



UAV to map growing stock volume for shared forest management plans

Introduction

The PRI.FOR.MAN project aimed to develop a Decision Support System that promotes shared management approaches among multiple landowners. To achieve this, the project initially mapped forest resources across the entire region using data from the national forest inventory and LiDAR data to identify the most promising areas. Once these areas were identified, the project simulated the development of shared forest management plans to demonstrate their feasibility.

To accomplish this, four test areas were selected, each involving different landowners. In these areas, 15 ground plots were measured through field sampling, and the area was surveyed using a fixed-wing photogrammetric drone to create a hybrid canopy digital model (photogrammetric DSM - LiDAR DTM). These data were then used to map woody volume, basal area, and dominant height in the area with greater accuracy.

The growing stock volume map were subsequently utilized to calculate the value of each landowner's forests within each forest parcel in a shared forest management plan. Under a technical point of view the drone allow to collect very high spatial resolution data within a very short time (approximately 250 ha in 1h30minutes).

Lessons learned

The fixed-wing drone data with vertical take-off used in the project enabled the collection of information over vast areas in a very short time. However, the cost of the drone is quite high and can only be feasible for purchase in the Friulian context where it was tested if multiple organizations and technicians come together to share the costs. The flight itself is straightforward because it's entirely automated.

Fieldwork for collecting data on at least sample areas is always necessary and remains somewhat costly. However, when compared to forest management plans developed using traditional methods, the number of sample areas required is significantly reduced. Nonetheless, costs can be reduced when multiple landowners decide to pool resources compared to conducting surveys independently.

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Further information

https://lookerstudio.google.com/u/0/reporting/2f6c2f81-b78f-446c-ab07-96571d7b6984/page/p_w5k3gvls6c





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