

Research Highlight

'AI-powered estimation of tree covered area and number of trees over the Mediterranean island of Cyprus'

Summary

Trees play a crucial role in mitigating climate change by absorbing CO₂ and providing biophysical cooling. In Cyprus, an EU member state located in the Eastern Mediterranean, and a climate change hotspot, increasingly impacted by forest fires and more arid conditions, the absence of a comprehensive tree monitoring system hinders effective carbon stock assessment and land-based mitigation strategies for the achievement of the European Commission goal of substantial greenhouse gas reductions by 2030. This study presents a deep learning neural network model applied to high resolution (10 cm) airborne images collected during the year 2019, to generate segmented tree crowns and the number of individual trees over selected areas of Cyprus, including a large national forest park, a forest park in the capital city, and a small urban area, encompassing a total studied area of 107 square kilometers.

Impact

The study provides insight into the exact location, size and number of trees in Troodos and Athalassa national forest parks, with an accuracy of 93%. Almost 1 million trees have been found in the area of Troodos forest park, a number that wouldn't have been feasible to be estimated without the assistance of remote sensing data and deep learning methods. This work lays the foundation for establishing the first national tree-level inventory and estimating the forest carbon stock of Cyprus using airborne remote-sensing. Two maps of tree cover have been created and are now publicly available at the following links:

https://annzen.github.io/Troodos_Forest_park_tree_map/

https://annzen.github.io/Athalassa_Forest_park_tree_map/index_Athalassa.html

A demonstration of the map features is included in the following video:

<https://www.youtube.com/watch?v=AHIRiQZOZ7g>

Author's bio



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Reference

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