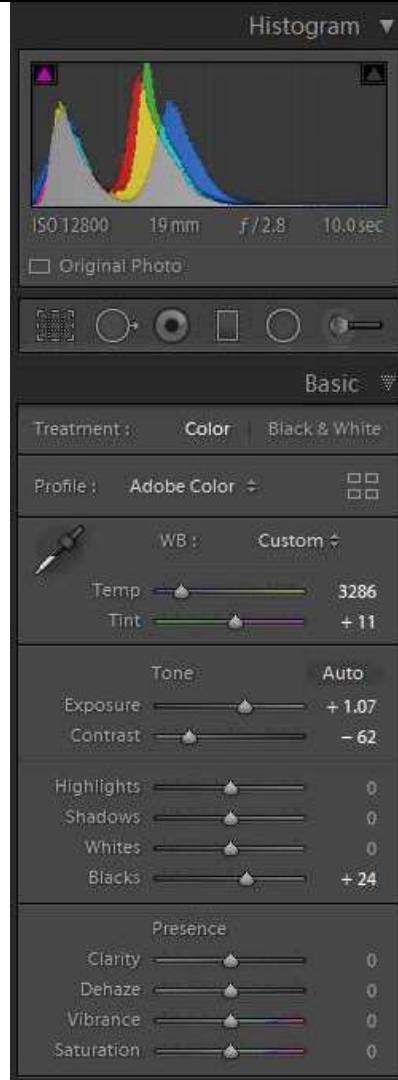
A night photograph of a desert canyon with a reservoir under a starry sky with the Milky Way. The canyon walls are reddish-brown and layered, with water reflecting the sky. The Milky Way is visible as a bright, cloudy band of stars across the dark blue night sky.

Equator Procedure

David Swindler – Action Photo Tours

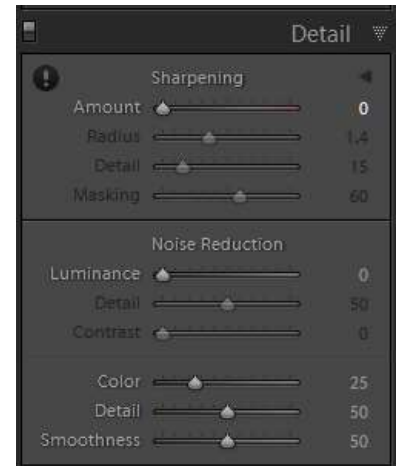
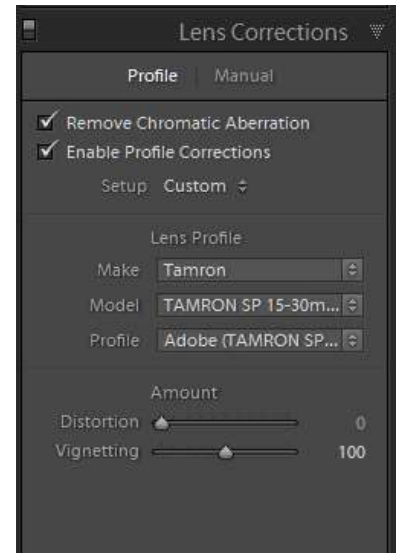
Preparing Images for Stacking

- The best stacking results are obtained from doing the least amount of pre-processing as possible in Lightroom or Camera RAW.
- Recommended Adjustments:
 - Use Custom WB
 - Increase Brightness
 - Decrease Contrast
 - Increase Blacks (look at left side of histogram)
 - Remove Lens Vignetting and Chromatic Aberration
 - Mild Color Noise Reduction



Things to Avoid

- Auto White Balance
- Adding Contrast, Clarity, and DeHaze
- Adding Color through Vibrance, Saturation, and HSL
- Pushing the Bright Tones through Highlights and Whites
- Noise Reduction & Sharpening
- Lens Distortion Corrections
 - Move distortion to zero. Still need vignetting correction.





If done properly, the resulting image will look flat, dull, and noisy.



If too much contrast is added in pre-processing, artifacts can creep in. Radial banding is especially problematic and is primarily caused by using lens distortion corrections.

Sync and Export

- Sync your Lightroom adjustments to the rest of your sky images.
- Export all sky images as 16-bit TIFF files and save them to disk.
 - Recommend using Adobe RGB.
 - No image resizing
 - Include all Metadata

The screenshot shows the Adobe Lightroom Export dialog box with the following settings:

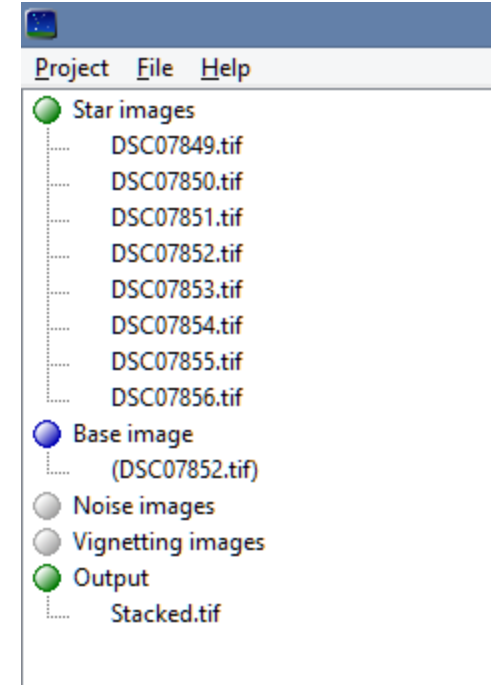
- File Settings:** Image Format: TIFF, Compression: None, Color Space: AdobeRGB (1998), Bit Depth: 16 bits/component, Save Transparency:
- Image Sizing:** Resize to Fit: Long Edge, Don't Enlarge: 2048 pixels, Resolution: 72 pixels per inch
- Output Sharpening:** Sharpen For: Screen, Amount: Standard
- Metadata:** Include: All Metadata, Remove Person Info: , Remove Location Info: , Write Keywords as Lightroom Hierarchy:
- Watermarking:** Watermark: APT Standard
- Post-Processing:** After Export: Do nothing, Application: Choose an application... Choose...

Buttons: Export, Cancel

Load Images

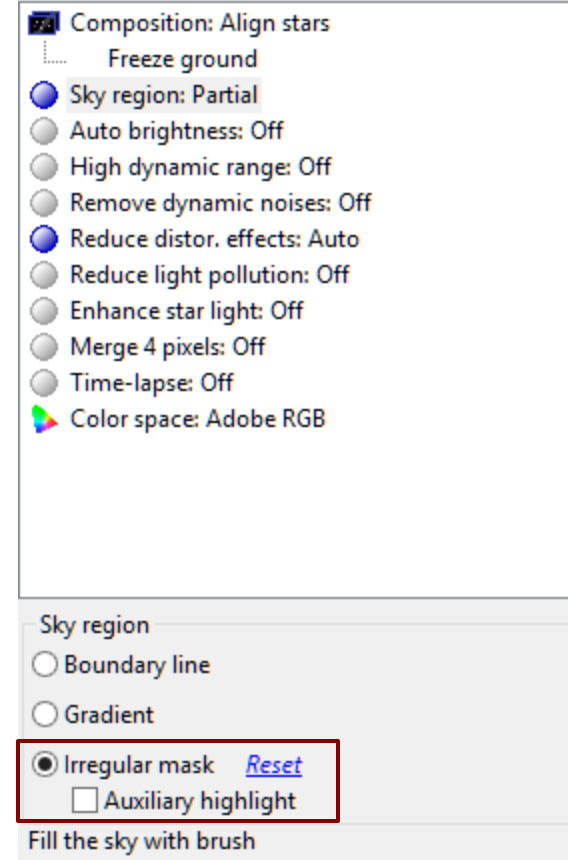
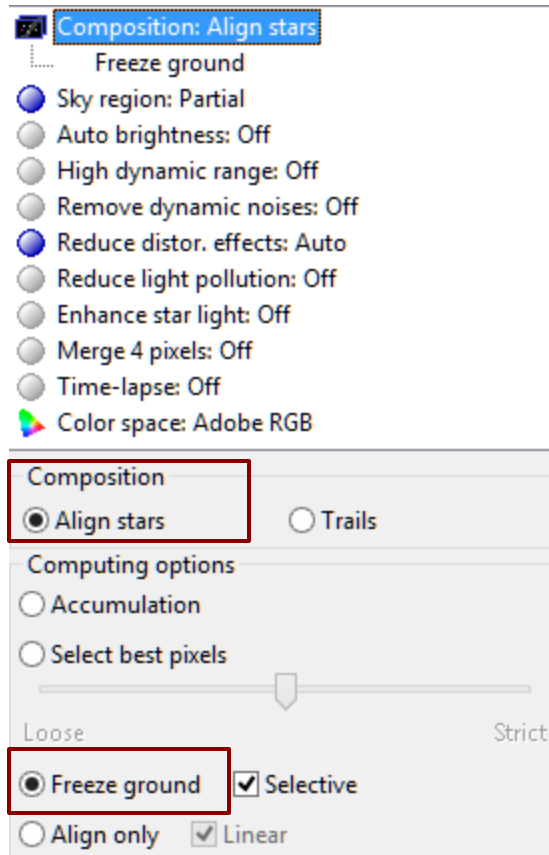


- Launch Sequator. Go to File -> Star Images and open the TIFF files you just saved.
- By default, the software will select the middle image as the Base Image. This is the one all other images will be aligned to. You can change this, but the best results are usually obtained with the middle image.
 - More advanced users can load additional files types like Noise Images (i.e. Dark Frames) and Vignetting Images. To simplify things, we recommend letting the stacking take care of hot pixels and removing vignetting in pre-processing.
- Choose Output, name the file, and select where to save it.



Setup

- Under Composition, choose Align Stars. Down below, ensure Freeze Ground is selected.
- Next, go to Sky Region and choose Irregular Mask.



Sky Selection



- After you select Irregular Mask, a circular brush will appear. Your job is to paint everywhere there is sky without painting on the landscape. Don't worry about being super precise.
- You can increase/decrease the size of this brush using the scroll wheel on your mouse. For touchscreens and touchpads, you can pinch/expand your 2 fingers to change the size.
 - As you get closer to the horizon, decrease the brush size for more accuracy.
- If you paint anywhere you did not want to, simply right click and hold to activate the eraser.
- Once this is done, the sky should appear with a soft green overlay.

Project File Help

- Star images
 - DSC07849.tif
 - DSC07850.tif
 - DSC07851.tif
 - DSC07852.tif
 - DSC07853.tif
 - DSC07854.tif
 - DSC07855.tif
 - DSC07856.tif
- Base image
 - (DSC07852.tif)
- Noise images
- Vignetting images
- Output
 - Stacked.tif

- Composition: Align stars
Freeze ground
- Sky region: Partial
- Auto brightness: Off
- High dynamic range: Off
- Remove dynamic noise: Off
- Reduce distort. effects: Auto
- Reduce light pollution: Off
- Enhance star light: Off
- Merge 4 pixels: Off
- Time-lapse: Off
- Color space: Adobe RGB

- Sky region
- Boundary line
- Gradient
- Irregular mask: [Reset](#)
- Auxiliary highlight

Fill the sky with brush

Start

Result: C:/Users/David/Pictures/Night RAW Images/Temple of the Moon Raw/TIFFs with Contrast/Sequator with Contrast No Options.tif [Open](#)

Options



- Auto-Brightness:
- High Dynamic Range
 - Best not to use these functions. Instead, do your contrast adjustments in post-processing.



Options



- Remove Dynamic Noises
 - Can help to remove hot pixels. Recommend using it.
- Reduce Distortion Effects
 - Can help with star streaks near the corners of the lens. Ok to use if needed.
- Reduce Light Pollution, Enhance Star Light, Merge 4-Pixels, and Time Lapse should stay off.
- Set the color space to Adobe RGB.
- Hit Start to begin the stacking procedure.

Finishing Up



- Import the Stacked TIF file back into your Lightroom Catalog.
- Make the necessary adjustments to the sky (contrast, brightness, clarity, dehaze, colors, sharpening, etc). The sky will look very flat and dull after stacking.
- Bring the stacked sky shot into Photoshop along with any long exposure(s) for the foreground and blend them.
 - Make sure you pay attention to stacking artifacts near the horizon and around the edges of landscape features.
 - If you see any, you may need to locally stretch the sky in those areas to remove them.
 - If any airplane streaks or satellites remain after stacking, you may wish to remove those.