

SECȚIUNEA 3. Test-flight with a light aircraft

Our research project has two distinctive components concerning the capture of aerial snapshots, as field research support: one of them is referring to the use of drones (for which we already have the necessary experience, see section 1 of this report) and the use of light-sport aircrafts.



Figure 3.1.

Oblique snapshot, 4th Nov. 2014, between Pitești and Albota.

The visibility conditions were quite modest, but the test had a different purpose.

The light aircrafts are most frequently used during the archaeological observation for the oblique snapshot. There are two main reasons for this: the oblique snapshot „profiles” the field’s dislevelments, thus helping to identify discrete traces on the surface of the ground; in their design, most of the light aircrafts were not equipped with special devices for vertical photography (a hatch, for instance, or any apparatus aiming towards earth). Nevertheless, although undoubtedly useful, the oblique snapshot alone cannot be used for producing orthophotos, which makes the connection between the image and the exact coordinates of the observed items.

As many of the speakers from the recent Conference of the Landscape Archaeology (Bucharest, MNIR, 22nd-24th Oct. 2014) have pointed out, the use of aircrafts for aerial exploration will not be decisively influenced by the emergence of drones, at least not for now. The reasons are both technological, and economical. The aircraft has the advantage of an autonomy of several hundred

kilometers, being able to produce, in a little over two hours of flight, photographic material for the entire range of the Roman frontier under study, or at least for most of its length. Also, if we consider the costs, the use of light aircraft is cheaper (making a comparison for the same standard length of 150 km). On the other hand, the drone has the advantage of versatility, of facile adaptation to quite different requirements, such as repeating sessions of image acquisition in order to obtain specific conditions (luminousness, vegetation conditions) for each area, or for detailed views (low altitudes for an optimal resolution).

Nowadays the greatest problem is that, although the use of a light aircraft with upper wing (like Wilga) is more economic, we lack the necessary experience and the specific facilities to obtain the vertical image. This is why a system was conceived to anchor several cameras on a plank that was attached to the fix scale of the aircraft, so that both vertical and oblique snapshots could be obtained (fig. 3.2).



Figure 3.2.

Photographic support while anchoring on the scale of the aircraft.

The first test (that lasted 25 minutes) was made on 4th of November, with the purpose to check the product and to establish the project's corrections. The flight took place in precarious visibility conditions¹, but we were not preoccupied by the quality of the snapshots, but by the possible problems of data acquisition. As anticipated, there were some problems with the vibrations (generated both by the plane's engine and by the aerodynamic pressure at speed), and the shooting angle, which wasn't exactly vertical. The vibrations remain the most serious phenomenon, for they affect the sharpness of the image.

¹ Nevertheless better than the conditions from the rest of November, when in the Romanian Plain fog prevailed.