# Video Multiple Alignment Point Tool

The video display and processing tool located at Image Set Operations | Video Processing in ImagesPlus 6.5 has improved grading and multiple alignment point selection to create an improved stacked image. All planetary, lunar, solar, and DSO video files must first be graded. Grading is not used with dark, flat, and bias video files when creating master calibration frames for use with planetary, lunar, solar, and DSO video files. After grading one or more alignment points are selected along with a frame combination method before processing of a video starts. Calibrate and normalize operations can be applied to planetary, lunar, solar, and DSO video files as part of video processing.

Creating Master Calibration Frames   Master dark, flat, and bias frames are created from their video files before the light frame video file is processed. First select the calibration video file using the *Select Video* button on the Display tab of the video processing tool. Select *Dark, Flat,* or *Bias* as the video file content type on the Process tab of the video processing tool then press *Apply* to create the master calibration frame in FITS format. Press the *Display Combination* button on the Process tab to check the master frame. After all master calibration frames are created select the master calibration frames, for use with the video processing tool, using the Image Set Operations | Calibration Setup window.

Processing Planetary, Lunar, Solar, and DSO Video Files
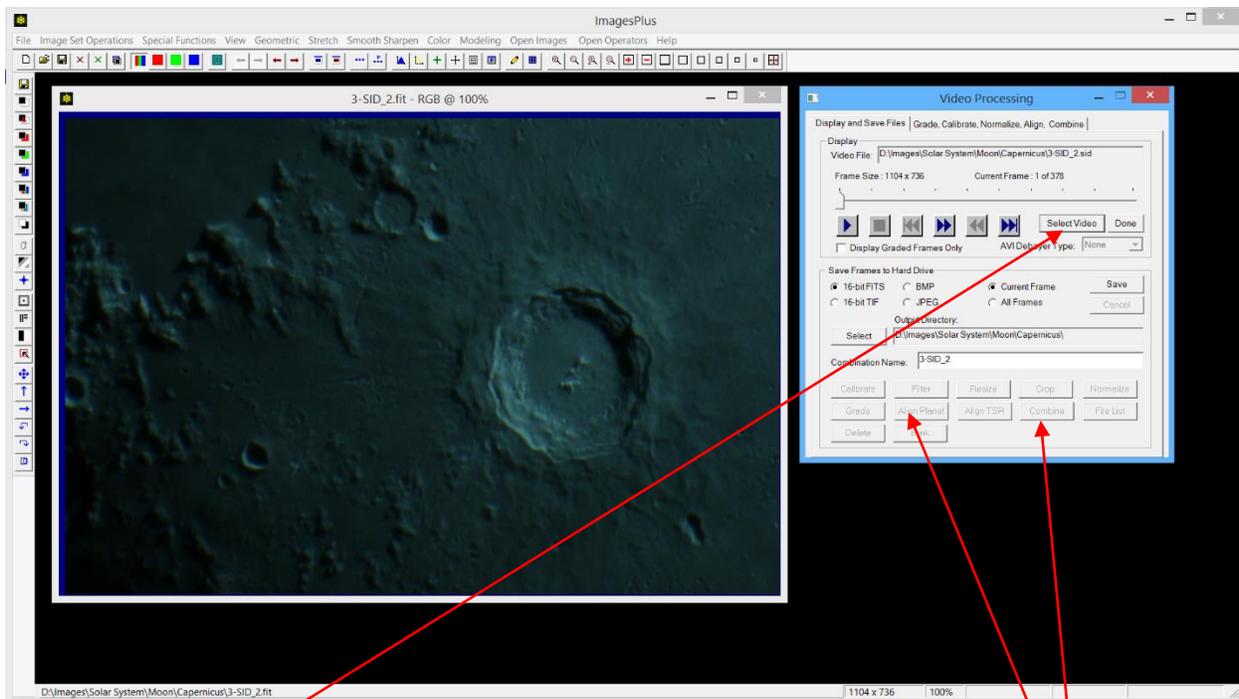
Step 1) Use the *Select Video* button on the Display tab of the Video Processing tool to select a video file. The play buttons can be used to display the video file. The current or all frames in the best frame range created by grading the video file can be saved as a set of separate image files. The image set operation button are used to process the saved image file as a set.
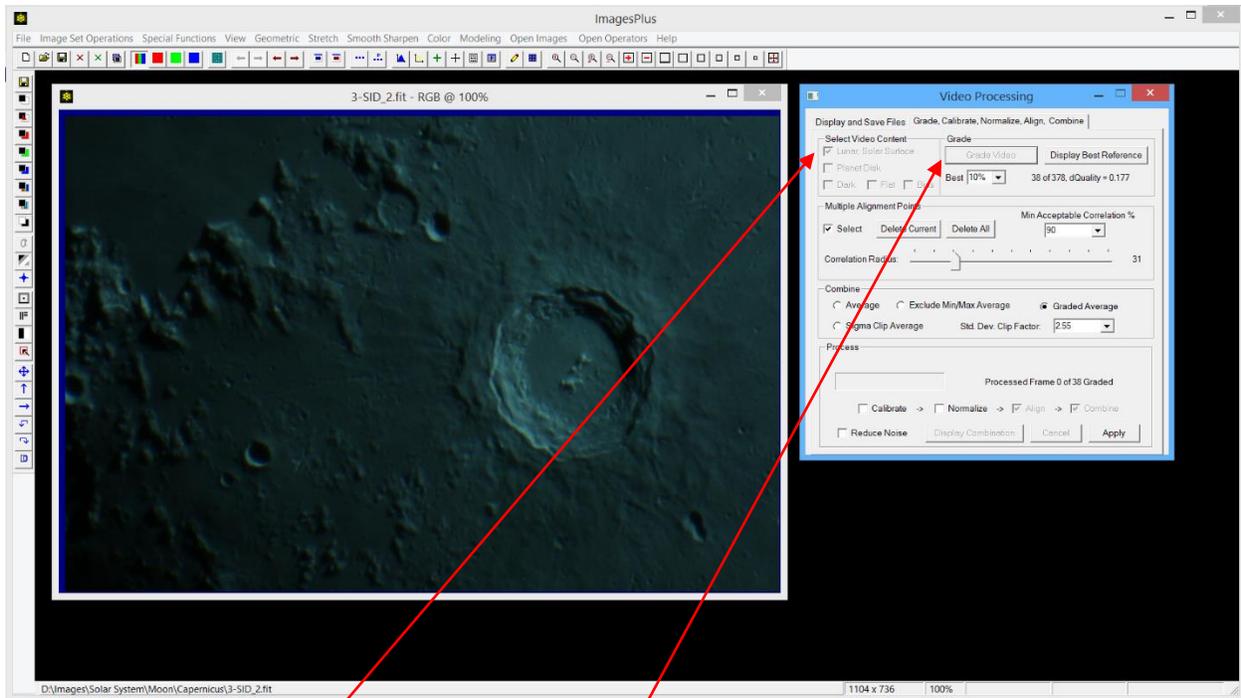
Step 2) Select the video content and then press the *Grade Video* button to grade the video file. In this case the *Lunar Solar Surface* option was selected as the video content. A video of a deep sky object would also use the *Lunar Solar Surface* content option. A planetary video would use the *Planet Disk* content option.

The best frame from the video file is displayed when grading is finished. Use the *Best* list to select the number and quality of frames to include when processing the video file. The best frame is always included in a given best percentage range. The change in quality from the best frame to the least sharp frame in the best percent range is shown by dQuality. In the above screen shot *Best* is set to 10% so the best 10% or 38 from 378 frames are used and the change in quality from best to worst frame is dQuality = 0.177. Use as many frames as possible while trying to keep dQuality under 0.10 to 0.20.

The controls on the Display tab can be used to play and save frames from the best percent range.
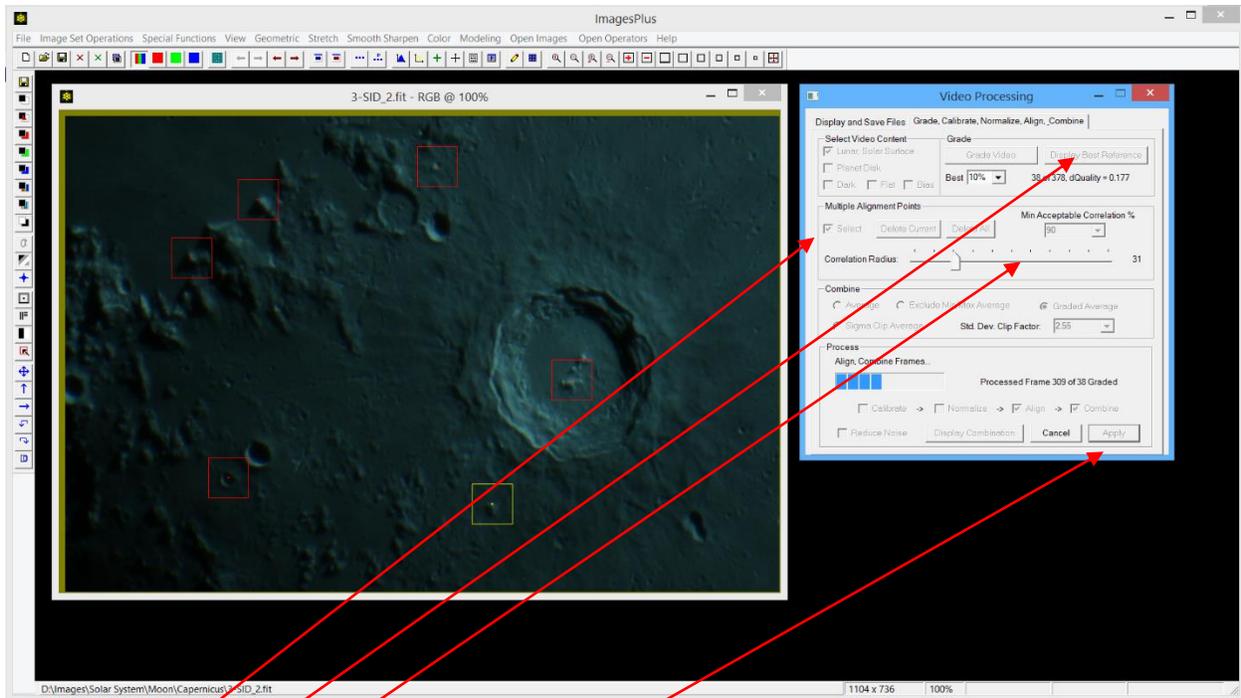
Step 3) If the Play button was used to inspect the frames in the best percentage range then use the *Display Best Reference* button to display the best frame before you select alignment points. Make sure the *Select* box is checked then left click on a few distinct features to use for alignment. Use the Correlation Radius slider to change the size of the correlation neighborhood about each alignment point. Left click on an alignment point to change its correlation neighborhood radius. A few alignment points with smaller correlation neighborhoods general work the best.
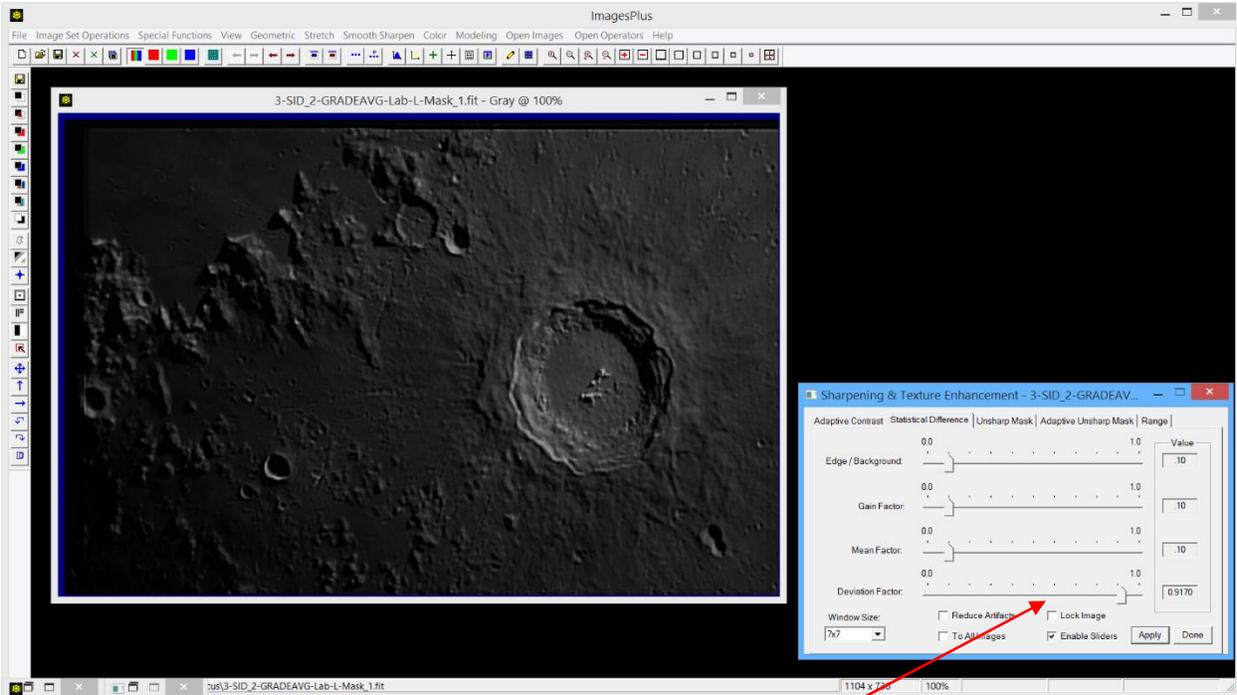
Press the *Apply* button to start processing the video file.
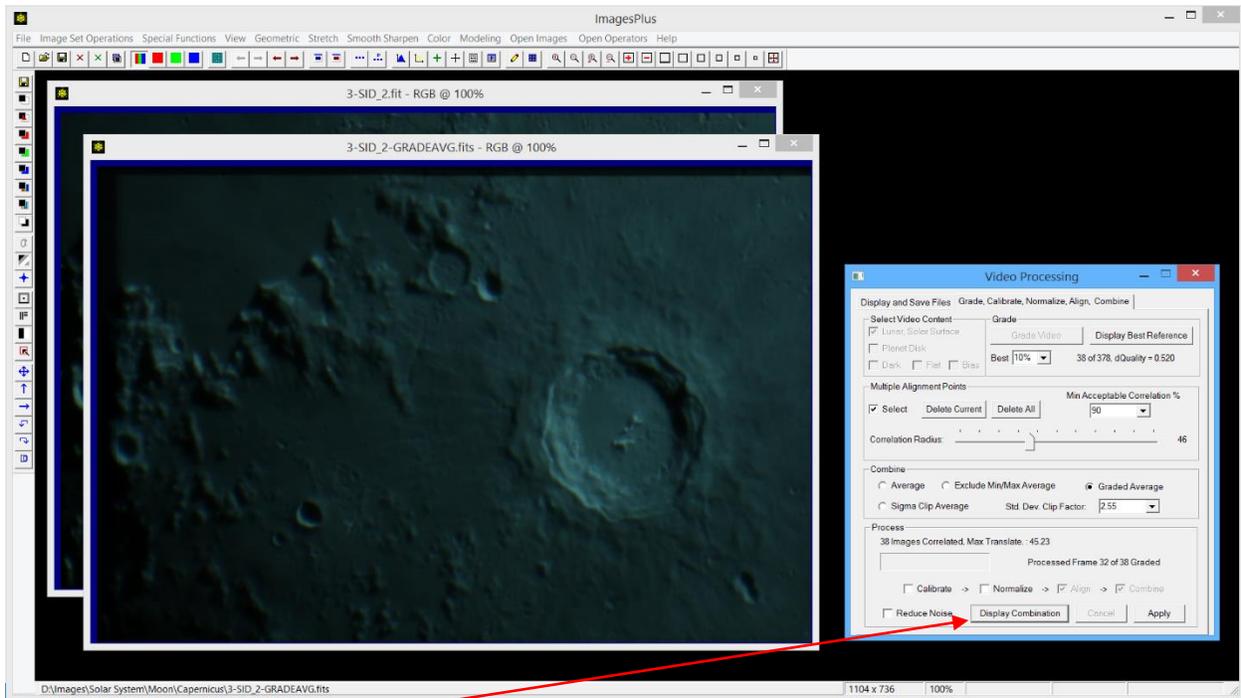
Step 4) Press the *Display Combination* button to display the processed video file.
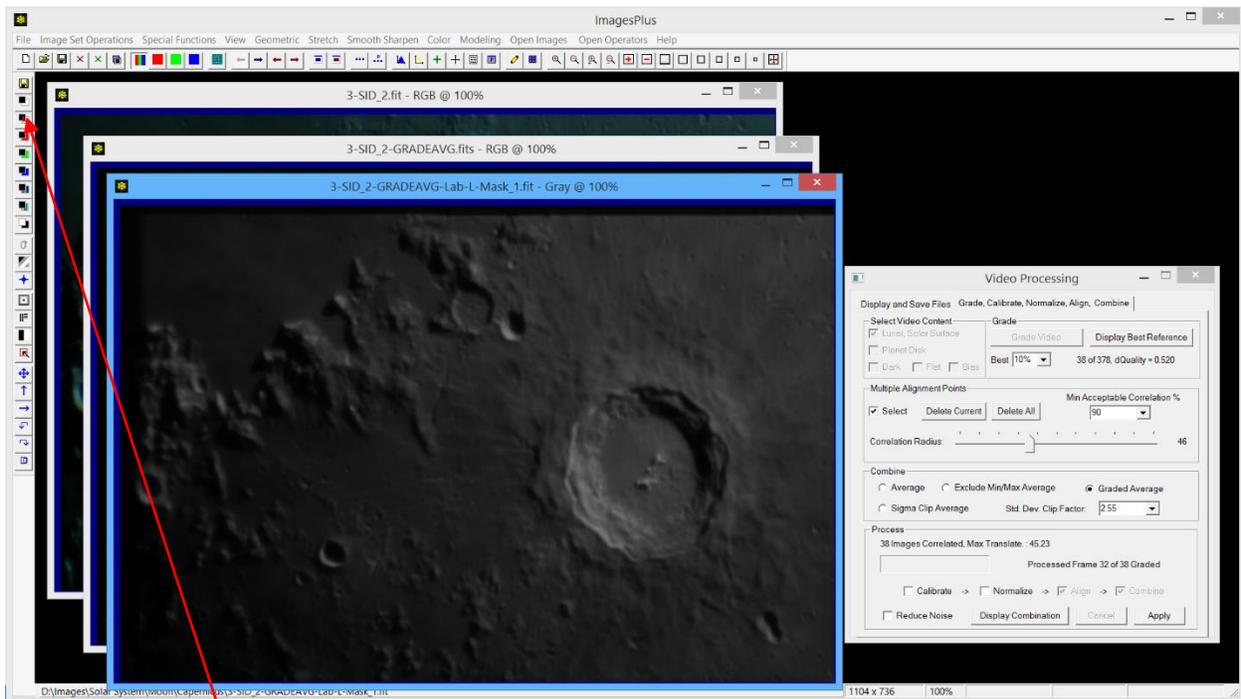

Step 5) The *Lab Luminance* toolbar button is used to convert the color image to a grayscale image.

Step 6) Smooth Sharpen | Sharpening & Texture Enhancement | Statistical Difference is used to apply a mild sharpening to the grayscale image. Move the *Deviation Factor* slider towards the left to sharpen the image.
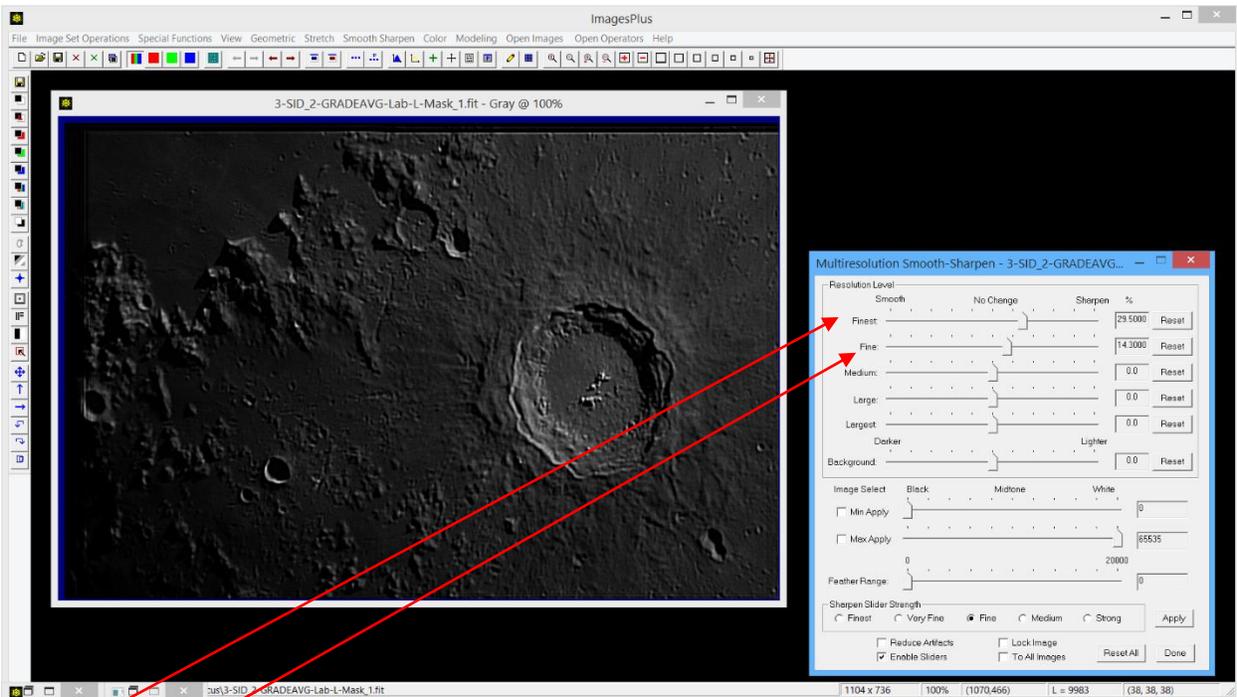
Step 7) Smooth Sharpen | Multiresolution Smooth Sharpen is used to sharpen the fine detail. Move the *Finest* and *Fine* sliders towards the right to sharpen.
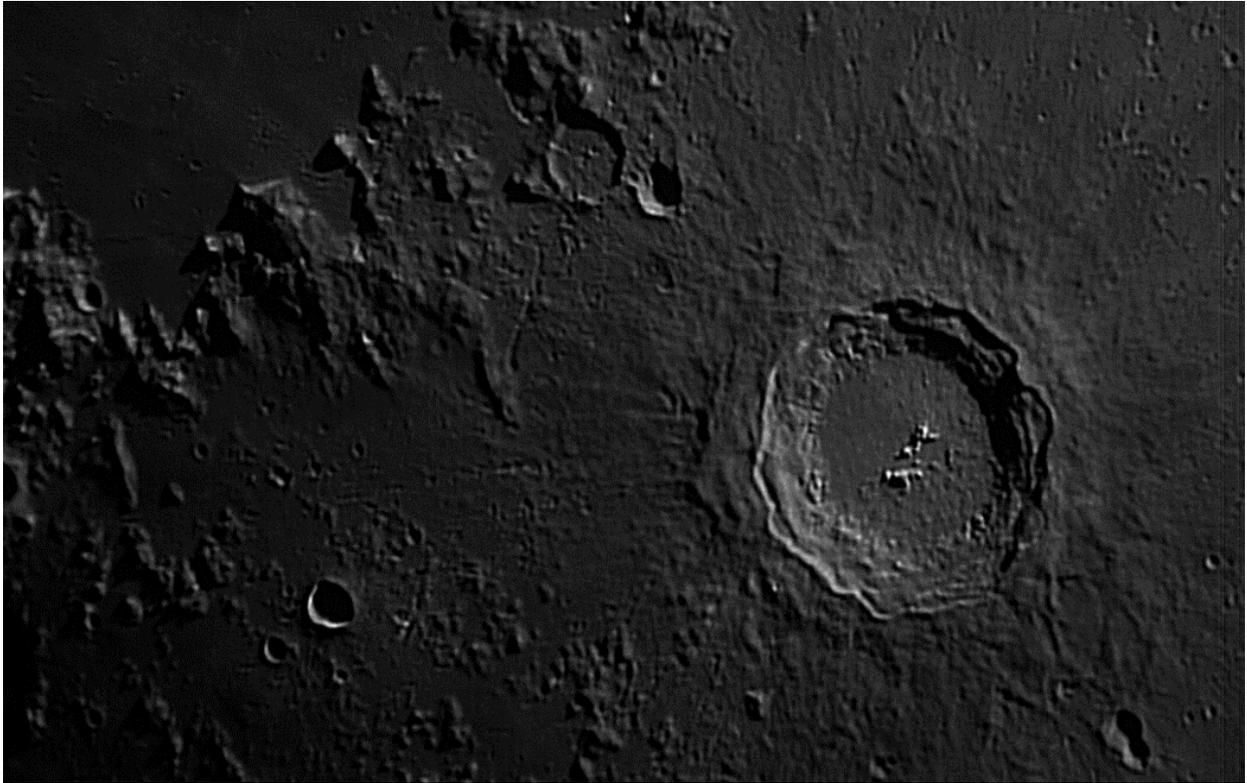
Final sharpened image created by stacking the best 10% of 378 frames with 6 alignment points.