LiDAR Mapping Systems

Post Processing - PhaseOne Undistorted Images in TerraPhoto

Revision Date: 20200605

Phoenix LiDAR Systems
10131 National Blvd.
Los Angeles, CA 90034

www.phoenixlidar.com
+1.323.577.3366
support@phoenixlidar.com

Legal Notices

All the features, functionality, and other product specifications are subject to change without prior notice or obligation. Information contained herein is subject to change without notice.

Please read carefully and visit our website, www.phoenixlidar.com for further information and support.

Disclaimer

Information in this document is provided in connection with Phoenix LiDAR Systems products. No license, expressed or implied, by estoppels or otherwise, to any intellectual property rights is granted by this document. Except as provided in the terms and conditions of sale for such products, Phoenix LiDAR Systems assumes no liability whatsoever, disclaims any express or implied warranty, relating to sale and/or use of products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright or other intellectual property right.

Phoenix LiDAR Systems products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications. In no event shall Phoenix LiDAR Systems liability exceed the price paid for the product from direct, indirect, special, incidental, or consequential damages resulting from the use of the product, its accompanying software, or its documentation. Phoenix LiDAR Systems makes no warranty or representation, expressed, implied, or statutory, with respect to its products or the contents or use of this documentation and all accompanying software, and specifically disclaims its quality, performance, merchantability, or fitness for any particular purpose. Phoenix LiDAR Systems reserves the right to revise or update its products, software, or documentation without obligation to notify any individual or entity. Backup collected data periodically to avoid any potential data loss. Phoenix LiDAR Systems disclaims any responsibility of all sorts of data loss or recovery.

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

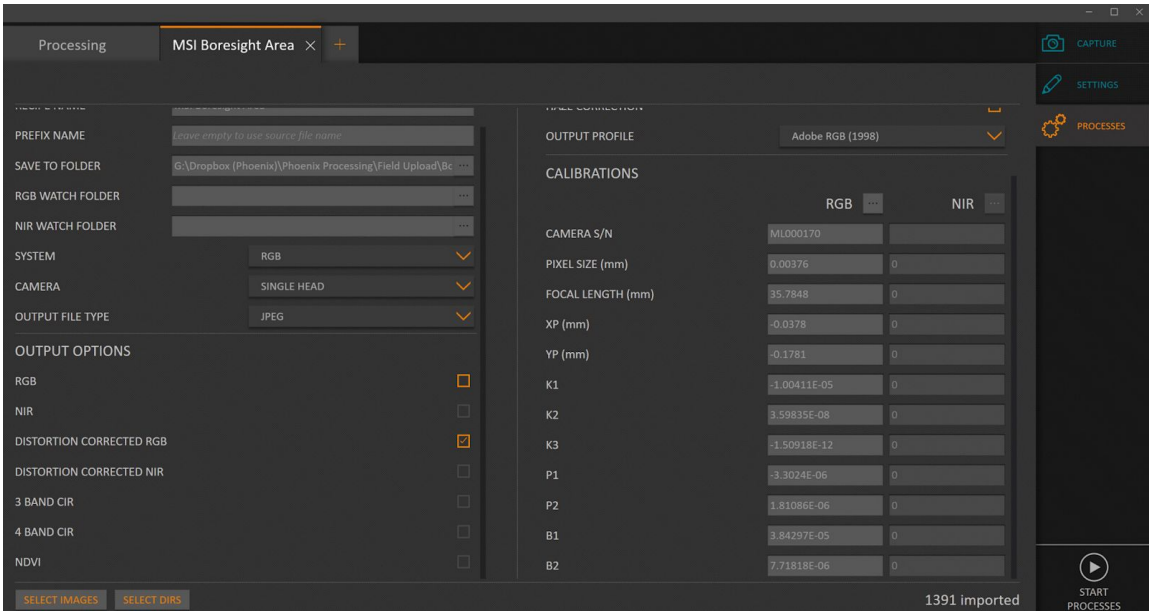

Figure 1.1 Example export settings for producing Undistorted RGB images

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.

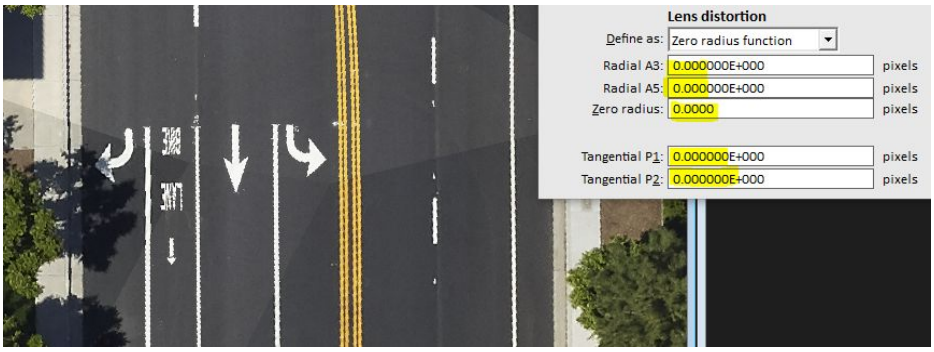

Figure 2.2 Terraphoto does not need to handle Lens Distortion

This content is subject to change.
Download the latest version from www.phoenixlidar.com

If you have any questions about this document, please contact Phoenix LiDAR Systems by sending a message to support@phoenixlidar.com.