IPACO expert report

Expert name	*Report date*	*Last update*
Antoine COUSYN	June 26, 2012	June 18, 2019

Type	*Class*	*Explanation*	*Complement*
IFO	**A**	Hot air balloon	

Document	*Imaging location*	*Imaging date*
Photos	Col de Vence, 06, France	January 11, 2009, between 15:37’03’’ and 15:39’07” local time

Photo n°025 taken at 03:37:03 p.m.

Photo n°025: close-up and enhancement

Photo n°026 taken at 03:37:09 p.m.

Photo n°026: close-up and enhancement

Photo n°027 taken at 03:37:32 p.m.

Photo n°27: close-up and enhancement

Photo n°028 taken at 03:39:07 p.m.

Photo n°28: close-up and enhancement

I. Imaging circumstances

The witness was with three other people at a place called "*St. Barnabé*", near the "*Col de Vence*" when he observed an object that looked like a metal sphere that was changing altitude, while moving very slowly from the northwest to the southwest.

The witness was able to take five photographs; four of these will be used for the study.

II. Camera settings

The camera model that was used is a Canon OES 350D which technical settings can be seen in details here.

III. Data examination

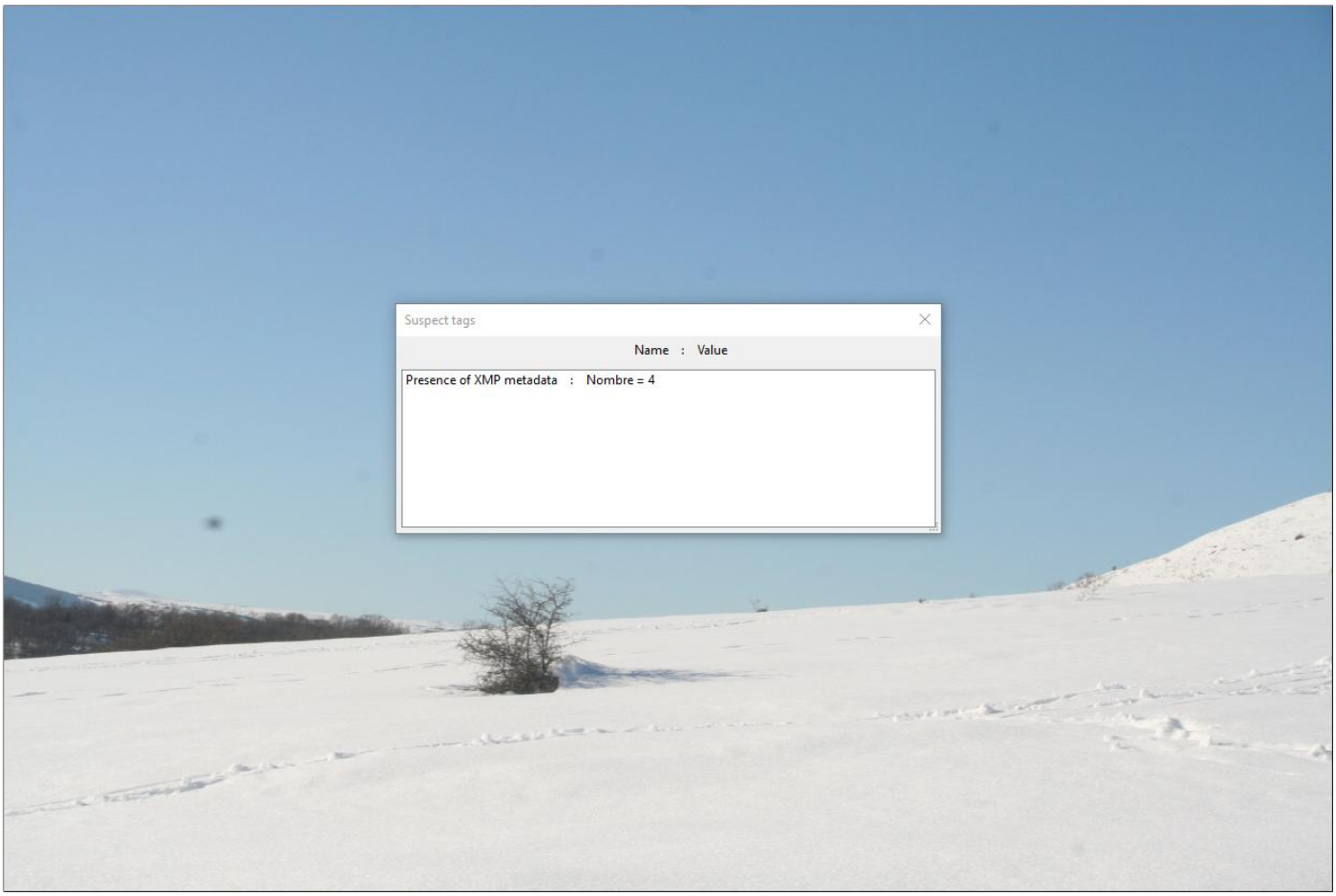
1. Authentication

The photographer provided the original photos, renaming them ("col_de_vence_0xx.jpg"), in .jpeg format.

A document is deemed authentic, within the meaning of the "*IPACO Analysis Methodology*", if it results from a direct copy of the original file created in the camera.

Any modification, made either to the file whilst still in the memory of the camera, or later, can be detected by IPACO with the "*Authentication*" module, in three different possible ways.

The "*Suspecttags*" tool, in particular, can be used to determine, for example, the possible use of a third-party software, or a modification of the dimensions of the file (cropped image):



We note here the presence of 4 XMP metadata reported as suspect. In order to check in detail what metadata are concerned, we can use another authentication tool called "*Remote Check*" which allows, in a few clicks, the checking of the status of raw metadata for one or more files.

After reading the image (s) concerned, IPACO displays a summary table including:

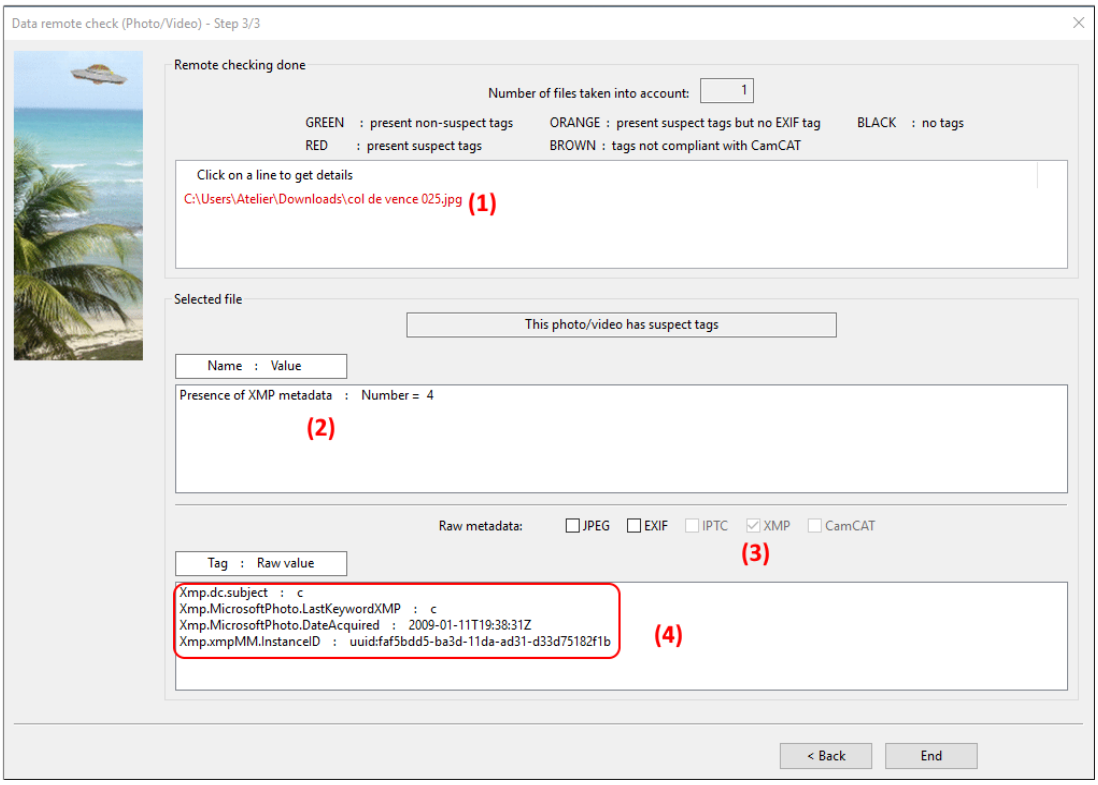
- One line per image with its path in the tree view of the machine. A colour code makes it possible to determine at a glance the status of the file under the authentication. In this case, the line is displayed in red, meaning that the state is "*present suspect tags*" (1).

- By clicking on the line of the image that interests us, the details of the suspect metadata appear in the following box. We find here the title displayed by the tool "*Suspect tags*»: "*Presence of XMP metadata: Number = 4"* (2).

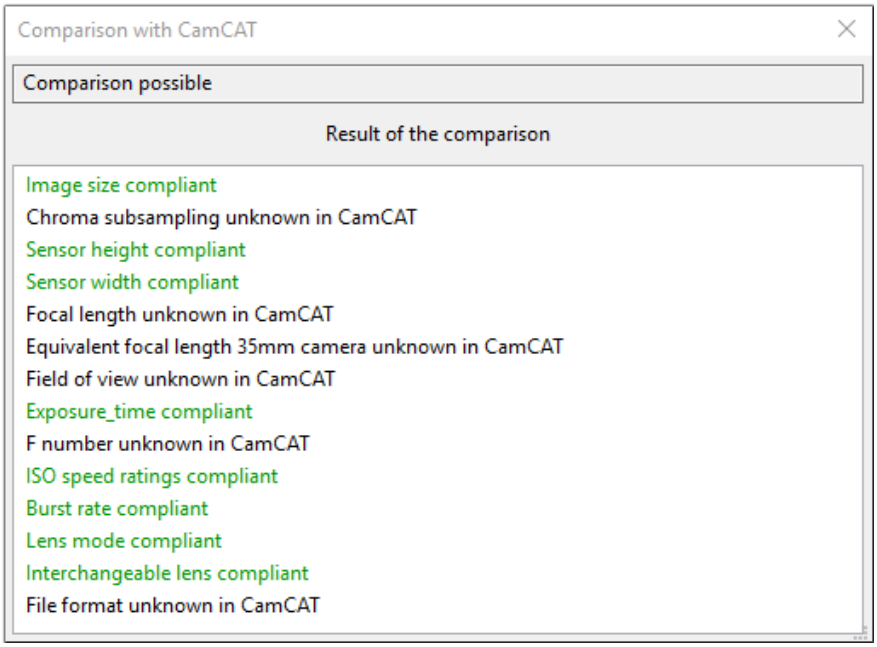
- Then, the raw metadata can be displayed directly by ticking the box that interests us, i.e. XMP (3).

The 4 lines concerned are displayed in the lower box (4). In this case, they indicate that the photographer has integrated some metadata directly into the image in the camera. These are the "*subject*" ("*Xmp.dc.subject*" marker) and "*keyword*" ("*Xmp.MicrosoftPhotoLastKeywordXMP*" marker) fields with the letter "*c*". The date of this integration and the identification of the document thus modified are indicated respectively by the markers "*Xmp.MicrosoftPhoto.DateAcquired*" and "*Xmp.xmpMM.InstanceID*".

The integration of these additional metadata (such as for example copyright) is common in photography and cannot be considered as a deliberate forgery. They are simply reported by IPACO as not natively derived from the shot; it's up to the analyst's will to examine it more carefully.



Another complementary method is to compare the technical data of the photo with those of the CamCAT catalog to check that they comply with what the device can achieve. The "*Comparison with CamCAT*" tool allows you to do this:



Technical data known by CamCAT and compliant are in green. The other data, unknown by CamCAT, are in black. We find that the known data are all compliant.

In conclusion, the photographs are certainly original authentic.

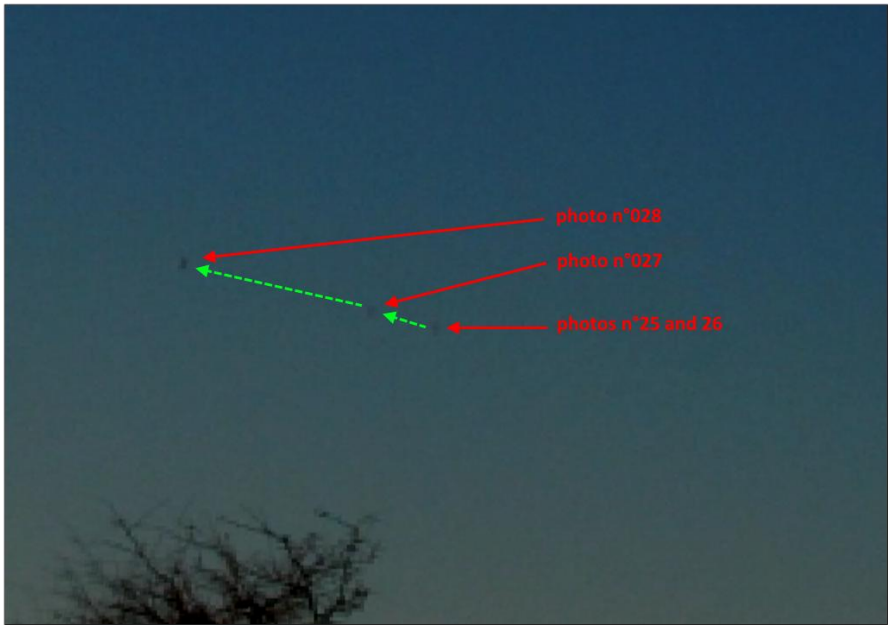
2. Analysis

Materialization of the object's movement

Careful examination of the photographs reveals what appears to be a regular movement of the unidentified object.

In order to verify this, we can use the "*3 points registration*" tool which can detect this, using three identical reference points in the four photographs to overlay them. These three points, in order to eliminate or limit the effects caused by the parallax, will be chosen on the distant landscape.

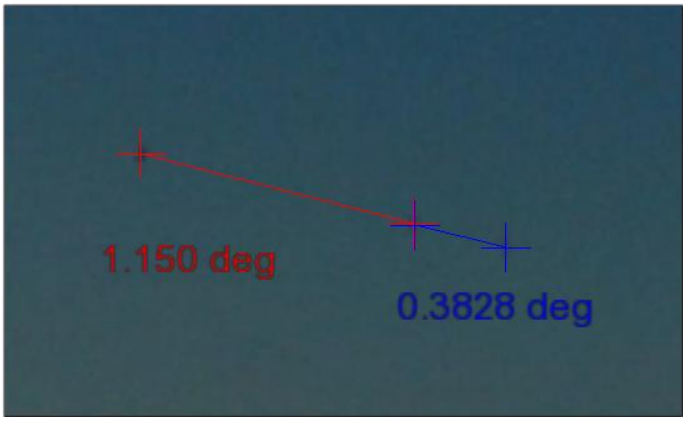
Once the registration is complete, we can visualize, after enlarging and improving contrasts and brightness of the composited image, the apparent movement of the unknown object:



We find that it moves on a slight upward curve. The time intervals between the photos are as follows:

- 6 seconds separate the photos n°025 and 026
- 23 seconds between photos n°026 and 027 during which the object has travelled 0.38 degrees
- 95 seconds separate photos n°027 and 028 during which the object has travelled 1.15 degrees

The movement seems to be very regular.



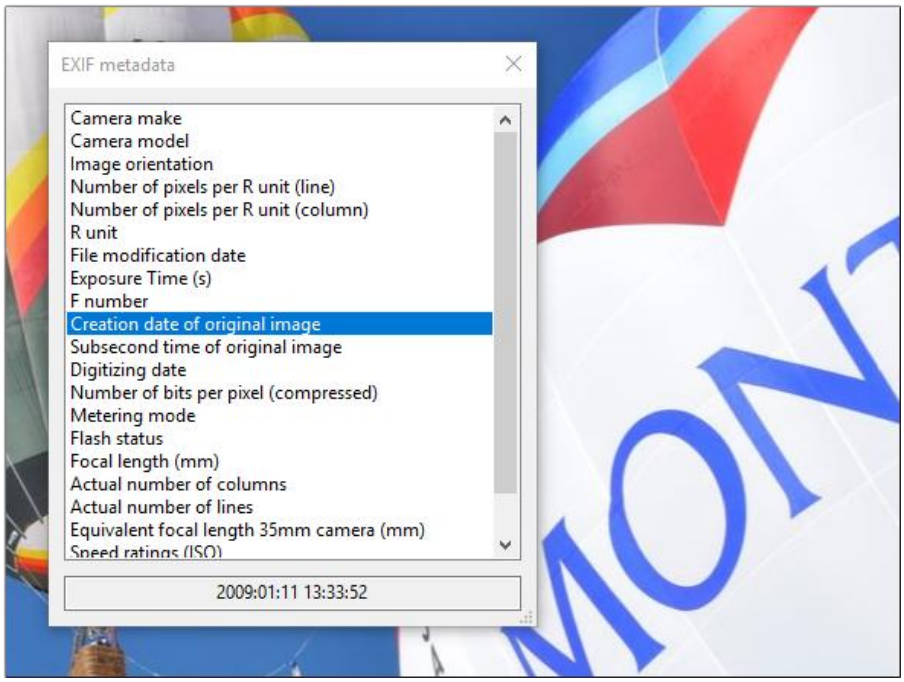
Hypothesis

An Internet search tells us that on 11/01/2009, the balloon club "*les aéronautes de Monaco*" organized a hot-air balloon ride from the Gréolières-les-Neiges plateau. Two balloons were inflated for the occasion.

Could it be possible that the witness saw and photographed one of these hot-air balloons?

Lots of photos were taken of this event, like this one for example:

These photographs, freely downloadable, include all their metadata including those that relate to the hours of the shooting, between 13:23 and 14:24, a little more than one to two hours before the observation by the witness and the shots.



This delay allows one of the hot-air balloons to take off, climb and become visible, being previously hidden by natural obstacles (ridges, hills, etc.).

North of Gréolières-les-Neiges there is a flat area called "*grand pré*" (or "*plateau*") ideal for a hot-air balloon departure zone. Located at the edge of a road, visible on the photographs of the event, this area is thus easily accessible.

In addition, a map shows us that the Gréolières-les-Neiges plateau is approximately 10.5 km distant from the witness position and that the trajectory of the hot air balloon passes in the line of sight of the photo to the West is about 7 km away.

It seems, given the large dimensions of balloons (20 m high for 15 m diameter), quite possible with good weather conditions (good visibility, clear sky) to observe at such a distance such a balloon.

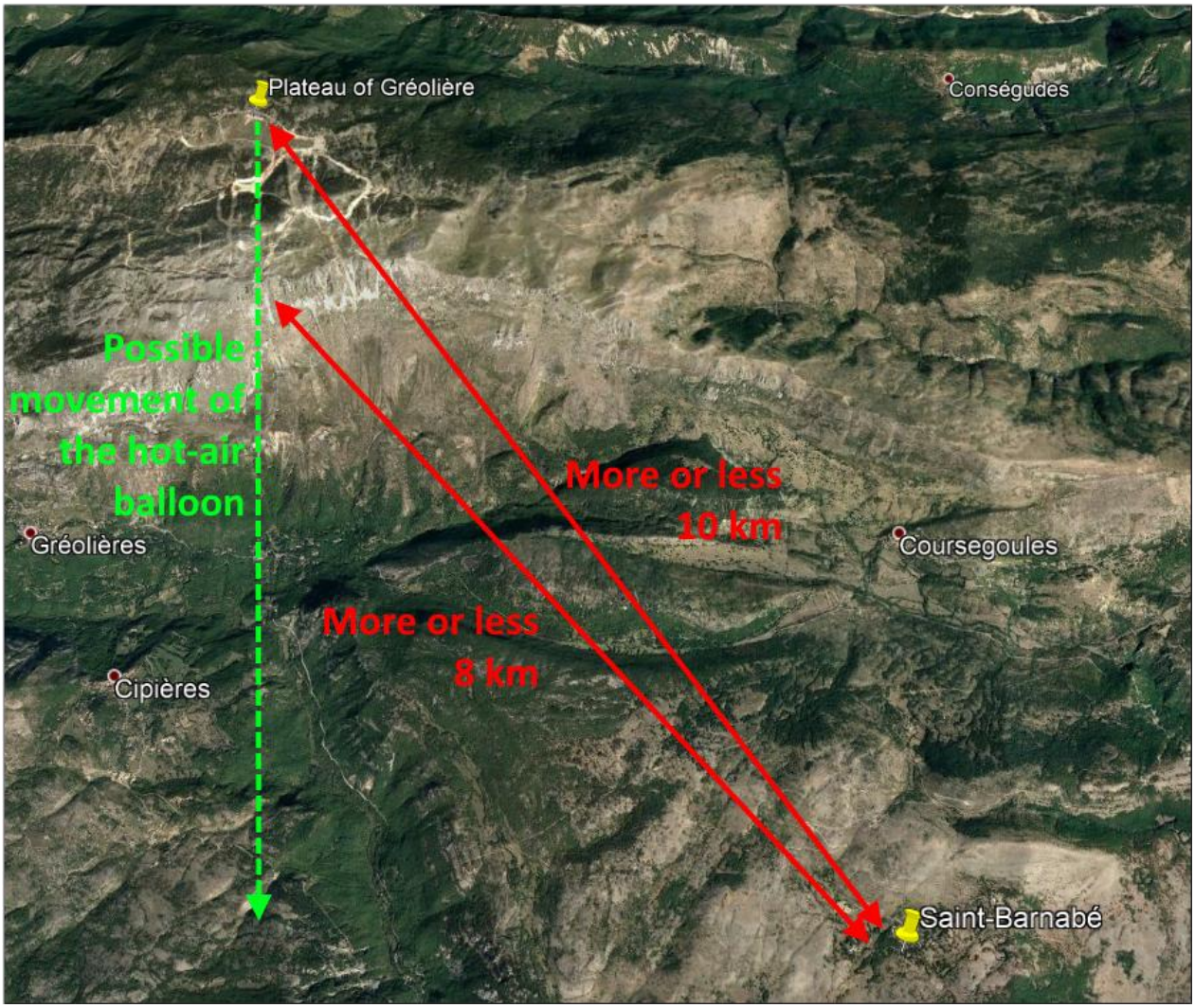
For example, it can be read on Internet that a hot-air balloon launched during an operation of the *"Fédération Patrimoine Environnement* ", was visible up to 19 km.

We also see on this map that the direction given by the witness who took the photographs is in line with the direction taken by the hot-air balloons moving south.

On January 11, 2009 at 3:37 pm the sun is quite low on the horizon to the southwest and the bush visible in the foreground photos throws its shadows towards the right of the image, thus to the northeast; which means that the photographer was oriented towards the northwest.

Since the hot air balloon moves from right to left, it follows a roughly north-south trajectory, which can also be north-north-east/south-southwest or north-northwest/south-southeast.

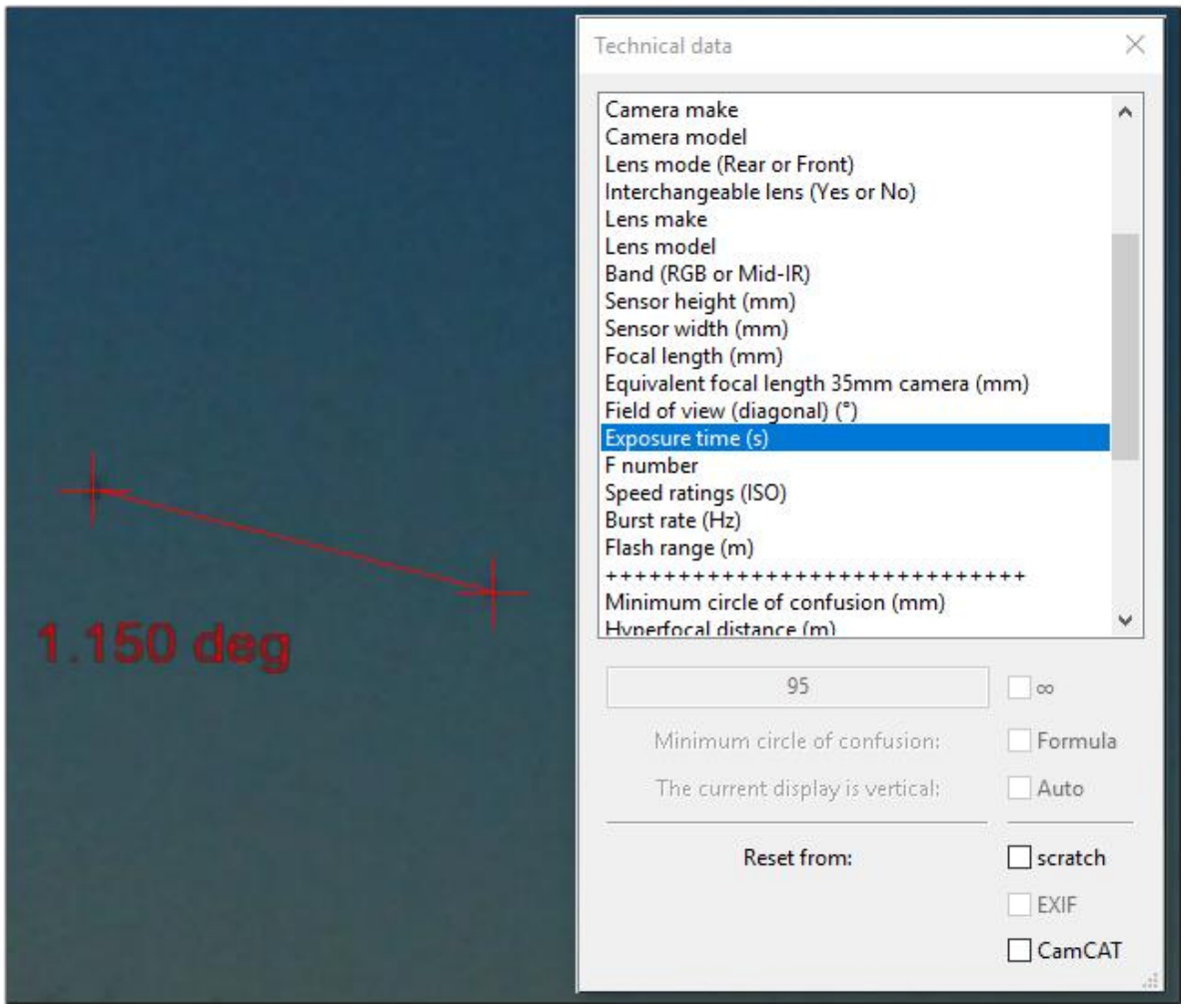
Meteorological wind data at the date and time of observation were consulted for several stations around Gréolières-les-Neiges. A generally weak wind is reported between 14 and 16h UTC, blowing between 0.7 and 3.7 m/s or between 2.5 and 13.3 km/h. According to these stations, the direction of the wind is variable, ranging in a wide range from the south (180°) to the northwest (300°). The low wind speed, the mountainous area over flown by the balloon and the altitude at which it is located do not allow a clear definition of the direction of this variable wind, which could as well be oriented north or northeast.



Movement speed

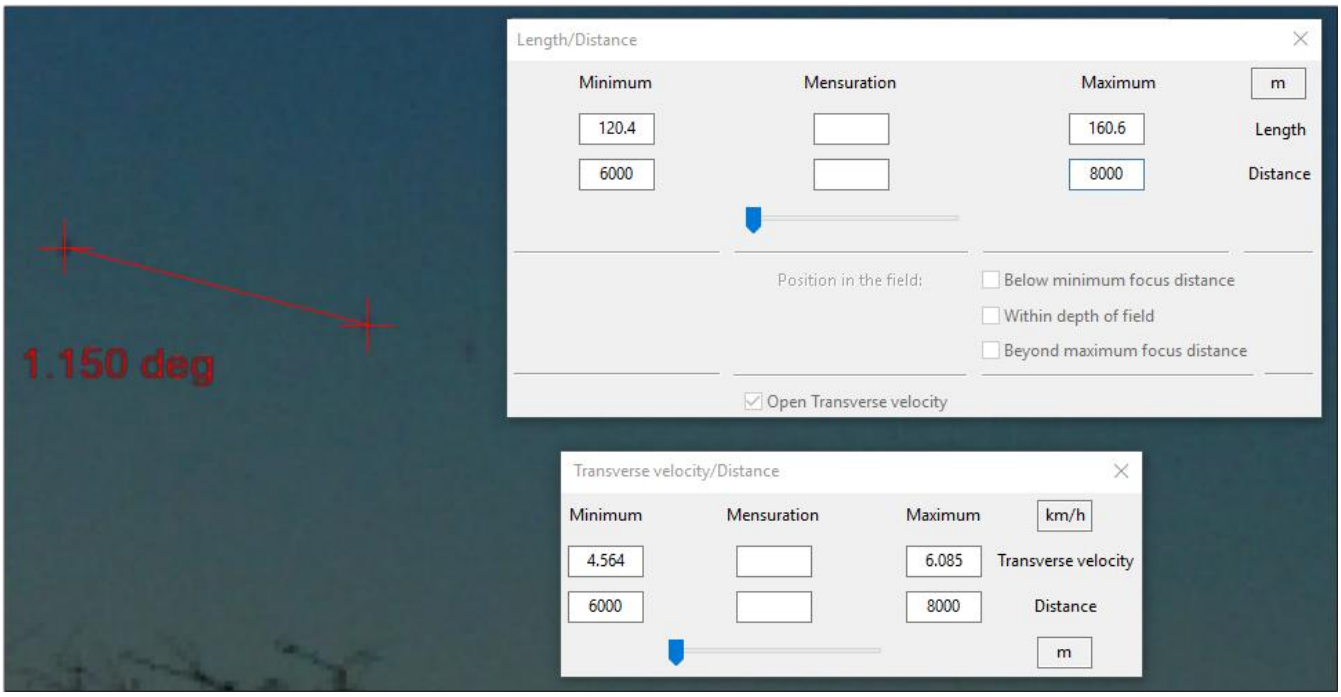
With these results, we can check with IPACO if the speed of movement is consistent with the capabilities of hot-air balloons and the weather conditions of the day of observation (wind speed).

Considering that this displacement was transverse to the photographer, we take again the composite image realized previously with the angle measurement corresponding to the movement of the object between the photo n°27 and n°28 and open "*Technical Data*" in order to give this image a "*pseudo exposure time"* corresponding to the time elapsed between the two photos (95 seconds):



Then we open the "*Length/Distance*" tool and report in the minimum and maximum distance boxes an estimated range of the distance between the balloon and the witness, which is approximately 6 to 8 km.

By ticking the box "*Open transverse speed*" the corresponding window is displayed as well as the speeds calculated automatically by IPACO for the corresponding distances:



The average speed is about 5.3 km/h which is very close to the average balloon speeds (between 7 and 20 km/h) and fits perfectly with the wind speed recorded by the weather stations in the area.

IV. Conclusion

Taking into account both the objective data provided by the examination of the photographic documents and the photographer's testimony, we can conclude that the object in the photographs is a hot-air balloon coming from a plateau located at Gréolières-les-Neiges and in slow and steady movement.

V. Acknowledgements

All the original photographs and testimonies come from the Internet site "Ovni et Vie extraterrestre les mystères des ovnis", and especially from the topic : "2009: le 11/01 à environ 15h30 ,16h - non lumineux Ovni en forme de diamant - st Barnabé col de Vence (06)"