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Editorial

Unmanned Aerial Vehicles in Geomatics

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Geomatics as a geospatial science, including technologies and processes, has experienced a boost in recent years with the development of Unmanned Aerial Vehicles (UAVs) equipped with sensing instruments [1].

In this regard, specific geographical information can be achieved with sufficient accuracy because of the autonomy and abilities of UAVs, including the advantage of providing access to hidden areas that are difficult otherwise to observe.

This Special Issue addresses the use of UAVs in geomatics where four important applications in different fields have been proposed with successful results.

Bulanon et al. [2] proposed a method for monitoring and assessment of crops by using a multispectral camera (near-infrared, green, blue) onboard an eight-rotor UAV in an experimental apple orchard. Vegetation indices based on near-infrared (NIR), green (G), and blue (B) spectral channels were used for image segmentation, where canopy identification was the main goal.

Coastal morphology was the approach addressed by Papakonstantinou et al. [3], for the classification of the coastline and coastal zones; Digital Surface Models (DSMs) and orthophotos were generated for this purpose. A commercial high resolution camera was installed onboard a quad-rotor as the imaging sensor. The images were processed by applying Structure from Motion (SfM) methods.

Orthophotos and Digital Elevation Models (DSMs), also based on SfM with SIFT (Scale-Invariant Feature Transform) as features for image-to-image registration, were the photogrammetric products used in Jaud et al.'s research [4] to monitor sedimentary hydrodynamics at different erg scales, in a silty estuary with intertidal mudflats connecting marine and continental supplies of nutrients and sediments. They used a hexacopter UAV equipped with a high resolution digital camera with fixed focal length of 35 mm.

Capolupo et al. [5] compared two regression methods based on vegetation indices for predicting bio-physical and bio-chemical plant traits of grasslands assessing different fertilizer levels. They used an octocopter UAV equipped with a photogrammetric camera, a global position system and a hyperspectral camera, with a wavelength operation range of 400–950 nm. Based on this information, ortho-mosaic, DSMs and hyperspectral data sets were obtained for analysis.

In short, UAVs and sensory technologies onboard such platforms facilitate usage in different applications for efficient Earth observation. This Special Issue covers four areas where observations were carried out for very different purposes, e.g., for agriculture and farming or ecosystem dynamics in intercostal areas. These are clear examples of geomatics applications using UAVs conveniently equipped with appropriate sensory technologies. This only covers some of the many possibilities of using UAVs in geomatics as expressed in [1], as their evolution continues. Geomatics will undoubtedly benefit from the use of UAVs.

Conflicts of Interest: The author declares no conflict of interest.

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