

LiDAR Mapping Systems

Post Processing - PhaseOne Undistorted Images in TerraPhoto

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1. Exporting Undistorted Frames

Convert raw image files to a common format and correct the frames for lens distortion.

- Use the Processing tab of Phase One's IX Capture software.
- Configure various output parameters
 - Ensure that you select "Distortion Corrected..." as the output option
- Select input raw .IIQ Image files
- Click the More Options Icon (...) in the Calibrations section for your camera(s)
 - Import your factory provided Phase One calibration (ex: iXM-100-ML...AUS.txt)
- Start Processing

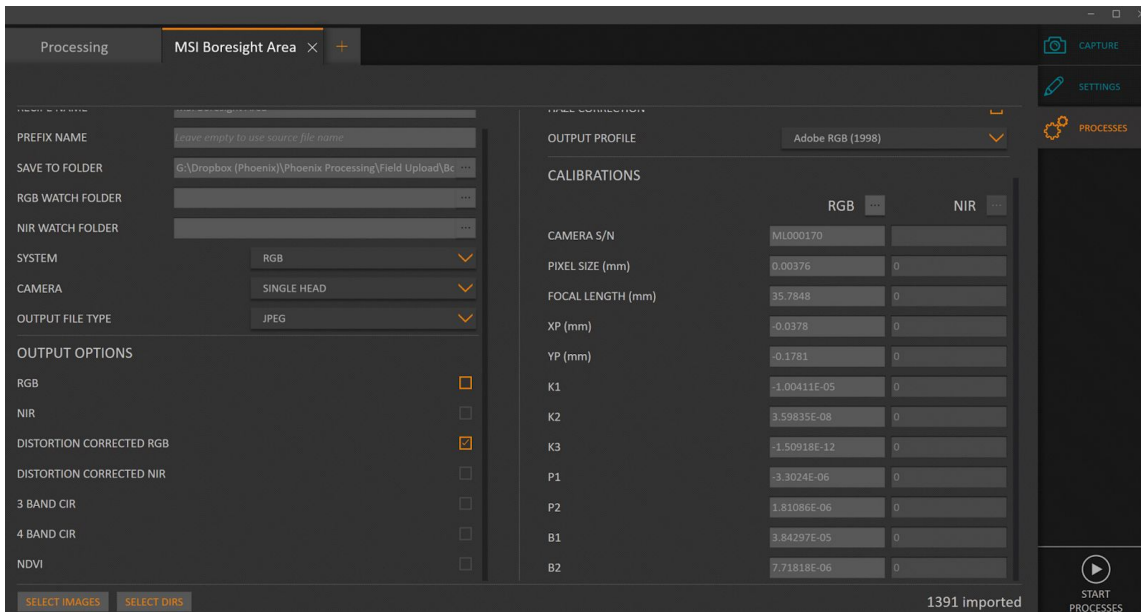


Figure 1.1 Example export settings for producing Undistorted RGB images

2.0 Terraphoto

The workflow is generally unchanged when using undistorted images in Terraphoto. However, you will need to prepare a new camera calibration (.cal) file specifically for these frames.

2.1 Camera cal file for undistorted frames

2.1.1 Mask bad pixels

Undistorted frames have their pixel content adjusted to remove the effects of lens distortion. This typically produces some areas of No-Data pixels within the rectangular raster data bounds, near the edges. These areas must be defined to avoid artifacts in the final mosaic.

- To create a mask to exclude the bad areas:
 - Open a .dgn that has Easting and Northing origins set to zero in 'Photo Define Coordinate Setup'
 - Start 'Manage Raster References' from the TerraPhoto toolbar
 - Attach one of the undistorted images (for example cap_0001_cal.jpg)
 - Select this image in the reference list and start 'Edit / Modify attachment' menu command
 - Click OK
 - Image gets positioning where lower left corner is at 0,0 and pixel size is 1.0 master unit
 - Start 'Display / Fit / All' and click in view 1
 - Draw polygon(s) for the bad image area
 - Start 'Define Camera'
 - Use 'File / Open' to open your .cal file
 - Select the polygon(s) drawn in step 7
 - Start 'Tools / Assign bad polygons'
 - Save the camera calibration



Figure 2.1 A polygon mask outlining the No-Data pixels along the bottom edge of a frame

2.2.2 Lens Distortion

- Set up a TerraPhoto mission using the typical procedure
- Ensure that the image timing file(s) contain names that match the images before building an image list.
 - Undistorted images may have “_cal” appended.
- Zero out the lens distortion values in your .cal file.
- Refine the .cal file, excluding lens distortion, using a basic tie point method.

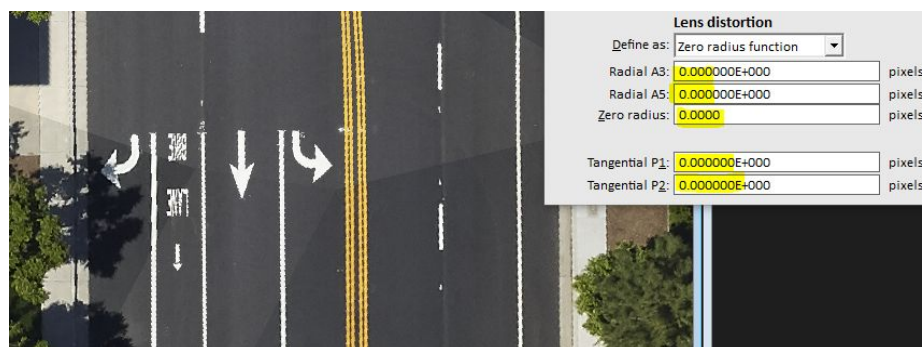


Figure 2.2 Terraphoto does not need to handle Lens Distortion

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