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"AERIAL AND SATELLITE PHOTOGRAMMETRY: HOW MUCH ARE GETTING CLOSER?"

In the last decade we witnessed a fascinating development of civil spaceborne Earth-observation missions that are now capable to cover almost any point of the Earth with single-, stereo- or even multi-coverage images, at a geometric resolution of some decimetres. Due to the improved agility and acquisition modes, the revisit time is also impressive (a couple of days) and, above this, hyperspectral information is provided too. The merit of this data is extremely high. Just think about the critical role of rapid mapping after disasters (here "rapid" means hours or a few days) for damage estimation and emergency management, or the possibility to monitor and map remote and/or conflict areas with sub-meter accuracy. With respect to data processing, the workflow followed to generate 3D geospatial products, such as surface-, terrain- and city models, 2D- and 3D maps, is analogous to the one used in aerial photogrammetry.

"Daniela, where is the border between aerial and satellite photogrammetry?"
If we want to answer the question and quantify the border between aerial and satellite photogrammetry, the mapping scale 1:5000 is probably the current answer which can be translated into a Ground Sample Distance (GSD) of the images of 30 cm. For mapping applications, indeed, both aerial and satellite images with GSDs at the 30 cm level are currently used as data source. In remote or sensitive areas where airplanes are not allowed to fly, satellite imagery is of course the only option. Elsewhere, satellite images could become more convenient than aerial ones for project sizes at regional or national scale, but it should be stressed that, given the same theoretical GSD, the radiometric and geometric quality of a satellite image is lower compared to an aerial image acquired on the same area by any modern digital photogrammetric camera.

"Daniela, will aerial photogrammetry disappear soon, given the rapid increase of the performance of spaceborne optical sensors?"
We should highlight the large developments achieved by manufacturers and software houses in the aerial photogrammetric domain. State-of-the-art digital photogrammetric cameras can acquire high-quality images with GSDs up to 2 cm or better (i.e. for railway and power line mapping and 1:500 scale cartography). Furthermore, multi-perspective (oblique) cameras are becoming more and more popular for photogrammetric projects in urban areas. In the early 2000´s oblique images were available at lower radiometric and geometric quality and were mainly used for visualization of urban environments, approximate 2.5 D building measurements or 360°-exploration; nowadays modern oblique cameras are reliable photogrammetric sensors, with very high potentials for urban modelling. The 3D highly-detailed point clouds generated in urban areas have proved to model building vertical surfaces to a higher extent, compared to LiDAR technology.

"What is the take-away message?"
We are witnessing an increase in the overlap between platform technologies. Here satellite towards aerial photogrammetry was discussed, but aerial photogrammetry overlaps UAV too and, on the same platform, aerial photogrammetry overlaps LiDAR. At the same time, it is evident how each technology identifies those domains of application where its advantages are uncontested. The wish is that this synergy will grow further with valuable benefits to the photogrammetric community and final users.