README FOR AUTOCAMS RELEASE 0.990a

All the files in the 0.990a release are simply unzipped to the C:\CAMS directory.

Installation Instructions

1. Backup the files in the CAMS directory.
2. Backup the files in the CAMS\Cal directory.
3. Download the http://www.davesamuels.com/cams/AutoCams_0.990a_base.zip file.
4. Download the http://www.davesamuels.com/cams/AutoCams_0.99a_start.zip file.
5. Unzip the files to the CAMS directory.
6. Edit the AutoCams.Params.ini file and make the appropriate CAPTURE section changes as documented in the new CAMS.PDF section 24. Change all instances of 998 to match your camera number.
7. Test the operation during the daytime to ensure everything will function normally.
8. If you haven't already been using AutoCams, this is a first-time installation for you. In that case, you should download the **cams.pdf** file and use it to learn how to configure and set up your configuration at your site. Some of the things you will need to do are:
    - Install and configure a clock synch application.
    - Refer to section 5 in the cams.pdf document for set up instructions.
        - Configure the CameraSites.txt file.
        - Edit the LASTSETTINGS.txt file.
        - Test using CameraLiveViewer.
    - Capture a few minutes and calibrate (see sections 6 and 7).
    - Configure the twilight table (see section 8).
    - Set up a Windows Scheduled Task (see section 9) and test.

There are a ton of changes this time. This marks a major release. The impetus for most of the

changes was because of issues that users had during daily processing. A lot of the work was also triggered because of making things compatible with the dual-camera configuration. Hopefully, it will be compatible with a four camera configuration also, but some testing will be required before certifying the AutoCams scripts for four cameras.

- **Dual-Camera Capture Mode** - New Capture logic now supports dual-camera capture. The settings for this are governed by configuration parameters in the AutoCams.Params.ini file in the CAPTURE section.
- **AutoCams.Params.ini**
  - This file is designed for end-users to edit according to the documentation. There are now six sections with lots more variables. There is also a section to control SIMULATION for testing and simulating capture. The CAPTURE section controls the capture mode, the batch script used to run the capture, and a few other settings.
  - Be sure to read the documentation in Section 24 of the cams.pdf manual to learn how to properly configure your system.
  - **Note**: The FTP_Capture.bat.ini file is no longer used to trigger the use of FTP_Capture.bat instead of CaptureAndDetect.bat. This has been replaced by the CAPTURE.capture_mode setting in the AutoCams.Params.ini file. The AutoCams.Params.ini settings are documented in the cams.pdf. You can delete the "FTP_Capture.bat.ini" and "FTP_Capture.bat.ini.disabled" from your system.
- **New log file format**.
  - The log files for the Working directories are now located in the "C:\CAMS\Logs" directory.
  - The log files for the SubmissionFiles directory are now located in the Logs directory of that session. For example, "C:\CAMS\SubmissionFiles\2012_08_11_213_03_44_55\213\Logs"
  - The format of the log files is more legible with indenting and labels included.
  - The log files for a session packages for submission are located in the "C:\CAMS\SubmissionFiles\[date_camera_time]\camera\Logs.
  - All the log files end in ".log".
  - There is a function on the Utility menu, **ZipLogs**, that will zip the log files for the current working date. You can then email or upload that zip file to get help with troubleshooting. This will be a useful tool for the local network coordinators as well as reporting bugs in the scripts. The resulting zip file is placed in the "C:\CAMS\Temp\Logs" directory. The

ZipLogs option tells you the full path and file name of the resulting zip file.

- Much of the logging is now limited to only output to the log files instead of to the console. This makes the console less busy. While many details appear on the console, the full details are stored in the logs.

- **New** submission **naming convention** was designed so as to avoid naming collisions between different sites as well as the ability to avoid naming collisions for multiple sessions in a single night.

  - You no longer have to manually deal with multiple sessions in a night if the camera had to be stopped for any reason. Just start another session. Any sessions that don't complete autonomously will need to be processed by using the "3. Enter Captured Date" AutoCams option and then processing using "[A]utonomous" or step by step.

    The new SubmissionFiles dir uses the following convention:
    "..\SubmissionFiles\date_camera_time". For example:
    "C:\CAMS\SubmissionFiles\2012_08_11_213_03_44_55".

    You can see how, with the captured date, the camera, and the captured time, there can't be naming collisions, even between multiple sessions in the same night from the same camera. The submitted zip files use a similar naming convention.

- **FTP Upload** robustness and reliability.

  - AutoCams now uses MD5 encryption hashing to validate and verify FTP uploads of the zip files. Every measure is taken to ascertain whether the zip file upload was successful or not.

  - When the zip file is created, it is hashed and then checked for the empty zip file scenario. Then, when the zip file is uploaded, it is then downloaded to the ..\Temp\Zip directory and hash checked again. If they don't match, it is considered a bad upload. Then, it unzips the zip file to the ..\Temp\Zip directory and checks for an exit code indicating a corrupt zip file or any other kind of issue. Then it cleans up the temporary files and reports OK.

- **AutoCams options 5 and 6 have been swapped**.

- **Option 7b. Auto Calibration is now run asynchronous to the AutoCams menu**. This allows you to kill the calibration window and stay in the AutoCams menu without having to restart it. This gives you the flexibility to abort a calibration pass if you see that it is obviously not going to calibrate. I believe all the calibration routines follow this same new option. When you abort a calibration in this way, the AutoCams menu text will display the following prompt:

  ^CTerminate batch job (Y/N)?

  To which you should enter: **N**
  to stay in the AutoCams menu.

- **Option 7c. Auto Cal with prompts** - has been changed to allow a minimum of 6 stars instead of 40 as before. This allows you to use option 7c to attempt to establish even a crude calibration and then increase the parameters and build up the accuracy of the calibration by making multiple autocal iterations.

- **AutoCams startup performance** is now slower because it has to scan for detect files and things it was not doing before. The biggest issue is the case when it is when it is started and there are tens of thousands of detections in the detect file for the currently selected date. Please be patient. Efforts have been made to bypass any unnecessary loops.

- **Detect file selection/searching** is now a standard algorithm in the GetDetectFile.bat script, which is called for numerous reasons. You will see it often and it is in the logs a lot.

- A new file, "**CalFileList.log**", is created at AutoCams startup if it doesn't already exist in the ArchivedFiles dir. This is a file that contains a simple list of all the CAL files referred to in the detection file (for all the cameras). To save time, if the file already exists, it is used unless ApplyCal is used or after rerunning the detection.

- Another new file, "**GCFC.log**", contains a simple list of all the cameras used to capture files in the CapturedFiles dir. I should have renamed it to "cameralist.log".

- **Confirmation (AutoCams option 10)**:

    - This option can now be run after option "13. Package Working dirs into SubmissionFiles dirs". The reason for the change is that the new default option is for autonomous operation. Confirmation is really only a funtion that is performed for your own record keeping. This way, full autonomous operation can completely run the zip and ftp functions and still allow you to run the Confirmation step from the SubmissionFiles directories. You can then re-zip (using option 16) but you don't need to run the FTP Upload again. I'm finding this additionally useful when a fireball report occurs a few days later. This change allows you to perform a confirmation pass without disturbing the submission files. By the way, if you had already run and submitted a confirmed set, you might want to rename the existing detection file in the ConfirmedFiles directory before running confirmation a second time (say, for the fireball report). That way, you can skip ahead to the time of the reported fireball and examine just those FF files instead of confirming the entire night's files. Then, when you're done, just delete the created detect file and rename the original ConfirmedFiles detect file.

    - Also, when you launch Confirmation, you are automatically asked to enter a comment (option 11 is automatically triggered).

    - You no longer have to run the Choose ArchivedFiles option after the Confirmation step anymore.

    - Confirmation is now run asynchronously to the AutoCams menu. You can kill the confirmation window to abort the procedure.

- **Option "13. Package Working dirs into SubmissionFiles dirs" is much improved**. Especially with the logging. Hopefully, it is now robust enough where there won't be so many issues as before.

    - When this function processes the ArchivedFiles and ConfirmedFiles dirs, the detection files are copied to the SubmissionFiles\...\EmailFiles dir. They are now named differently than before to handle the potential issue of multiple capture sessions in the same night.

    - The ArchivedFiles detection file is now named with "_scanned.txt" as the suffix.

    - The ConfirmedFiles detection file is now named with "_confirmed.txt" as the suffix.

- **Option 14. Choose Submission dir**. Now properly sets all the other variables, like the CapturedFiles and ArchivedFiels dirs, etc.

- **Option 15. Move SubmissionFiles dirs to working files dirs**. Now does a proper cleanup after the move. There are no longer remnants left in the SubmissionFiles dir unless there was a move error of some kind. Typically, move errors are caused when you are reading a log file or something when you do the move. Also, the meteor counts and other stuff are properly adjusted after the move. You no longer need to run the ChooseArchivedFiles option afterward.

- **16. Zip Submitted dir** - now functions better and is more robust. It also uses the MD5 hash for comparison to test for empty zip file scenarios. Also, the zip files now are more streamlined and they don't contain quite so much data.

- **17. Upload FTP** - Is now more robust. This is important because we figure that the FTP server will often use anonymous FTP, which the users typically can't overwrite bad zip files with newer ones.

The utility menu now has some new functions that I ought to mention:

- To support **dual camera configurations**, the initial idea was to try to split the CapturedFiles, ArchivedFiles, and detection files into separate cameras. New directories and detection files with the other camera removed was one method of processing a dual camera option. Personally, I'd prefer that the captureanddetect software produce separate FTPdetect files for each camera. The reason is because it will simplify troubleshooting of one camera. We often find cases where one camera fails and the other continues. It would be good to separate these. Because they are not created separate, I have elected to rewrite the scripts to support the combined scenario, which is now working... I hope. The **62. Split Dual Capture** is one of the functions to support the older splitting option if that's needed.

- Sometimes, the system may reboot or the software could crash in the middle of the night. In that case, the ftpdetect file in the ArchivedFiles dir will be corrupt. The best method to resolve this is to run the AutoCams option "**44. Multi-tasked Meteor Scan**". This will run the detection in a multi-tasked manner. It will divide the number of CapturedFiles equally among the number of CPUs you have and perform the processing in separate ftp_reprocess_n.exe processes. Each one starts at 10-second intervals in order to allow time to create it's output so that the wait thread won't finish early.
  Note: In order to avoid an issue discovered on systems that have a high number of CPUs, a new key value in the DETECT section of the AutoCams.Params.ini file, maxdetectionthreads, allows you to set the maximum number of simultaneous detection threads for this option. For my 8 CPU i7 processor, I have set this to a value of 6. If you have fewer than maxdetectionthreads CPUs, the actual number of CPUs becomes the number of simultanous threads that will be created when using option 44.

  When Option 44. runs, it produces several files in the ArchivedFiles dir. They have a naming convention that follows this format: "FTPdetectinfo_Case###.txt". Where ### represents the CPU number. Option 44b is required for merging all the FTPdetectinfo_Case###.txt files into a single valid detect file with the appropriate header and meteor count.

- **Option 44b. Merge Multi-tasked Meteor Scan Files** - This option 44b remains a separate step because there are often times when option 44 must be run against multiple directories, then the files are moved into the ArchivedFiles directory, then you will merge all the remaining "case" files once all the detections have been processed.

- The **"61. MakeArchiveDateZip"** is supposed to help you manage the archive sizes by removing the CapturedFiles dirs for specified dates and then zipping the dir.

- There are some **hidden functions**:

  - "**v**" lists the **variables** in use at the time.

  - "**del logs**" deletes all the logs from the ..\Logs dir.

  - "**edit**" opens the AutoCams.bat file in notepad.

  - "**notepad <filename>**" opens the filename in notepad.

  - "**ziplogs**" creates a zip of the log files for troubleshooting.

- **Known Bugs...**

  - There is still an issue with the **AutoCams listing of the latest cal file**. The menu only shows

the one that corresponds to the specified camera. However, it is compatible with multiple cameras and multiple cal files. For the most part, you should be able to ignore the idea of multiple calibration files except/unless there are calibration issues. In that case, you will check the Cal directory and use the 7a - 7d AutoCams options to resolve calibration issues. Another place where this arrises is when you run the ApplyCal function (option 9), which shows which calibration file is current. You should trust that if one camera's cal file is applied, then the others probably did also. Option 9 shows three possible options:

- **DIFFERENT** - where the cal file found in the detect file is not the latest cal file found in the Cal directory for that camera.
- **PASS** - where the Cal files in the detect file match the captured date, but NOT the Latest Cal file in the Cal directory for that camera.
- **GOOD** - where the Cal files in the detect file match the captured date AND they match the latest Cal files in the Cal directory for that camera.

However, there seems to be a problem that I still have to locate. Right now, immediately after option 9. is run, it will show GOOD or PASS. However, the next time you start AutoCams, it may show DIFFERENT. Please be patient. This issue is a priority, but the cause/solution is tangled somewhere that I haven't been able to locate yet.

- **Options 37 and 38** to list the summary of the number of Confirmed meteors so far still needs some work to be compatible with the new file naming conventions.
- **Option 18. Report on Submission** - hasn't been modified to be compatible with the new naming conventions.
- **Options 9 and 11** - Be careful on this one. For some reason, in some instances, when the script encounters an empty variable name for the detection file, it asks a question after the Apply function if you want to:
  Are you sure Y/N?
  ALWAYS ANSWER "N" if you encount this prompt. Answering "Y" will **DELETE ALL THE FILES** in the Cal directory and it will be difficult to restore the files.
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Post questions about this to the seticams@yahoogroups.com alias so all can see them.

Some new procedures and troubleshooting steps will be added to the cams.pdf document soon.

Regards,

Dave Samuels