



Growing Stock Volume Map to support forest operation planning

Introduction

To effectively plan forest operations and optimize resource allocation, it is of most importance to map the Growing Stock Volume (m^3/ha) within a specific area. This information plays a critical role in conducting economic evaluations of forest operations and supporting forest management planning.

Traditionally, acquiring such data has involved labor-intensive and expensive fieldwork, posing a significant burden, especially for small-scale forest owners. However, recent advancements in research have yielded remarkable progress in developing modeling and prediction techniques that leverage freely available data sources like the National Forest Inventory and Remote Sensing Data. These approaches enable the creation of accurate and detailed maps of Growing Stock Volume. These maps hold tremendous value for forest operation planning and have been successfully implemented throughout the Tuscany Region as part of the GO-SURF initiative.

By utilizing data from the National Forest Inventory plots and open-access Landsat imagery, a high-resolution map of Growing Stock Volume has been generated for all regions in Tuscany, boasting a spatial resolution of 23 m x 23 m. This technological leap not only reduces the costs associated with data acquisition but also grants small forest owners, who typically face limited budgets for field campaigns, access to this invaluable information.

Additionally, forest companies seeking suitable forests for logging purposes can benefit significantly from these comprehensive maps. The resulting map is conveniently accessible through a Decision Support System Platform, empowering users to query the data through interactive tools like drawing or uploading polygons. The way to query the data was co-designed with farmers, forest owners, forest managers and forest company in order to be sure to fit their needs. This type of query the Growing Stock Map through the platform facilitates direct extraction of reports and geographic data, streamlining decision-making processes and elevating overall forest management practices. By leveraging these advancements, stakeholders can make informed choices and ensure the sustainable management of forest resources.

The access to the Growing Stock map through the DSS can bring several benefits for the Tuscany Forest Sector, including improved resource allocation, enhanced operational efficiency, better risk management, and the ability to plan and implement sustainable forest management practices also in small forest owners' properties that usually are abandoned. In this sense, the map in the next years can be used to develop efficient and sustainable wood mobilization practices that are essential to ensure a continuous supply of timber and wood products while minimizing environmental impacts. The maps can be used also to identify productive areas that can be used to build new wood value-chains that are not well organized in Tuscany forest sectors.

Lessons learned

An interesting lesson learned from GO-SURF is that it is possible to introduce digital tools in the forestry sector of Tuscany. The introduction of the GO-SURF Growing Stock map occurred in a context where stakeholders were not accustomed to using digital tools. However, the co-designed platform has facilitated access to the Growing Stock Map. Moreover, analyzing the daily access to the DSS platform, we have observed a continuous increase in usage (from an average of 10 users per month in the first month to 40 users per month currently).

Accessing the map does not require users to have knowledge of complex models and algorithms used in its generation. In fact, users are not required to have knowledge of remote sensing data or national inventory data. Users are provided with the specific product they need and are interested in, which is the map of Growing Stock Volume. As suggested by forest owners, managers, and companies involved in the co-design of the platform, the Growing Stock Volume map allows for a better understanding of wood resources within an area and is useful for assessing forest operations and management activities in a sustainable way.

Figure 1. Overview of the digital platform.



For further information contact







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Further information

<https://www.go-surf.it/>



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