into the Support folder.

## Instructions for ADC Series Systems

### Transfer Images and Logs Using GPS Log Distiller

After you've taken several pictures with your camera (with or without logging turned on), you'll want to extract those pictures (and logs) into a folder on your PC by using either GPS Log Distiller or Windows Explorer. Tetracam recommends accessing the image files from your camera by using a memory card reader. Tetracam also recommends using GPS Log Distiller for file transfers. The following illustrates how to extract image and log files from a memory card reader using GPS Log Distiller:

1. Open PixelWrench2.
2. Insert your memory card reader that contains the memory card of your camera.
3. Click the View menu, and then click *Launch GPS Distiller*.
4. Click the *Transfer Files* button in the GPS Log Distiller window that opens.
5. Next, choose or create a directory you would like to save the files to. When you've selected your desired directory, click *OK*.
6. Once the transfer is done, optionally erase the card using the *Erase Camera* button, then unplug your memory card reader.



## Information About CPF Files and Opening Them

Once you've transferred your RAW or RWS files to your PC, you'll want to make sure that you've opened a CPF file. You can acquire a CPF file from two different sources:

1. Your factory CPF file in your Support folder referring to [this section](#) that comes from the installation CD associated with your camera named XXXXXX.cpf, where XXXXXX matches the serial number of your camera.
2. The CPF file that you generated in the field that pertains to the specific conditions that you were taking pictures in using a neutral reflectance standard target.

For information on making your own CPF file to increase accuracy of measurements, click the blue question mark in the Matrix tab of the Index Tools form to reach the right section in the PixelWrench Help; in addition, you can reach the PixelWrench Help by opening the Help menu of the software. For information about calibration, please refer to the same area just mentioned as well as the [PixelWrench2 FAQ](#).

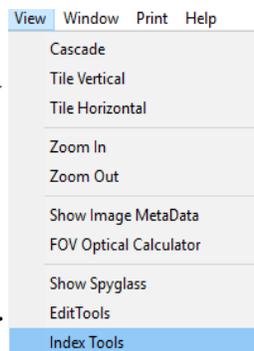


Note: Making a CPF file in the Matrix tab and using the Calibrate button in the Index tab, both in the Index Tools form, follow different procedures: The Calibrate button requires a color processed NIR/R/G image, while making a CPF file requires a RAW or RWS image. Further, a CPF file is used to increase the measurement accuracy of both color processing as well as generating vegetation indices, while the Calibrate button is only used to increase the measurement accuracy of generating vegetation indices.

*It is highly recommended to open a CPF file that is **not** one of the default CPF files located in the Support folder of PixelWrench2 to ensure more accurate measurements; instead, open your factory CPF file that you copied into the Support folder referring to [this section](#) or the CPF file you created yourself.*

To open a CPF file, perform the following:

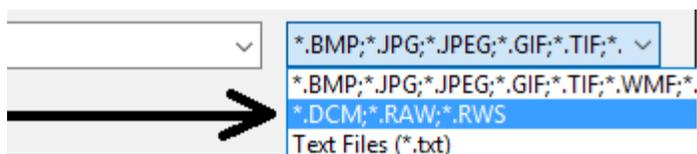
1. With PixelWrench2 open, click the View menu, and then click *Index Tools*.
2. Next, in the Matrix tab, click *Open CPF*.
3. Then, navigate to your CPF file located either in the Support folder or elsewhere. Once you've done that, click *Open*.



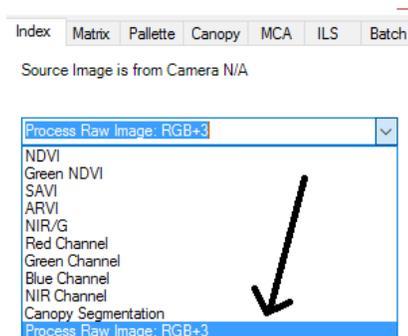
## Using the Index Tab of Index Tools to Create Individual Color Processed Image Files

Now that you have your RAW or RWS files on your PC and you have your CPF file opened, you are ready to create your color processed NIR/R/G image files. The following is the procedure for color processing one RAW or RWS file at a time:

1. Open Index Tools from the View menu of PixelWrench2, if it is not already opened.
2. Click the Index tab.
3. Now, click the File menu of PixelWrench2 and then click *Open*.
4. There is a drop down menu above the *Open* and *Cancel* buttons. Click on that, and choose \*.DCM, \*.RAW, \*.RWS from that menu.



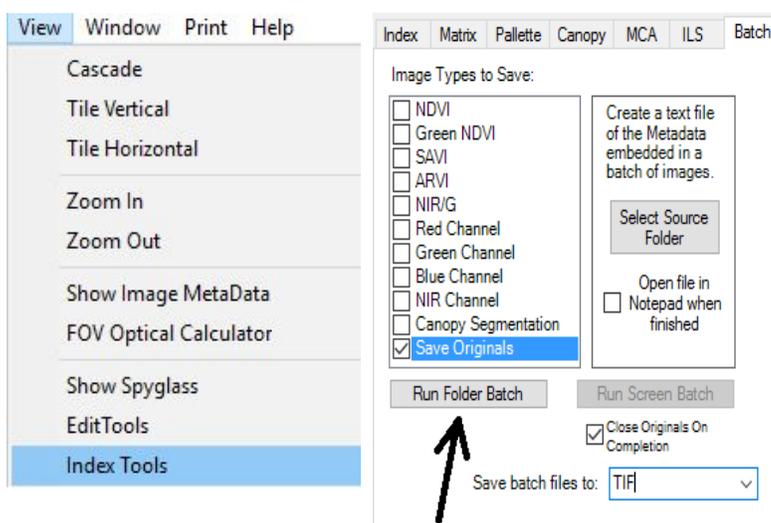
5. Navigate to the directory that contains your RAW or RWS files.
6. Select one of the files, and press *Open*.
7. Now that your RAW or RWS file is opened, click on the drop down menu right below all of the tabs in the Index Tools form. Select *Color Process Raw Image* from that menu.
8. Click *Execute*.
9. Now you should see your color processed RAW or RWS image in view.



## Using the Batch Tab of Index Tools to Create Many Color Processed Image Files

The process for creating many color processed image files at once is as follows:

1. Open Index Tools from PixelWrench2 if it is not already opened.
2. Click on the Batch tab.
3. There are many different image types to choose from. Click on the *Save Originals* check box; leave all other check boxes unchecked.
4. Where it says “Save batch files to:”, there is a drop down selector. Click on this and a file format of your choice, such as TIF.
5. Click on the *Run Folder Batch* button.
6. A window has opened. At this point, you’ll want to select the folder that you put your RAW or RWS files in on your PC. Once you have done so, click *OK*.
7. Now you want to select or create a folder to put the color processed image files into. Once you have done so, click *OK*.
8. At this point, PixelWrench2 will create all of your color processed image files; it may take a while if you have a lot of RAW or RWS files. Once the process finishes, you’ve successfully created your color processed NIR/R/G image files!

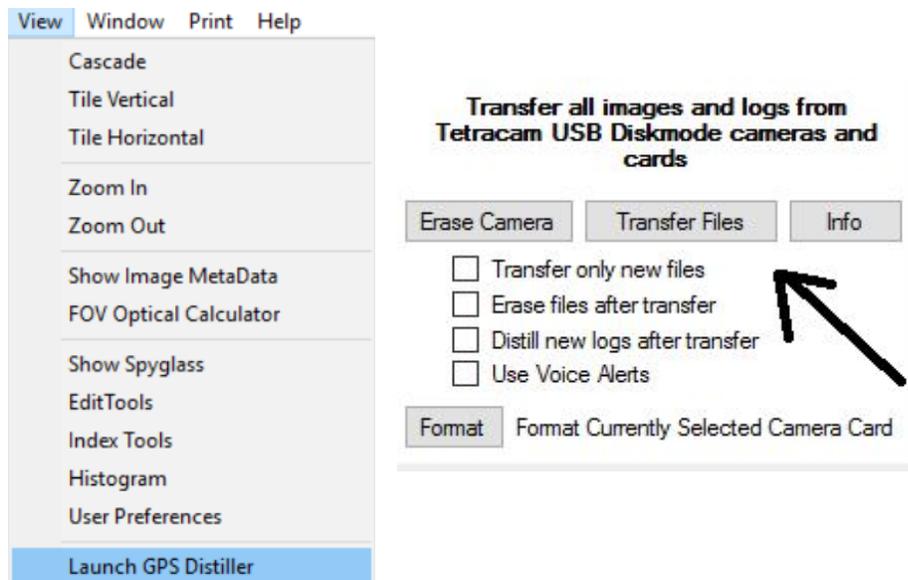


## Instructions for MCA Series Systems

### Transfer Images and Logs Using GPS Log Distiller

After you've taken several pictures (with or without logging turned on) with your camera system, you'll want to extract those pictures (and logs) into a folder by using GPS Log Distiller. Using Windows Explorer is too inconvenient in contrast to this utility when working with MCA series systems. The following illustrates how to extract image and log files from USB using GPS Log Distiller:

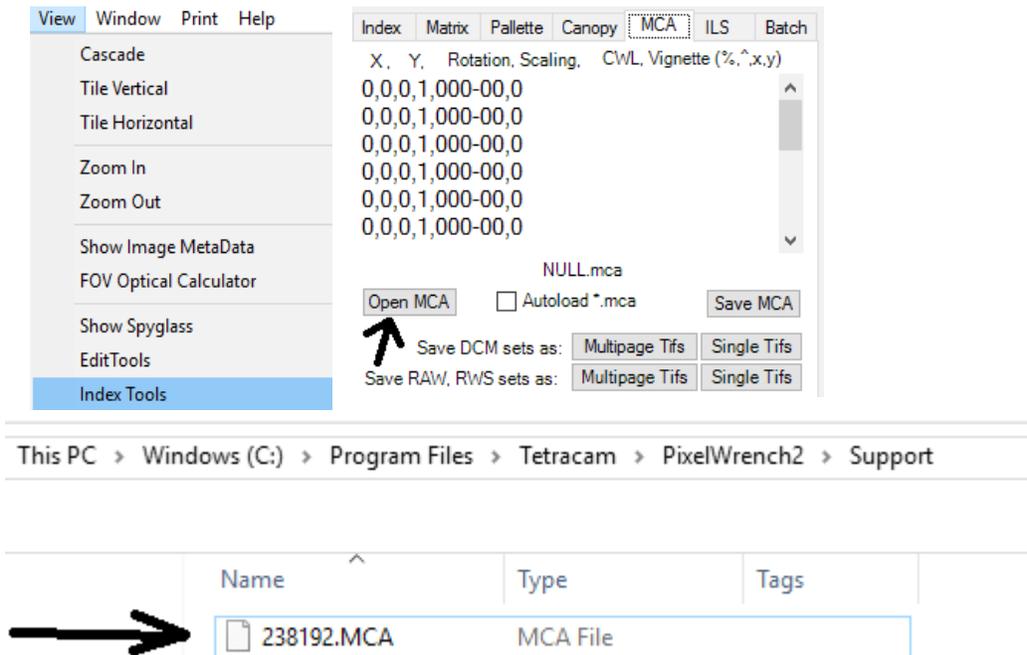
1. Open PixelWrench2.
2. Click the View menu, and then click *Launch GPS Distiller*.
3. Plug in your camera system via USB, then press the *Info* button in the GPS Log Distiller window.
4. Click the *Transfer Files* button.
5. Next, choose or create a directory you would like to save the files. When you've selected your desired directory, click *OK*.
6. Once the transfer is done, optionally erase your camera system by clicking the *Erase Camera* button. The GPS Log Distiller window will indicate when this process is finished.
7. Wait a few seconds, unplug your camera system from USB, and then power it off.



### Loading Your MCA Alignment File

In order for all of the image files in the MCA to be aligned precisely for each picture that was taken, you must use the MCA alignment file associated with your specific camera system. This file is located in the Support folder of the PixelWrench2 directory, which you copied from your Tetracam installation CD in [this section](#). The following describes the process of loading your MCA alignment file using PixelWrench2:

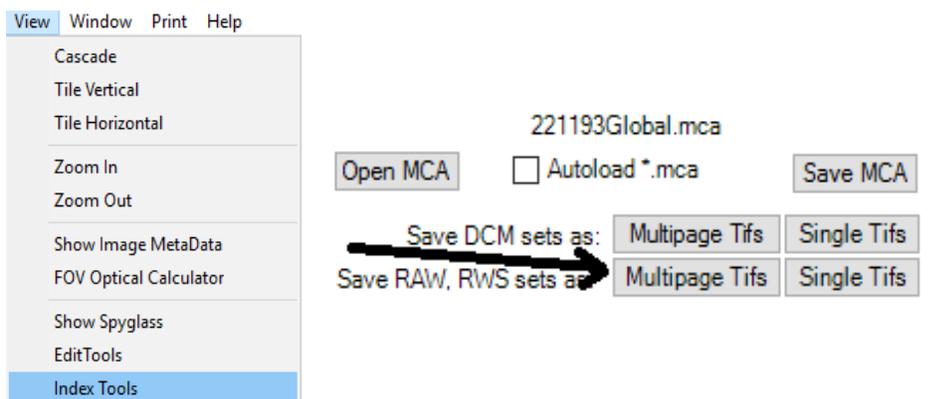
1. Open PixelWrench2, if it isn't open already.
2. Click on the View menu, then click *Index Tools*.
3. Click on the MCA tab.
4. Now, click *Open MCA*.
5. Navigate to the Support folder of the PixelWrench2 directory.
6. Click your MCA file, and click *Open*.



## Creating Multi-Page TIF Image Files

Once you've loaded your MCA file and you've acquired RAW or RWS image files, you are now ready to export multi-page TIF image files from your RAW or RWS image files. The process consists of the following:

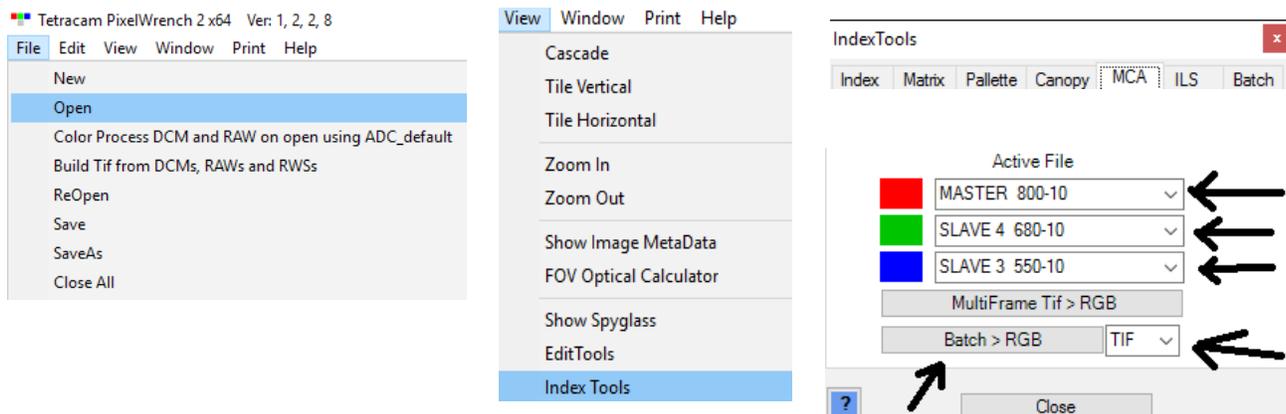
1. Open Index Tools from PixelWrench2, if you haven't already.
2. Click the MCA tab.
3. Open your MCA alignment file, if you haven't already, referring to [this section](#).
4. If you have an MCA system that is **not** a Snap system, be sure to check the box next to Equalize Pixel Gains. Do not check any other boxes, unless you have a specific reason to do so.
5. In the big text box that was populated by your MCA alignment file, if you see any line that mentions ILS, put an 'x' (without quotes) in front of that line.
6. Click the *Multipage Tifs* button to the right of "Save RAW, RWS sets as".
7. In the window that pops up, navigate to the folder that contains all of your RAW or RWS image files. Once you have done so, click *OK*.
8. In the next window, navigate to or create a folder that you'd like to output the multi-page TIF image files to. Once you have done so, click *OK*.
9. The process of creating the multi-page TIF image files may take a while depending on how many RAW or RWS files you are working with. Once the process is complete, you now have your multi-page TIF image files!



## Creating RGB Extractions of Multi-Page TIF Image Files

After you have created multi-page TIF image files, you may want to create RGB extractions of those files. Here is the process:

1. Open Index Tools from PixelWrench2 and click on the MCA tab.
2. Click on the File menu, and then click *Open*.
3. In the window that pops up, navigate to the folder of the multi-page TIF image files you created in the [previous section](#). Select one of them, and click *Open*.
4. You should see a window with the image file in view, at this point. Now, in the Index Tools form in the MCA tab, there are three drop downs underneath “Active File”. In these drop downs, you are able to select the wavelengths to be displayed with red, green, and blue. A typical choice is NIR (800 nm) on the red bitplane, red (680 nm) on the green bitplane, and green (550 nm) on the blue bitplane; if you have an RGB+3 system, you’d want to put red on the red bitplane, green on the green bitplane, and blue on the blue bitplane, for example. Once you’ve chosen what wavelengths you wish to display, you can either create individual RGB extractions from files that are opened in PixelWrench2 or create multiple RGB extractions from a folder of multi-page TIF image files.
5. If you would like to create an RGB extraction from the file that you opened in Step 3, click the *MultiFrame Tif > RGB* button. After you do so, a new window will open displaying your RGB extraction!
6. If you want to create multiple RGB extractions from a folder that contains your multi-page TIF image files, click the drop down to the right of the *Batch > RGB* button and select the file format of your choice, such as TIF.
7. Click the *Batch > RGB* button. A window will display asking you for the source folder; navigate to the folder that contains your multi-page TIF image files. After you’ve selected that folder, press *OK*.
8. Another window will display; navigate to the folder that you’d like your RGB extraction image files to be written to. Once you’ve selected that folder, press *OK*.
9. Once the process is completed, you’ve successfully created multiple RGB extractions of your multi-page TIF image files!



### How to Generate Vegetation Indices Using the Index Tab of Index Tools

On many occasions, using PixelWrench2 to generate vegetation indices is very useful. Note that the Palette tab allows you to customize the display of the vegetation index you choose. The following explains how to generate a vegetation index from an image in view:

1. Click on the File menu of PixelWrench2, and then click *Open*.

2. Navigate to a folder that contains either color processed image files (ADC Series) or RGB extractions (MCA Series).

3. Click on the desired file, then press *Open*.

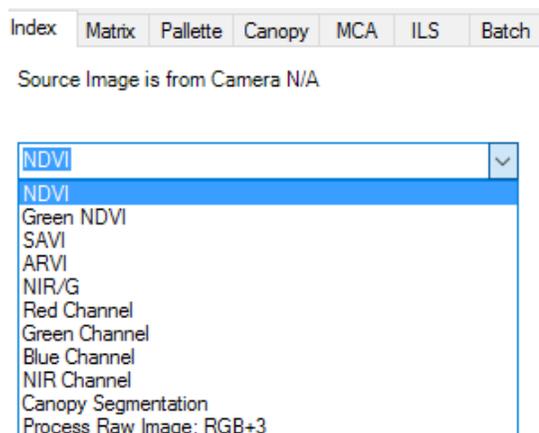
4. Now, click on the View menu, and then click on *Index Tools*.

5. Click on the Index tab, if it isn't already active.

6. There's a drop down menu right below all of the tabs of the Index Tools form. Select one of the indices from the menu, such as NDVI.

7. Now, click *Execute*.

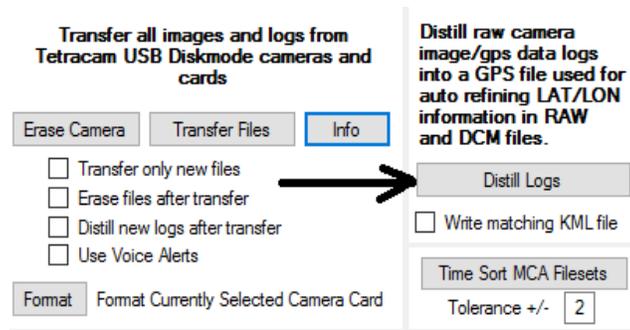
8. A window will now appear of the vegetation index you chose!



## How to Acquire a GPS Log File

If your camera system has logging turned on either by using the built-in camera menu or GPS Log Distiller, your system will create a log file that corresponds with images taken; using this log file, a GPS log file can be created using GPS Log Distiller. The following explains how to use GPS Log Distiller to generate GPS log files:

1. Transfer images and logs from your camera system to a folder of your choice. If you forgot how to do this, follow one of these links, depending on your system: [ADC series system](#), [MCA series system](#).
2. Click *Distill Logs*.
3. In the window that appears, select the folder that contains the images and logs that you transferred to in Step 1.
4. Once the process is completed, you will have a display of what was produced in the GPS Log Distiller window in addition to a GPS file, which was placed in the source folder you chose.



## Conclusion

Please feel free to email [support@tetracam.com](mailto:support@tetracam.com) with your comments, suggestions, questions, or general feedback about this guide. Once again, be sure to keep PixelWrench2 updated by clicking *Check for Updates* in the Help menu of the software or by visiting <http://tetracam.com/PWversion.htm>

In addition, check for general updates regarding Tetracam by visiting <http://tetracam.com/>

Lastly, thank you for using this user guide.