



*Frame CuePac
User Guide 2017.1
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Pre-requisites ->

1. Ensure *FramePro* software has been installed on the user machine.
2. Set the Camera and Calibration information using the *Camera Manager*, in GeoCue (Refer Fig. 1.1).

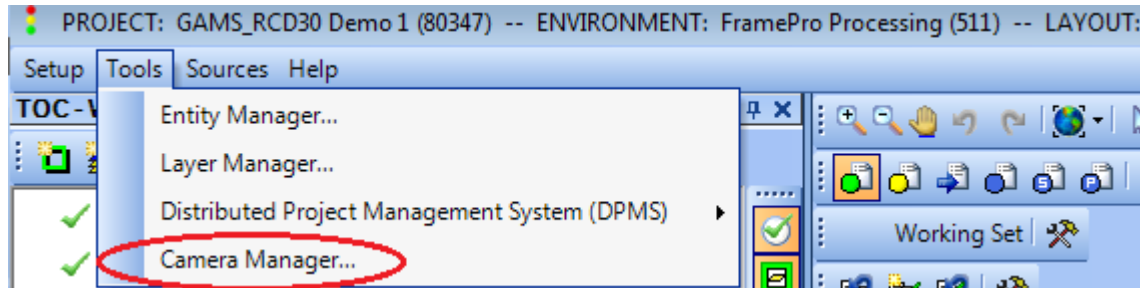


Fig. 1.1

Workflow ->

1. Creation of a new project :

- 1.1. Inside the GeoCue environment, under the *Setup* menu, select *Project -> New...* (Refer Fig. 1.2)

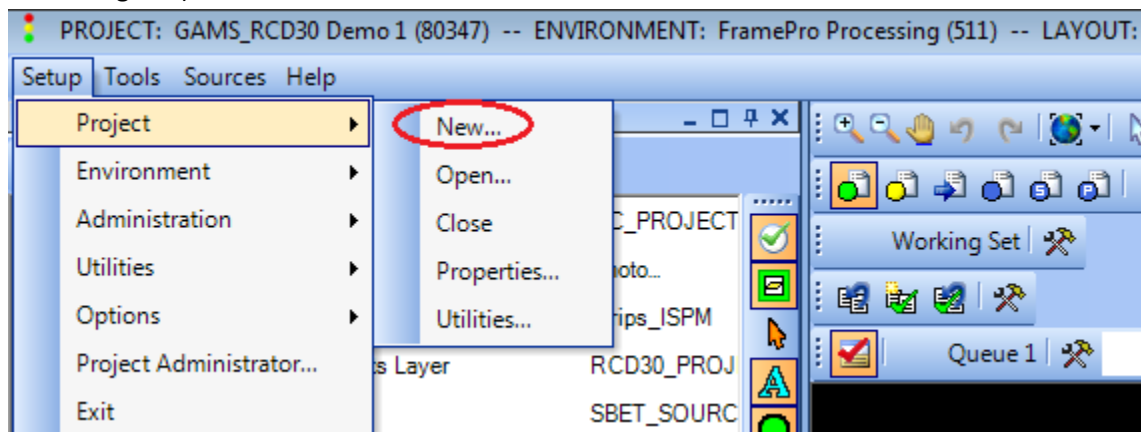


Fig. 1.2

- 1.2. Once the *Create Project* dialog opens, select '*FramePro Processing*' as the *Environment*. Select a valid co-ordinate system for the project. This is the co-ordinate system in which the data will eventually be processed to.

2. Importing a FramePro project :

- 2.1. Inside the GeoCue environment ->
 - a) *Sources -> Import Trajectory...*

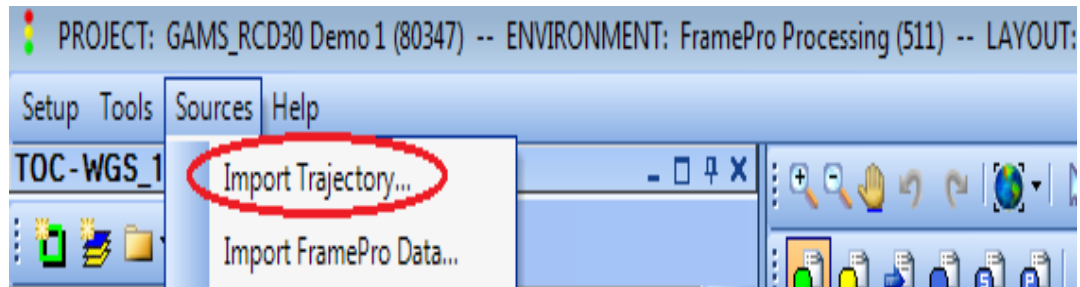


Fig. 1.3

The trajectory is needed to generate more refined *EO*, and thus help create more accurate footprints.

b) *Sources* -> *Import FramePro Data...*

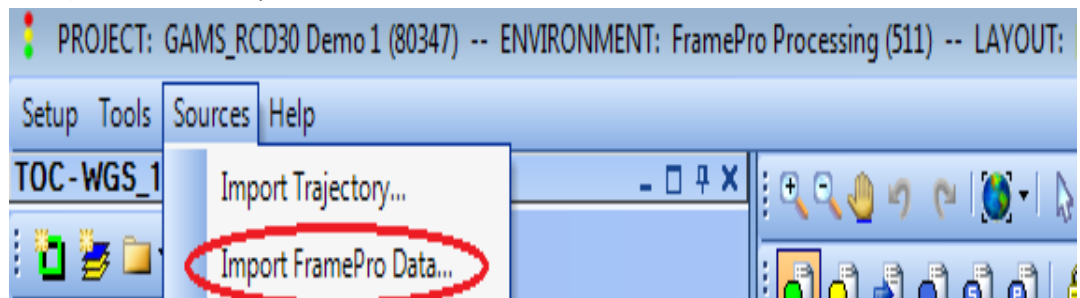


Fig. 1.4

3. The 'Import FramePro' Dialog :

- 3.1. Browse to a valid *FlightData.xml* file, for the given project.
- 3.2. If this FramePro data hasn't already been downloaded, the *Download* groupbox on the dialog (Refer Fig. 1.5) will be enabled, and the user will be bound to "download" the data to a user-selected location, prior to proceeding with the "import". On the other hand, if the FramePro data has been downloaded, however, the given *FlightData.xml* doesn't conform to the specifications of the current FramePro version, the user will still be required do "download" the project prior to the "import".
- 3.3. If the selected project is a multi-headed camera project, the *Create Oblique Footprints* check-box will be enabled, and the user will have the ability to select the same if desired.
- 3.4. Type in the desired *Layer Basename* (by keying in the prefix and suffix texts for the various layer names).
- 3.5. The *Source Coordinate System* is the coordinate system of the input data. This can be changed, preferably using the *Options...* button on the lower left corner of the "Import FramePro Project" dialog.
- 3.6. The *EO Coordinate System* is the coordinate system which the user wants the data to be processed into. This can be changed using the *Select...* button on this groupbox.

- 3.7. For *Average Ground Elevation*, the user can check the *Use SRTM* checkbox if they want to use the SRTM data for calculation, or can type in a desired ground elevation value by un-checking the *Use SRTM* checkbox, and typing in a value in the *Default Ground Elevation* textbox.
- 3.8. The *Compute EO from Trajectory* option can be selected if the user wants to calculate more refined *EO* using the trajectory imported for the given project (Step 2.1 <a>). Once checked, it will automatically populate the *Camera and Calibration Selection* groupbox, and will let the user select the appropriate trajectory data (if more than one trajectory has been imported for the selected project). If there is no trajectory that has been imported for the given project, the *Compute EO from Trajectory* option will be disabled.
- 3.9. Hit the *OK* button to proceed with the “Import”.

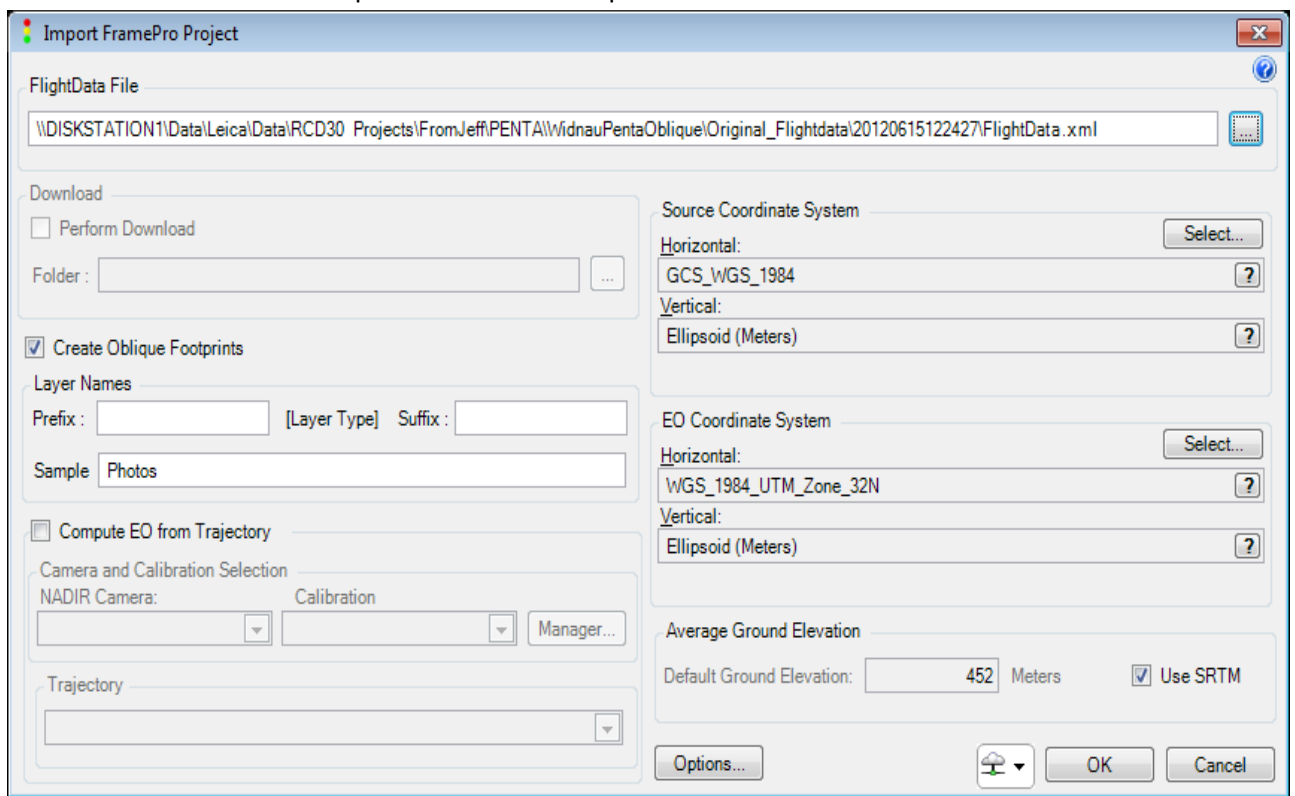


Fig. 1.5

4. After the “Import” :

- 4.1. Once the FramePro project has been imported into GeoCue, the user will be able to view the following properties / files, etc :
- a) On selecting the project boundary, the user can view the following attributes under the ‘RCD 30 Project’ attribute group –
 - Attributes
 - AvgElevation

- FlyingHeight
 - ProjectID
 - Camera
 - Camera Serial values for each of the cameras used in the given project, alongwith the associated Camera Label.
- b) User can also view the following files under the *Files* group on the project boundary –
- FramePro FlightData (*FlightData.xml*)
 - FramePro Settings (*FramePro.ini*)
- c) The strip / line entity will be assigned a new attribute group *FramePro* having the various radiometric, file type / format and advanced settings.
- d) If a photocenter entity is selected in the *MapView*, all its associated footprint(s) will also be highlighted. If this does not work, carry out the following step :
Go to : *Setup -> Options -> GeoCue -> MapView => Check "Highlight linked entities upon parent selection"*

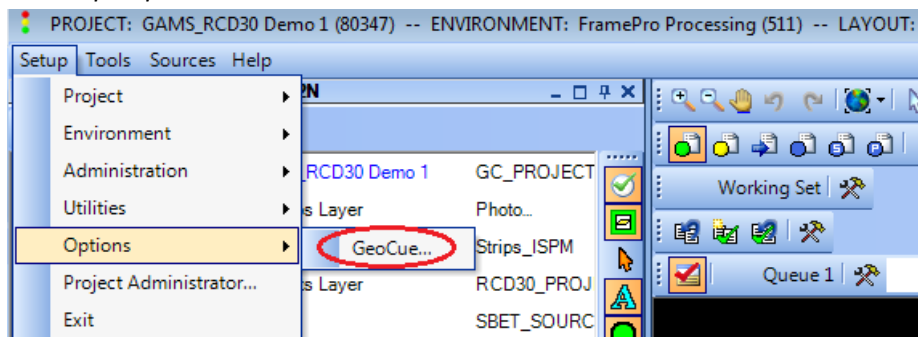


Fig. 1.6

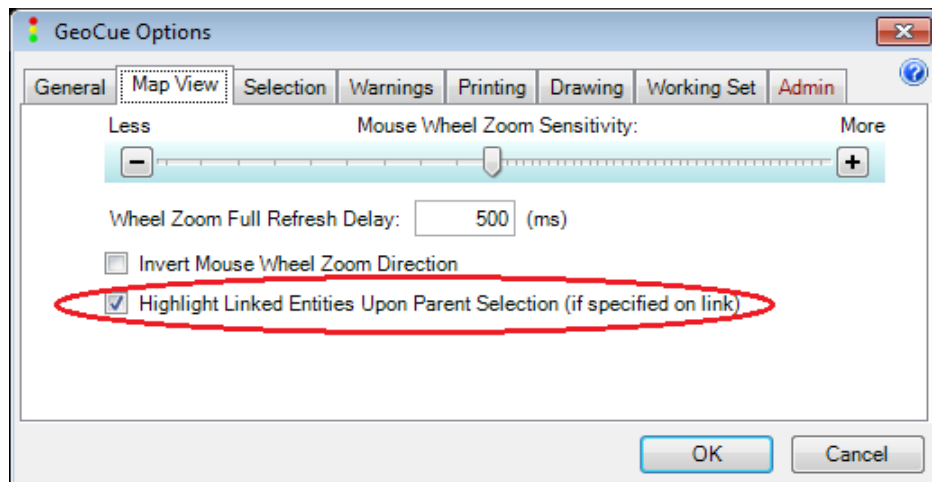


Fig. 1.7

Similarly if any of the footprint entities is selected, its parent photocenter entity and also the remaining footprint(s) associated with this parent photocenter will be highlighted.

- e) The *Nadir* thumbnail image will be displayed in the viewer on the selection of a Nadir footprint entity.
- f) On selecting the *Nadir* footprint, the following files will be initially attached to its *Files* group :
 - Thumbnails :
 - Thumbnail images for *Nadir RGB* and *Nadir NIR*
 - Corresponding *world files (TFW)* for the *Nadir RGB* and *Nadir NIR* thumbs.
 - GC Display Raster :
 - *Displayable Raster* will be set to the 'rgb thumb image' for the *Nadir* camera
 - Corresponding *Tiff World File (TFW)* for the *Nadir RGB* thumb image will also be attached.

5. Processing the strip / line entity(s) :

5.1. Add strip(s) to the working set.

5.2. Run the following checklist steps :

5.2.1 **Set Processing Parameters**

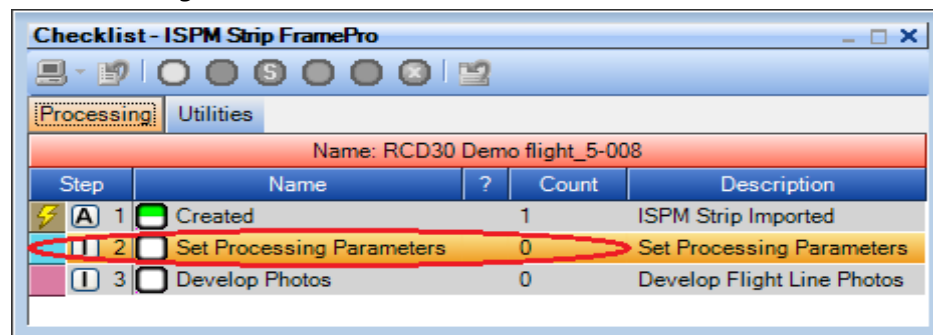


Fig. 1.8

- Here, we can modify the various processing options such as the *File Type*, *File Format*, *Bits Per Band*, *Radiometry (Gamma, Gain, Offset, Histogram Stretch)*, *Correction Type*, etc. This dialog is similar to the 'FramePro Ortho Workflow' Dialog in the FramePro software (*Settings -> Preferences -> Ortho Workflow*)
- Whenever the user imports a FramePro project into GeoCue, a copy of the corresponding FramePro "settings.ini" file is maintained (attached to the project boundary). Using the dialog (Fig. 1.9), the user has the ability to change these settings (processing parameters), and whenever

any value gets updated, the changes are recorded on the corresponding attributes under the concerned strip entity(s).

- This “*settings.ini*” file gets updated with the new changes only when the user processes the data again.
- As can be seen from the dialog, compressed *TIFF* images are not supported, and also *JPEG* images do not support overviews (minifications).

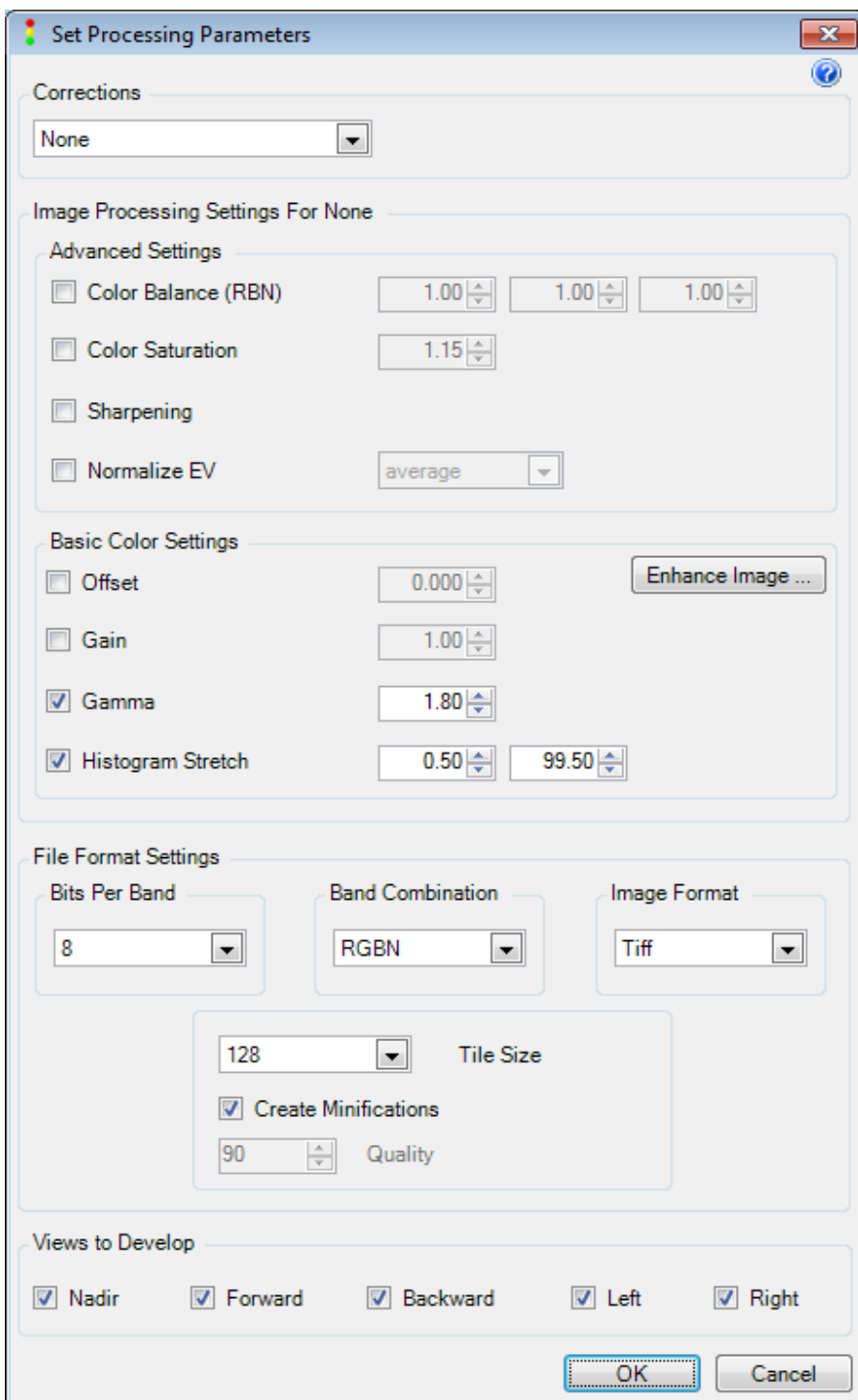


Fig. 1.9

5.2.2 Develop Photos

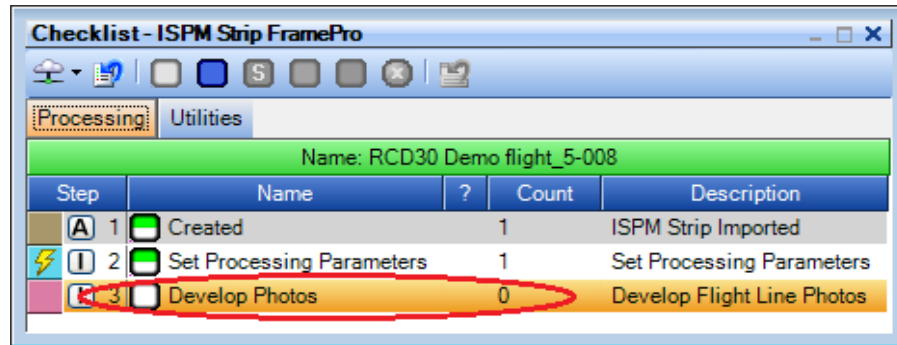


Fig. 1.10

- Developed (high-resolution) images will be generated.
- A log file will get attached to the selected (processed) strip entity(s).
- The developed *Nadir* and the oblique images will be displayed in the viewer on the selection of a developed / processed photocenter entity.
- On selecting a developed photocenter entity, one can view all the corresponding processed images (for each camera) under the file group 'Processed Images' on the given photocenter entity.
- After development of photos, on selecting the corresponding *Nadir* footprint entity for a processed photocenter, the following files groups / files can be viewed :
 - Nadir Processed Images
 - The *Nadir* processed image for the appropriate file type (*RGB*, *RGBN*, etc as selected by the user on the *Set Processing Parameters* dialog).
 - GC Display Raster
 - *Displayable Raster* will be set to the corresponding *Nadir* processed image.
 - Corresponding *world file (TFW)* for the processed *Nadir* image will also be attached.

6. Processing the photocenter entity(s) :

6.1. Add photocenter entity(s) to the working set.

6.2. Run the following checklist steps :

6.2.1 *Set Processing Parameters*

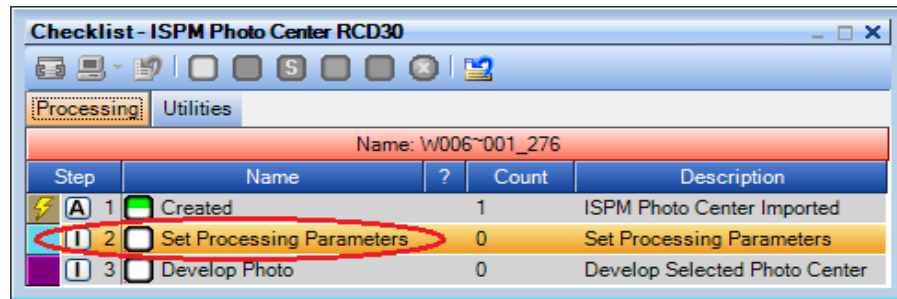


Fig. 1.11

- Here, we can modify the various processing options such as the *File Type, File Format, Bits Per Band, Radiometry (Gamma, Gain, Offset, Histogram Stretch), Correction Type*, etc. This dialog is similar to the 'FramePro Ortho Workflow' Dialog in the FramePro software (*Settings -> Preferences -> Ortho Workflow*)

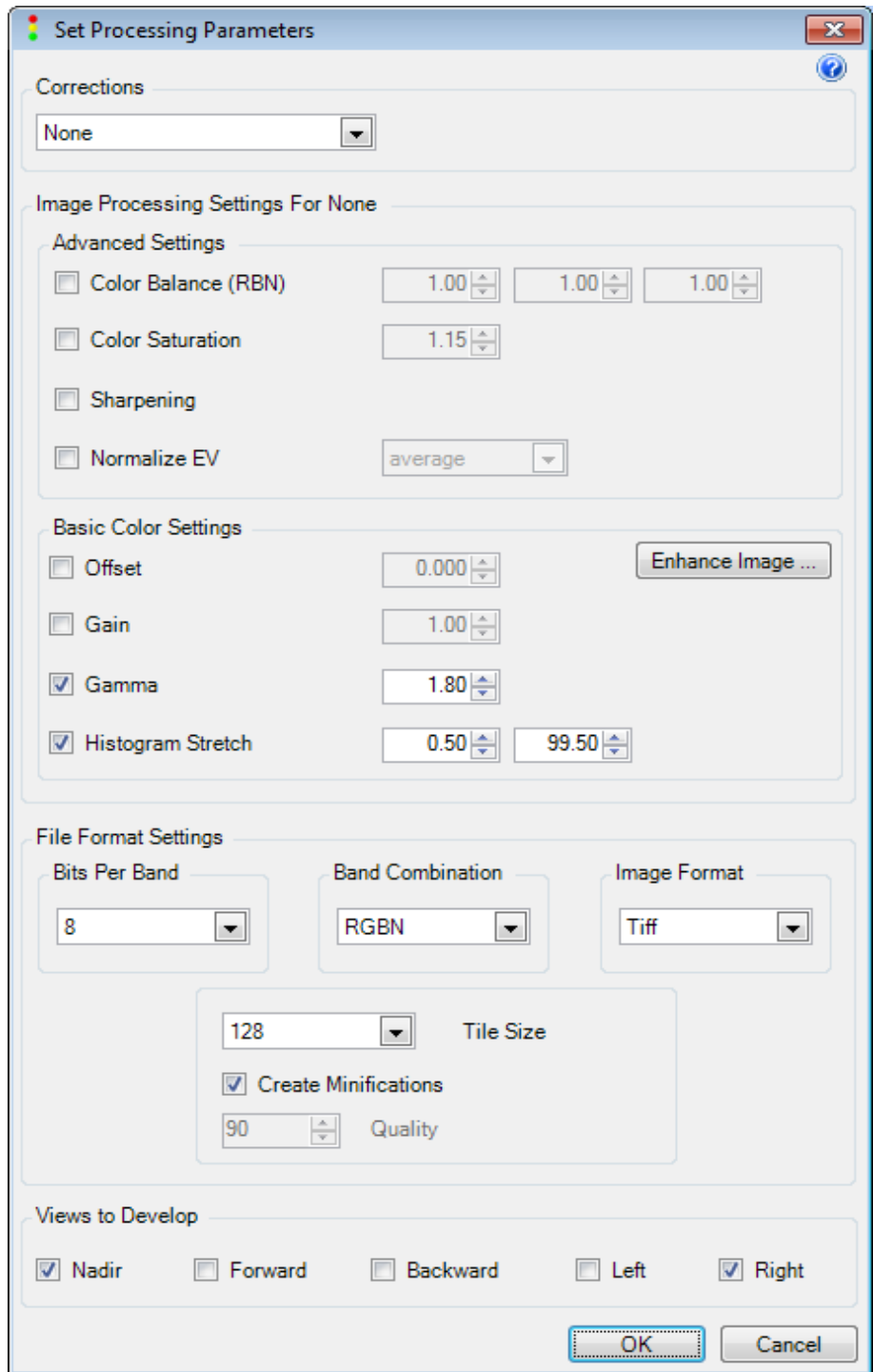


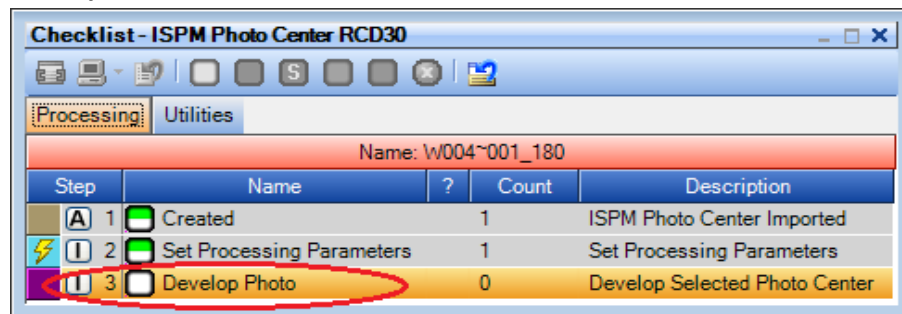
Fig. 1.12

- Whenever the user imports a FramePro project into GeoCue, a copy of the corresponding *FramePro* “*settings.ini*” file is maintained (attached to the project boundary). Using this dialog, the user has the ability to change these settings (processing parameters), and whenever any value

gets updated, the changes are recorded on the corresponding 'FramePro' attribute group on the selected photocenter entity(s).

- For a multi-headed camera system, the user now has the ability to select the views (Nadir, Forward, Backward, etc) they would want to process the selected photo for. This feature is applicable only for frame-based processing. For strip-wise processing, we would still be developing the photo(s) for all the possible views for the given camera system.
- In the event of the user selecting *NIR* or *CIR* as the *Band Combination*, only the *Nadir* frame will get processed as a *NIR* or *CIR* while the obliques will be processed as *RGB*.
- This "settings.ini" file gets updated with the new changes only when the user processes the data again.

6.2.2 Develop Photo



- a) Run the checklist step 'Develop Photo' which will then (in the background) run the corresponding *FramePro* command to process a photo – single frame at a time.
- b) Developed (high-resolution) images will be generated.
- c) Log file(s) [same number as the number of frames or cameras associated with that exposure station] will get attached to the selected (processed) photocenter entity(s).
- d) The developed *Nadir* and the oblique images will be displayed in the viewer on the selection of a developed / processed photocenter entity.
- e) On selecting a developed photocenter entity, one can view all the corresponding processed images (for each camera) under the file group 'Processed Images' on the given photocenter entity.
- f) After development of photos, on selecting the corresponding *Nadir* footprint entity for a processed photocenter, the following files groups / files can be viewed :
 - Nadir Processed Images

- The *Nadir* processed image for the appropriate file type (*RGB*, *RGBN*, etc as selected by the user on the *Set Processing Parameters* dialog).
- o GC Display Raster
 - *Displayable Raster* will be set to the corresponding *Nadir* processed image.
 - Corresponding *world file (TFW)* for the processed *Nadir* image will also be attached.

7. Image Enhancement :

7.1. Run through the checklist step 'Enhance Image'

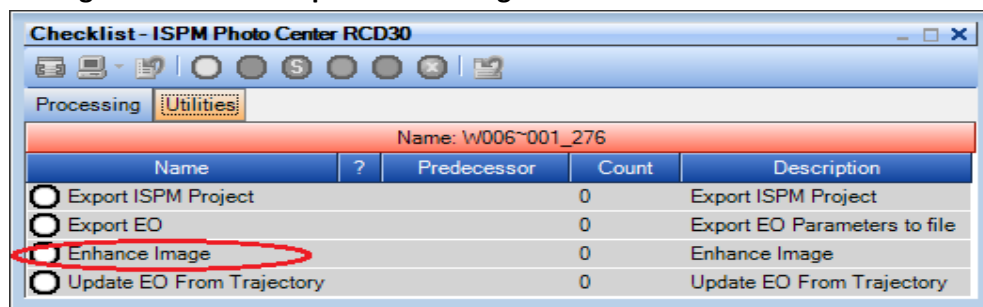


Fig. 1.14

- a) Add a photocenter entity to the working set and run the checklist step 'Enhance Image' (under the 'Utilities' tab).
- b) The 'Enhance Image' dialog (Fig. 1.15) will pop up, having two blocks – *Before* and *After* - being displayed on it, each being initially set to 'Image Generation in Progress' message (if not processed already). Meanwhile, in the background, the selected photo (if not developed) will be processed with *Offset | Gain | Gamma* values set to *0 | 1 | 1*.
- c) Once the photo has been processed, the *Before* block will get updated with the dark raw image (*OffsetGainGamma : 011*) while the *After* block gets updated with the image (*NADIR*) having the settings as stored on the corresponding photo's '*FramePro*' attribute group.
- d) The Image Enhancement dialog will be pre-populated with the corresponding photocenter entity's stored *FramePro* radiometric attributes, at the time of load.
- e) The user can modify the dialog settings by simultaneously viewing its effect on the image in the 'After' block and decide the settings that suit their requirement the best.

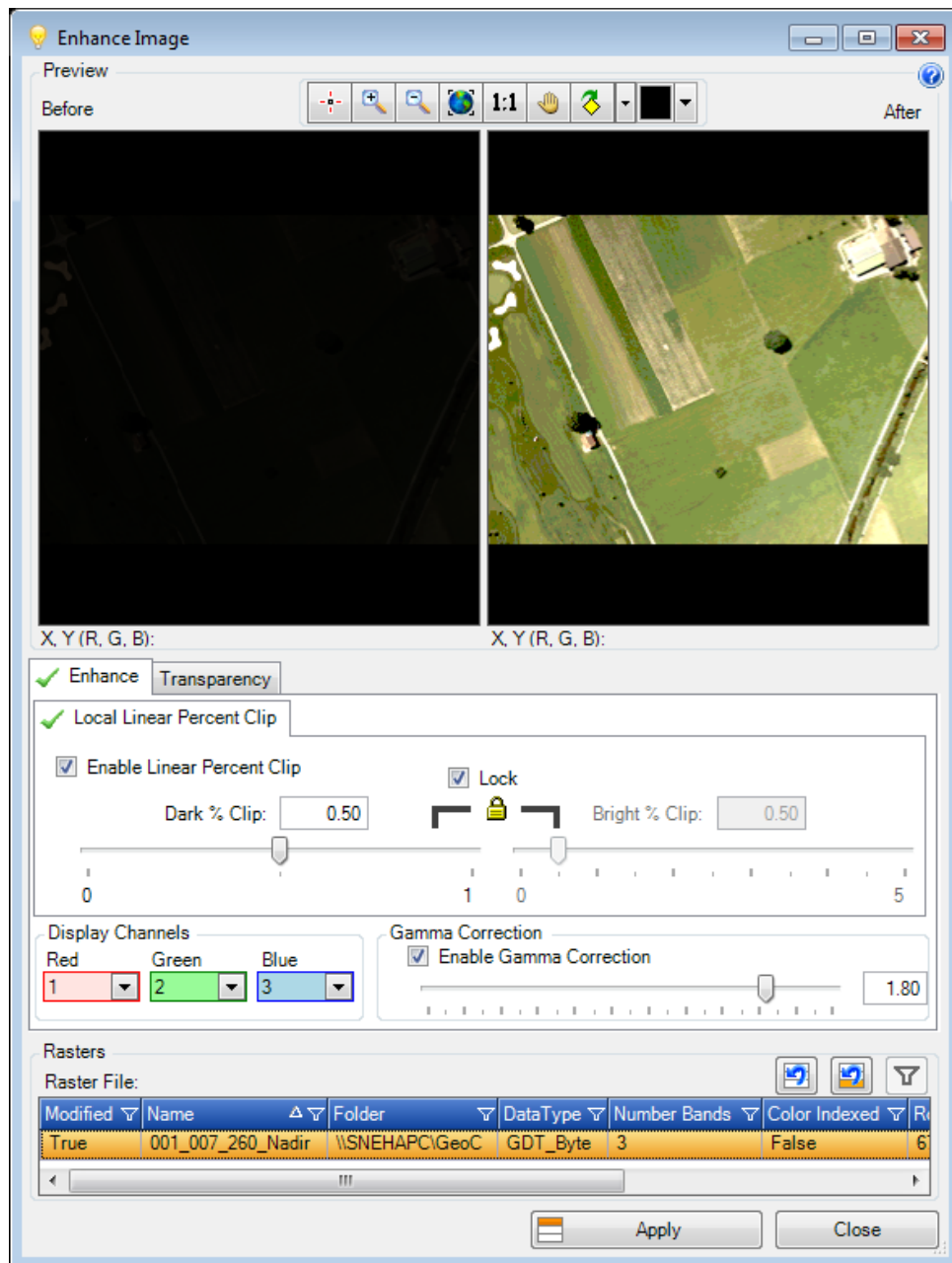


Fig. 1.15

- f) Accordingly, once the settings are confirmed, the *EnableOffset*, *Offset*, *EnableGain*, *Gain*, *EnableGamma*, *Gamma*, *EnableHistogramStretch*, *HistogramStretchMin*, *HistogramStretchMax* attributes under the 'FramePro' attribute group on the photocenter get updated.
- g) After the required image enhancement has been performed, the following file groups / files get attached to the selected photocenter :
 - o Base Image

- The raw unmodified image (having Offset | Gain | Gamma values set to 0 | 1 | 1) for the selected photo (so that if the user later wants to tweak the settings on the same photo they won't need to wait again until the software processes the raw image, but instead use the already processed raw (or base) image on the concerned photo.)

7.2. Run through the 'Set Processing Parameters' dialog

- a) Add a photocenter or strip entity to the working set and run the checklist step 'Set Processing Parameters' (Fig. 1.12). Once the dialog is displayed, click the button 'Enhance Image...' (Fig. 1.16).
- b) The 'Enhance Image' dialog (Fig. 1.15) will pop up, having two blocks – *Before* and *After* - being displayed on it, each being initially set to 'Image Generation in Progress' message (if not processed already). Meanwhile, in the background, the selected photo (if not developed) will be processed with *Offset | Gain | Gamma* values set to 0 | 1 | 1.
- c) Once the photo has been processed, the *Before* block will get updated with the dark raw image (OffsetGainGamma : 011) while the *After* block gets updated with the image (NADIR) having the settings as stored on the corresponding attributes on the 'Set Processing Parameters' dialog (Fig 1.16).
- d) The Image Enhancement dialog will be pre-populated with the corresponding Radiometric attributes on the 'Set Processing Parameters' dialog, at the time of load.
- e) Also, the raw image (OffsetGainGamma : 011) is processed using the *RGBN* band combination, so that for the selected photo the '*Display Channels*' group-box on the *Enhance Image* dialog will have four bands listed in the drop-down (1, 2, 3, 4) which will allow the user to select any one of the *RGB, CIR, NIR* bands for processing the concerned image.
- f) The user can modify the dialog settings by simultaneously viewing its effect on the image in the 'After' block and decide the settings that suit their requirement the best.
- g) Accordingly, once the settings are confirmed, the *Offset, Gain, Gamma, Histogram Stretch* fields on the 'Set Processing Parameters' dialog get updated.
- h) After the required image enhancement has been performed, the following file groups / files get attached to the selected photocenter :
 - o Base Image
 - The raw unmodified image (having Offset | Gain | Gamma values set to 0 | 1 | 1) for the selected photo (so that if the user later wants to tweak the settings on

the same photo they won't need to wait again until the software processes the raw image, but instead use the already processed raw (or base) image on the concerned photo.)

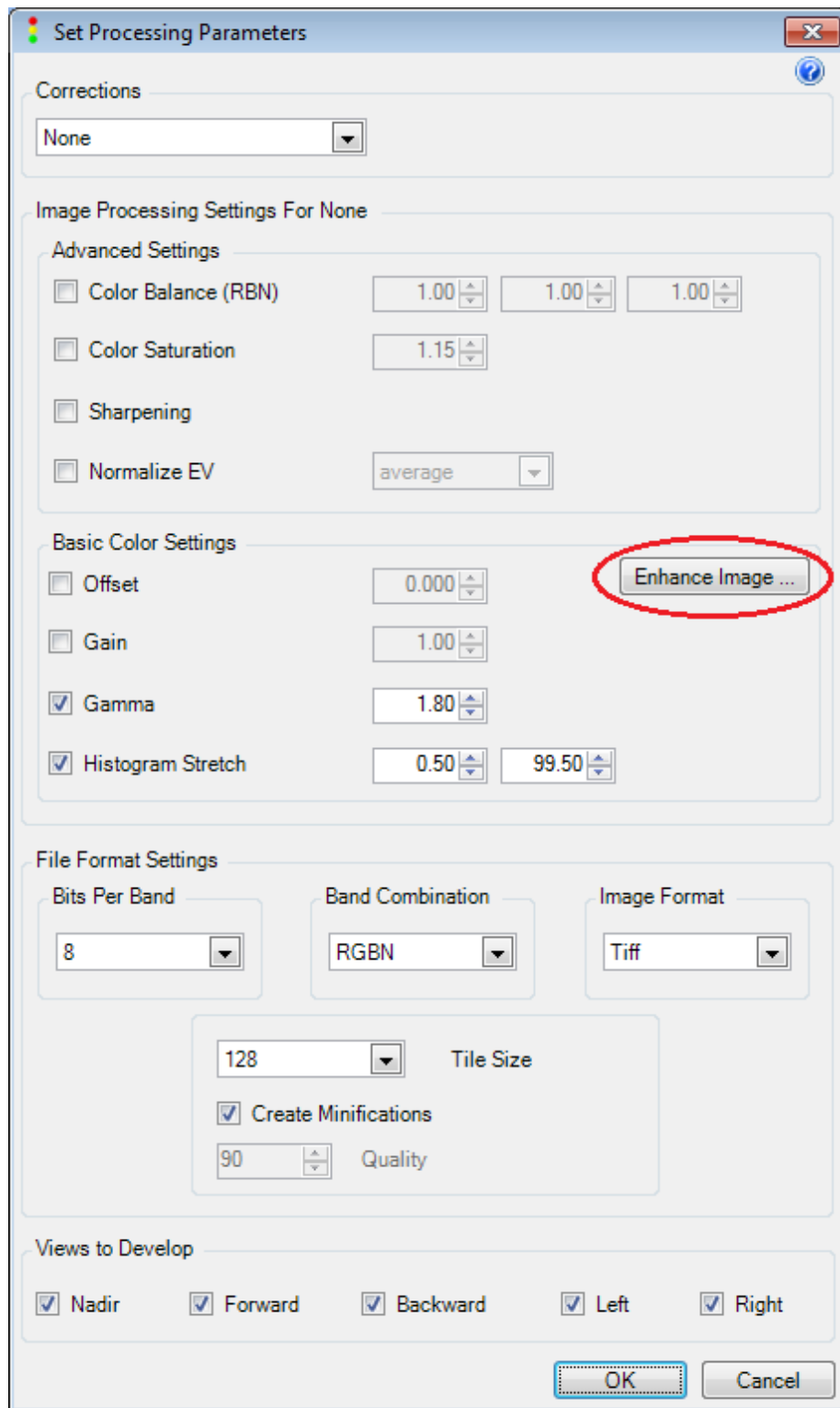


Fig. 1.16

- i) This way if the user hasn't already run the *Enhance Image* feature yet, they can do so during the *Set Processing Parameters* step

- Note :
 - In this case, if the *Set Processing Parameters* dialog is run on a strip, the *Enhance Image* feature triggered from this dialog will have the first photo on the concerned strip being displayed as the benchmark image for Enhancement Settings on that strip.
 - On the other hand, if the *Set Processing Parameters* dialog is run on a photo, the *Enhance* dialog will display that particular photo as the reference image.

8. Creation of 'ISPM Project Files' :

- 8.1. Add the project boundary to the working set.
- 8.2. Run the corresponding checklist step *Create ISPM Project Files*.

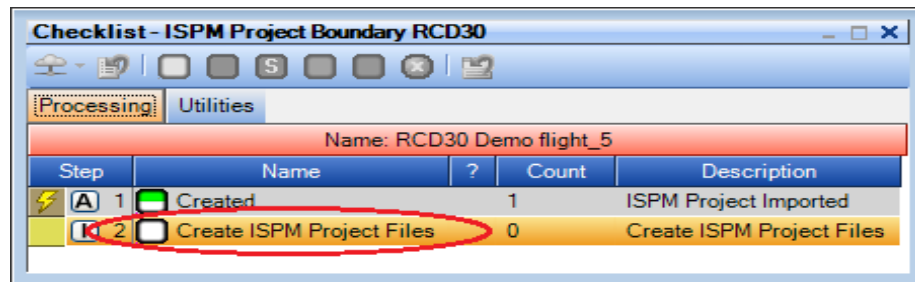


Fig. 1.17

- 8.3. On the *Create ISPM Project Files* dialog, the average elevation values will be automatically pre-populated with the corresponding values on the project boundary attributes.

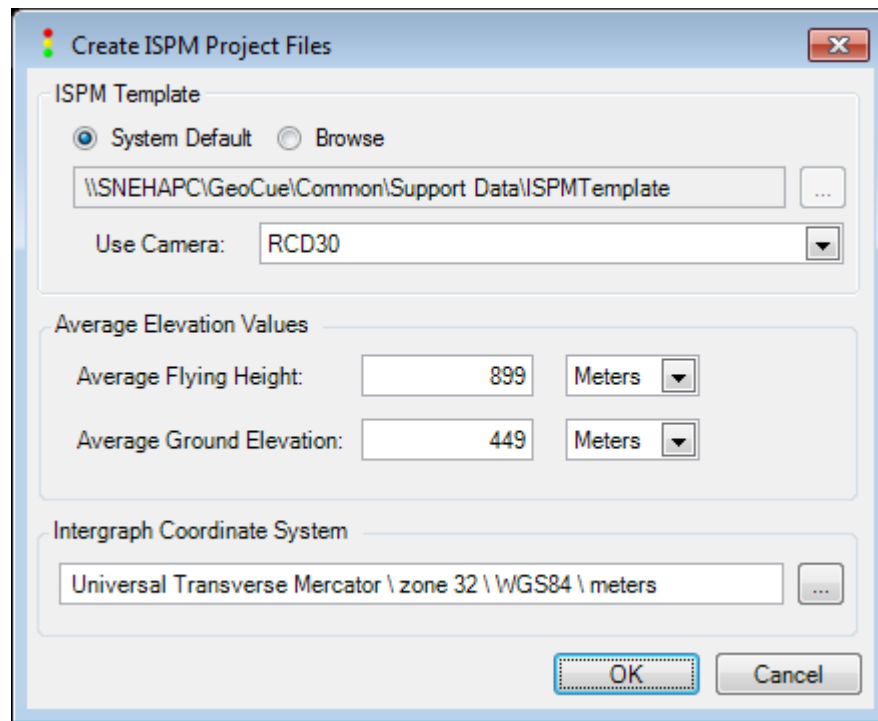


Fig. 1.18

- 8.4. Once this step completes successfully, the project boundary will now have the 'ISPM Project' path attached under its *Files* group.
- 8.5. The file named *photo* (located on the 'ISPM Project' path) won't be having the "image_id" tag yet.

9. Processing the "developed" photo(s) :

- 9.1. Add one or more developed photocenter entities to the working set.
- 9.2. Run the following checklist steps :

9.2.1 Export ISPM Project (*Utilities* tab)

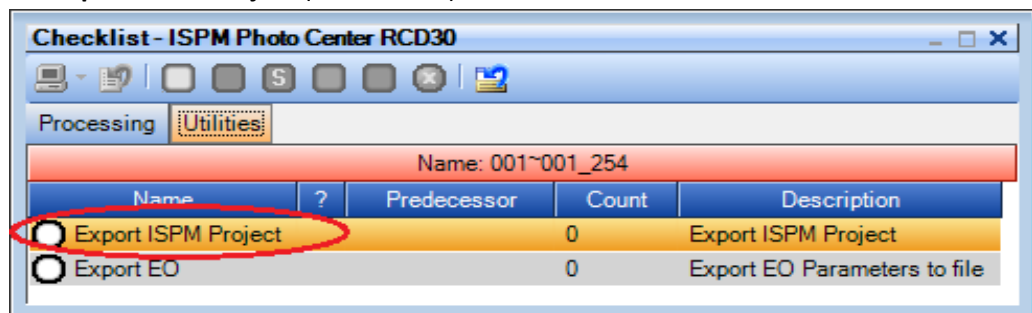


Fig. 1.19

- On the *Export ISPM Project* dialog, type in the 'Project ID' and select a destination folder (must be a **shared** folder when dispatching).

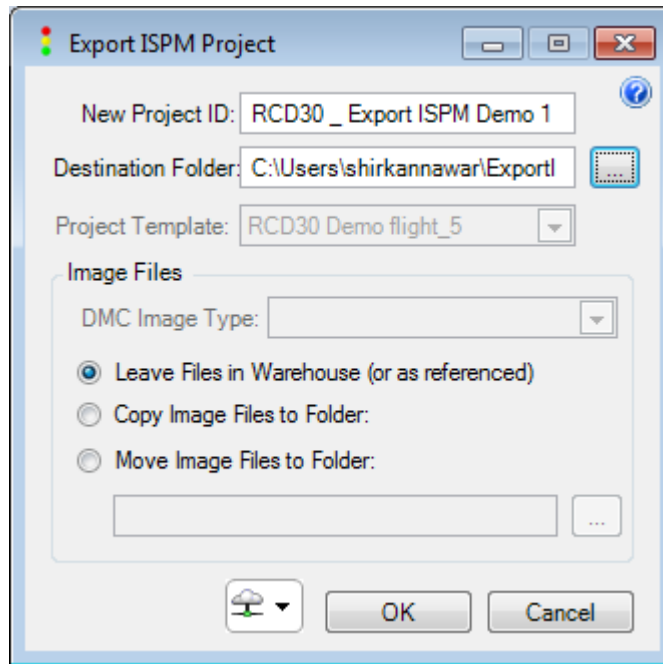


Fig. 1.20

- The *photo* file (present in the destination folder) will now include an “image_id” tag which points to the location where the image is placed / copied.

9.2.2 Export EO (Utilities tab)

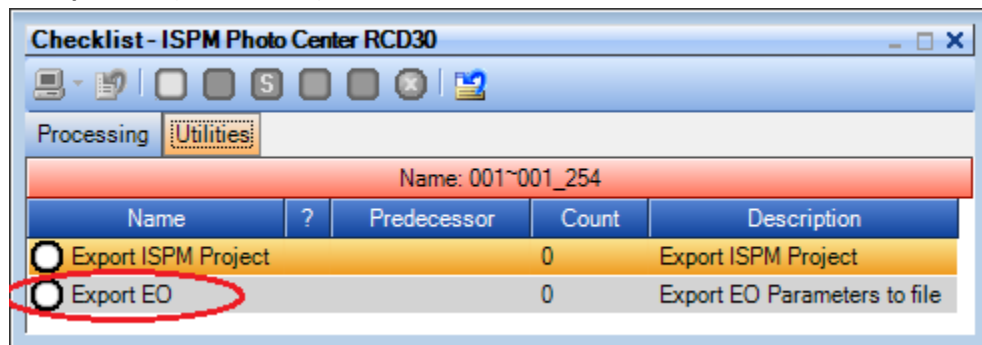


Fig. 1.21

- The *EO* parameters get written to the user-selected text file.

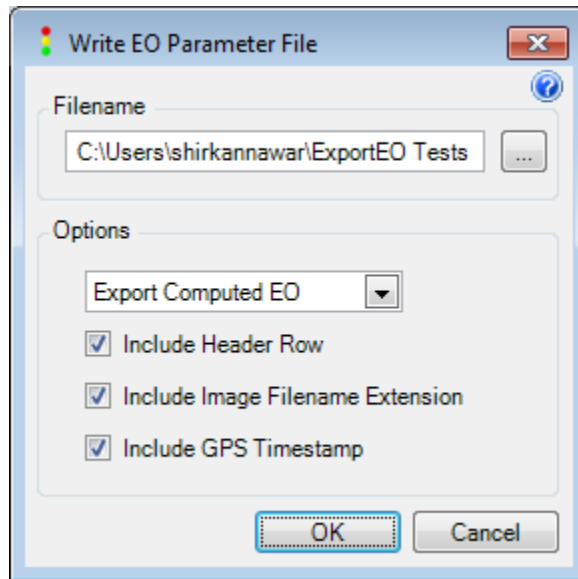


Fig. 1.22