



Federico is currently a PhD student at the University of Genoa, in collaboration with the CIMA Research Foundation, Savona, Italy. He works on plant functional ecology and remote sensing. His research focuses on fire ecology through extensive field measurements, UAV-LiDAR, multispectral imaging, and fire behaviour modelling.

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11h00 – 11h40

Salle 201, Bâtiment PS2, CIRAD-UMR AMAP,  
Boulevard de la Lironde  
Visioconférence : [Lien Teams](#)

## **Fire-Related Traits in Mediterranean Woody Plants: From Functional Ecology to UAV-Based Monitoring of Crown Traits and Fire Behaviour Simulation**

*presented by*

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### **ABSTRACT**

This PhD project investigates fire-related traits in Mediterranean woody plants by integrating functional ecology, remote sensing, and fire behaviour modelling. The research is structured around three complementary components: the first examines functional trait coordination and plant responses to different fire regimes in Mediterranean resprouter species, to stress the concept of fire as an eco-evolutionary driver shaping intra- and interspecific variability of fire-related functional traits. The second evaluates the potential of combining UAV LiDAR and multispectral imagery to estimate individual-level fire-related canopy traits, including crown-structural and leaf-related metrics, and to assess how these traits vary along wildfire gradient. The third applies LiDAR-derived fuel characterization to a real Mediterranean wildfire case study, providing inputs for crown fire behaviour simulation through spatially explicit fuel metrics and fuel-type classification. Overall, the thesis develops a multiscale framework linking field measurements, remote sensing observations, and fire modelling to improve our understanding of the relationships between plant functional strategies, post-fire vegetation dynamics, and fire behaviour in Mediterranean ecosystems.

### **KEY WORDS**

fire-related functional traits, interspecific trait variability, UAV-LIDAR, Multispectral imaging, fire behaviour modelling

### **Invited by:**

Olivier Martin

### **Type:**

Preliminary PhD results, workflow, and future steps

### **Oral language:**

english / italian

### **Language of PPT:**

english

### **Visioconférence**

<https://teams.microsoft.com/meet/335590304478852?p=51IQBHGXG3ba6HIXmvA>

