Menci Software

APSCheck Guidelines

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What is APSCheck

APSCheck is a fast tool to check flight dataset directly on field. APSCheck tests dataset's consistency by applying a light aerial triangulation: that ensures you will process (or not) the same pictures with APS. APSCheck has not production purposes: its results can not be used in later post-production processes.

Create a new project

1   Select project name
2   Select GPS-IMU information and dataset images
3   Select the Bundle Strategy

After you press "New" a dataset dialog will lead you to the first step.
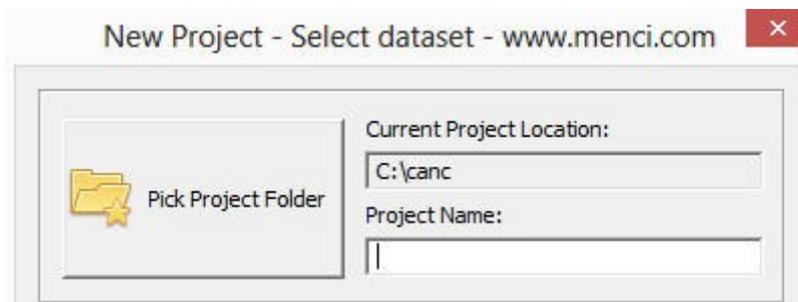

Select project folder destination and name.

After the project name is provided the next step is the dataset selection.
First you have to select the ASCII file with GPS / IMU camera positions got by your drone.

NOTE: APSCheck requires IMU informations to apply a fast bundle verification.
If IMU angle data are not provided, related images won't be processed.

At the top of the window you can change keywords used to parse the file by editing comments and separators. Moreover you can assign the table headers values by clicking on a specific column.
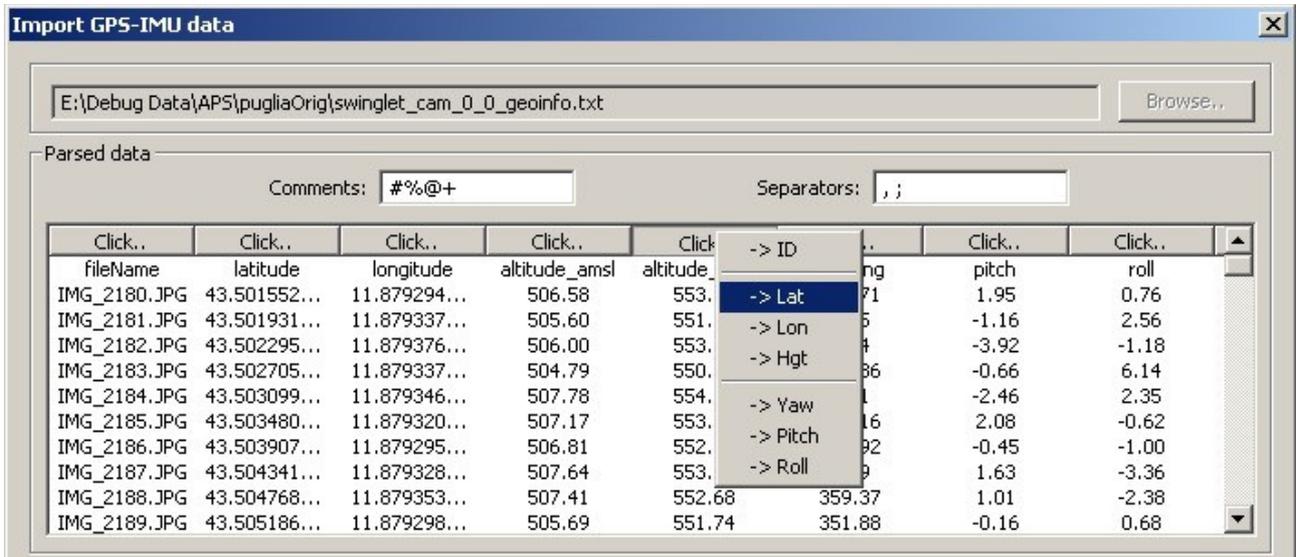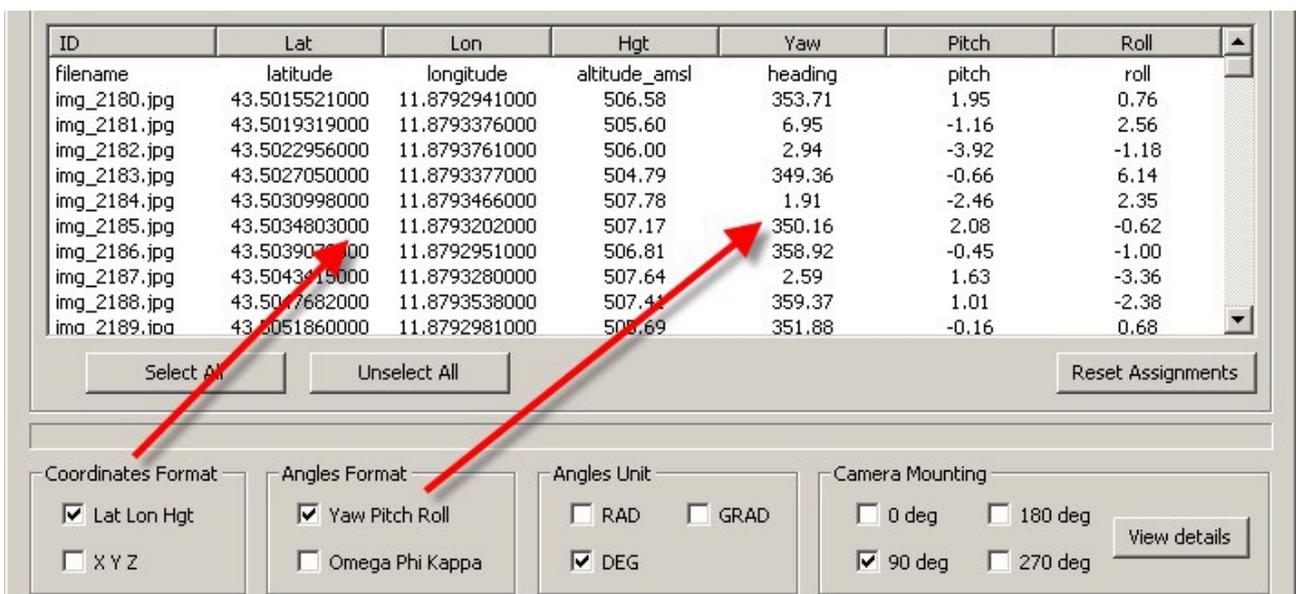

APSCheck accepts GPS data expressed in several geographic conventions.

The standard format is
ID | Latitude | Longitude | Height (amsl and wgs84)| Yaw | Pitch | Roll
but you can specify different format by selecting the options below

You can assign the angle unit too. If you don't have the angles information you can reset them by clicking on the specific column:

ID	Lat	Lon	Hgt	Yaw	Pitch	Roll	
filename	latitude	longitude	altitude_amsl		Reset Content		
img_2180.jpg	43.5015521000	11.8792941000	506.58				
img_2181.jpg	43.5019319000	11.8793376000	505.60				
img_2182.jpg	43.5022956000	11.8793761000	506.00				
img_2183.jpg	43.5027050000	11.8793377000	504.79				
img_2184.jpg	43.5030998000	11.8793466000	507.78				
img_2185.jpg	43.5034803000	11.8793202000	507.17				
img_2186.jpg	43.5039078000	11.8792951000	506.81				
img_2187.jpg	43.5043415000	11.8793280000	507.64				
img_2188.jpg	43.5047682000	11.8793538000	507.41				
img_2189.jpg	43.5051860000	11.8792981000	505.69				

Select All   Unselect All   Reset Assignments

After you did column-value assignments (if required) select all camera positions and press "Import". Select the images that should be included in your project.

You can choose them by Explorer (select them file by file or by folder) or through the Flight plan.
All images are going to match with camera passport and GPS data previously imported.
Incompatible or doubled images will be discarded. In manual file selection mode you can select images file by file or pick all files inside a folder.

In the Flight plan mode (an active internet connection is needed in order to view Google Maps overlay map) you will see the UAV path over the map.
All images are initially selected by default. You can exclude one or more images by surrounding them with a poligon drawn with your mouse..
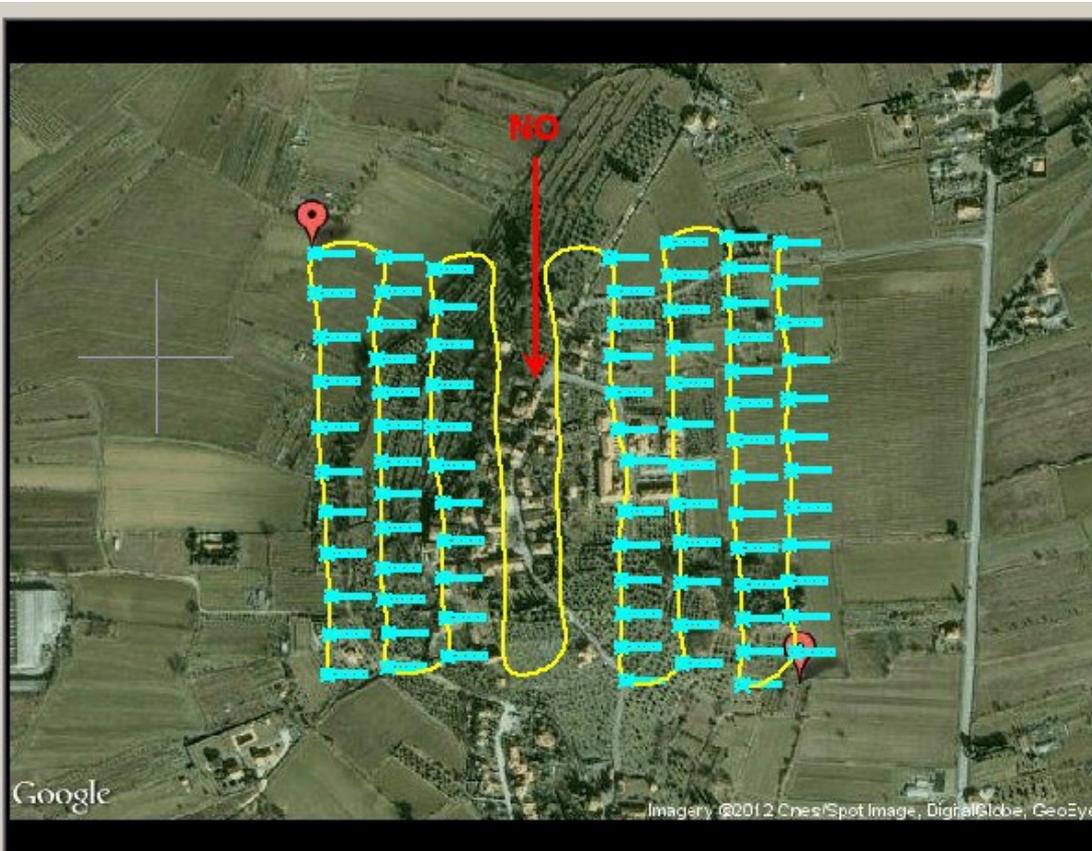
TIP: You must import a contiguous dataset avoiding splitted selections.
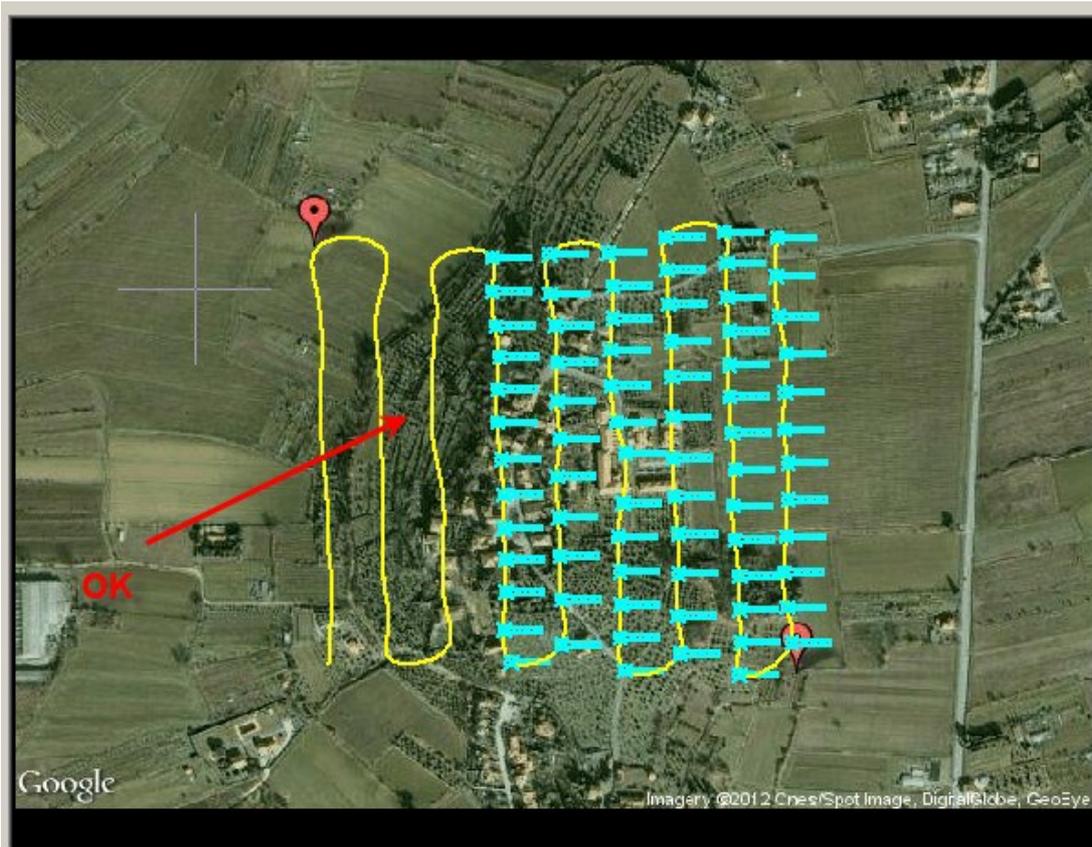
75 images selected   (select images to remove)   732631.459933, 4820943.718807

86 images selected   (select images to remove)   732594.604354, 4820877.766718

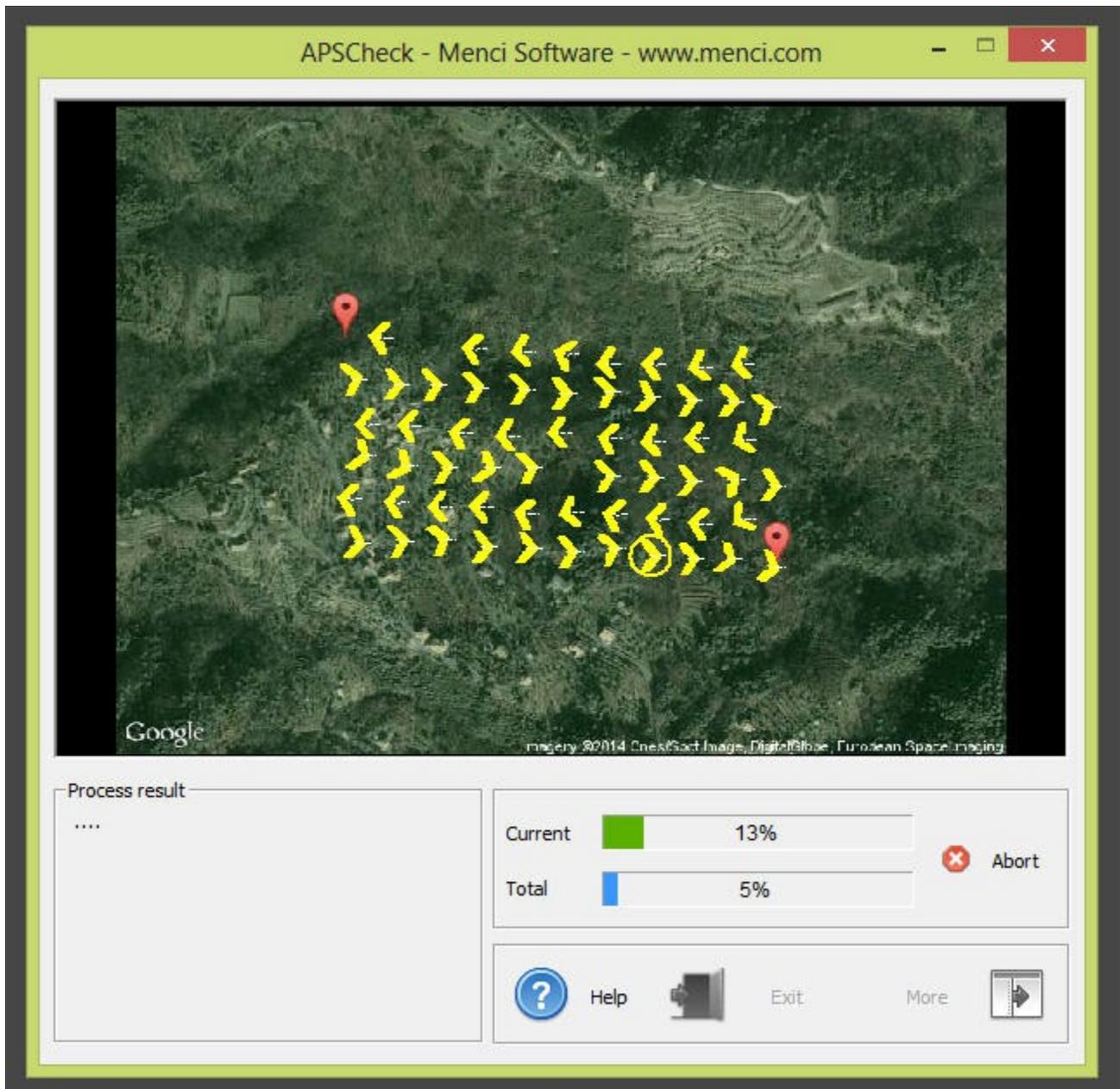You will see currently selected images in the box.

Finally confirm the dataset selection by pressing OK.

Process

During the process step you have to wait up to the aerial triangulation is finished or a bundle warning message is displayed.

APSCheck automatically use GPU if a compatible card is found on system.

Results

Bundle adjustement results are displayed in the bottom left box: all bundled images are coloured green.

Bundle Adjustement computation of APSCheck and APS are quit different: APS's computation is done to extract image's orientations for next uses, while APSCheck goal is a rapid flight verification. In general APSCheck could bundle some images that will be excluded by some APS algorithm.
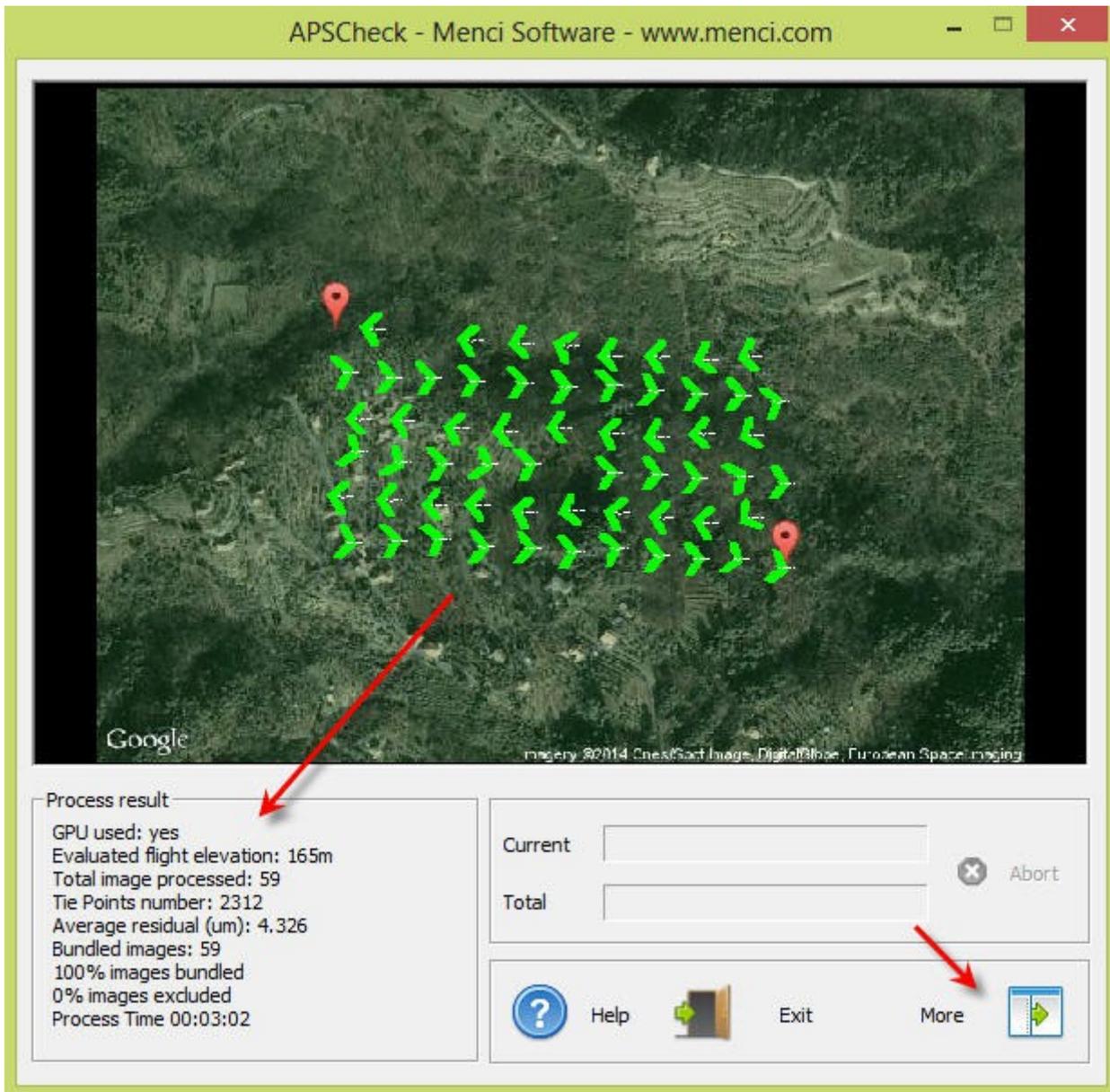

APSCheck includes four tools to highlight flight conditions. If some bundle problem occurred, you can test those tools in order to understand the cause and try to fix the next flight.

Press More button to show the tools interface.
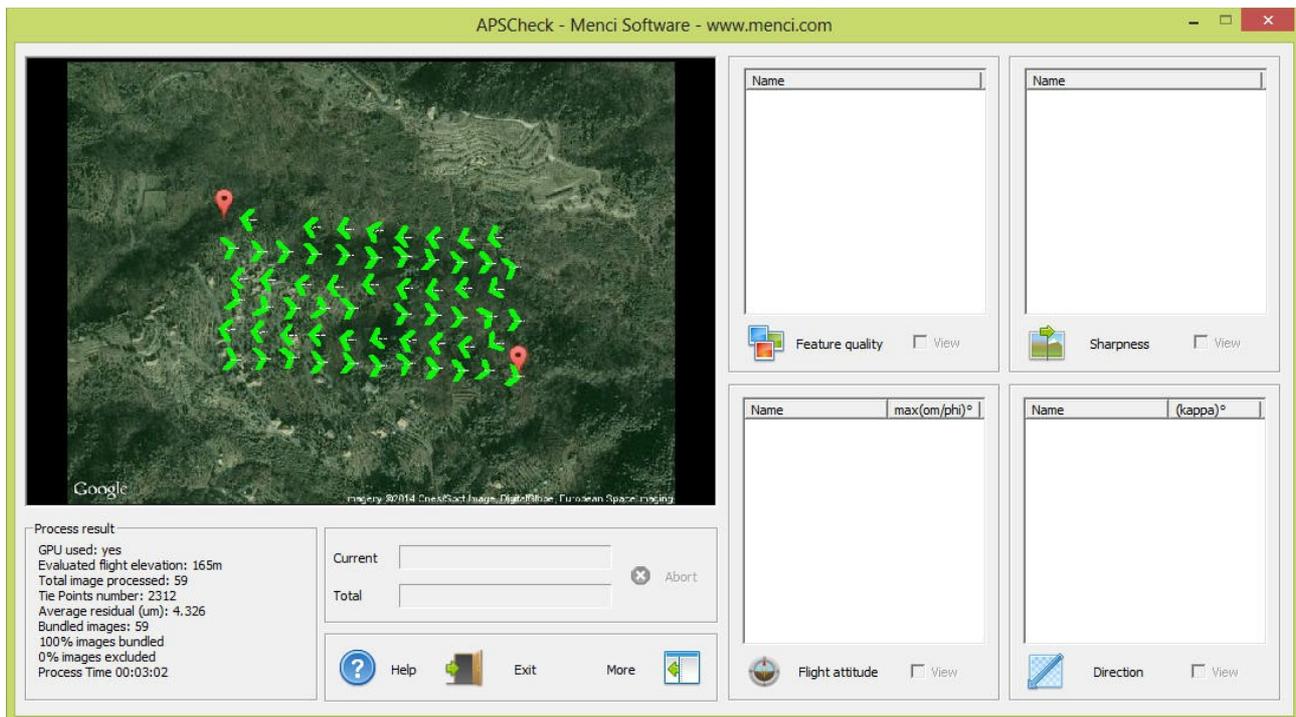
- **Feature quality**: it applies a feature tracking check. It is usefull to test how much an image is related to the next one (in a linear flight). Poor (yellow) rating means insufficient image overlap or poor texture detail. First images of every strip are excluded from the evaluation.

- **Sharpness**: it tests how much sharpen is an image. The image rating is not absolute, but compared to other images of the same project. It is usefull to find moving or blurred images, maybe due to wind.

- **Flight attitude**: omega and phi orientation angles are considered for every image, taking the maximum value. If it overcome 15° the image starts to be too much oblique for APS purposes.

- **Direction**: images are analyzed to discover if there are misalignment conditions (kappa orientation angle is checked). If an image compared to previous and next one is turned more than 10°, it is highlighted because it could be a windy condition.

Result of every tool is visible by colors that can be overlapped to bundle colors by checking the "view" checkbox.
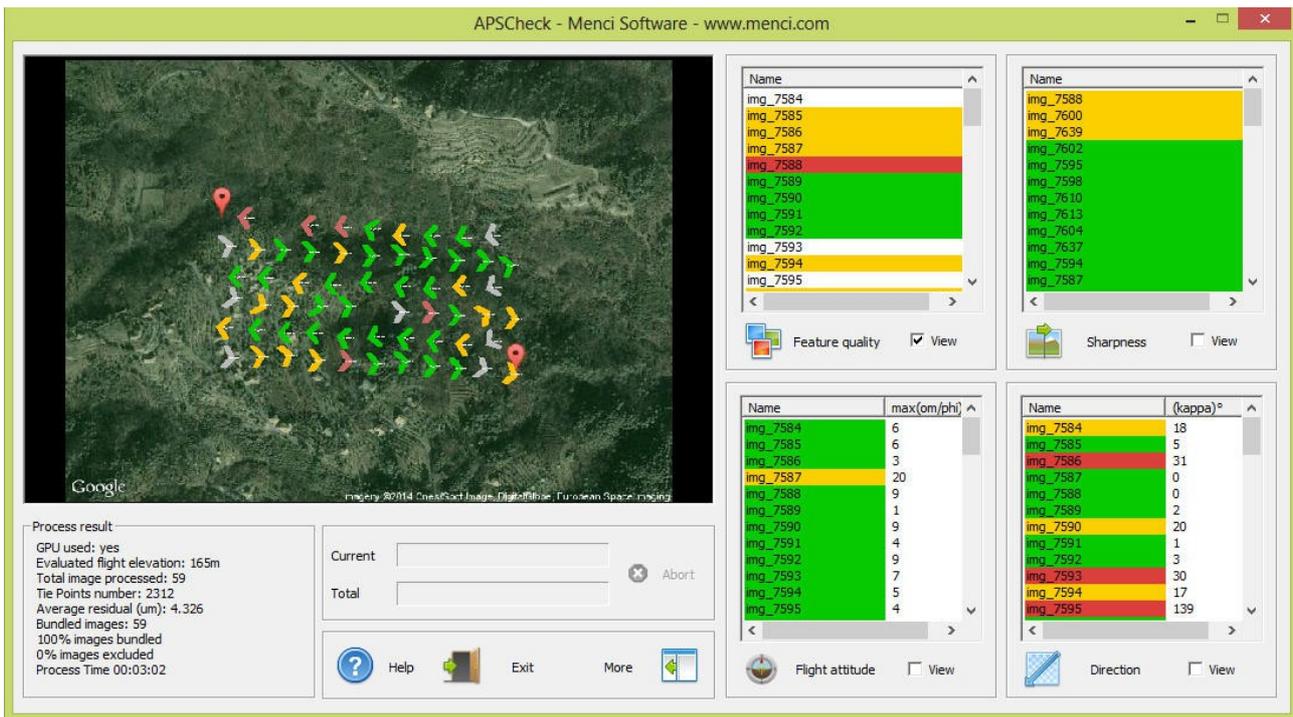
To examine an image you simply double click on its drone icon:

References

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