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Tree Latent Mortality: the dendrometer measurements to promptly assess tree responses

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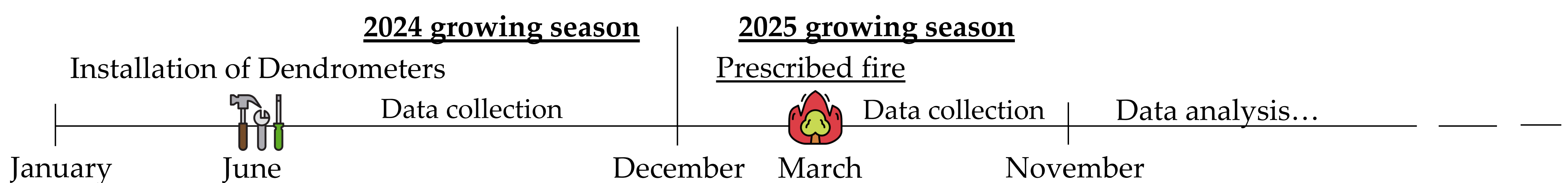
Introduction

Mediterranean ecosystems are increasingly fragile due to climate change and recurrent fires. Rising fire frequency highlights the need for effective monitoring and management. Rapid assessment of post-fire tree vitality is essential to guide restoration based on nature-based solutions (NBS) and to enhance our knowledge on tree latent mortality. This project focuses on the evaluation of physiological responses of *Pinus pinaster* before and after a prescribed fire to define and assess latent mortality mechanisms.

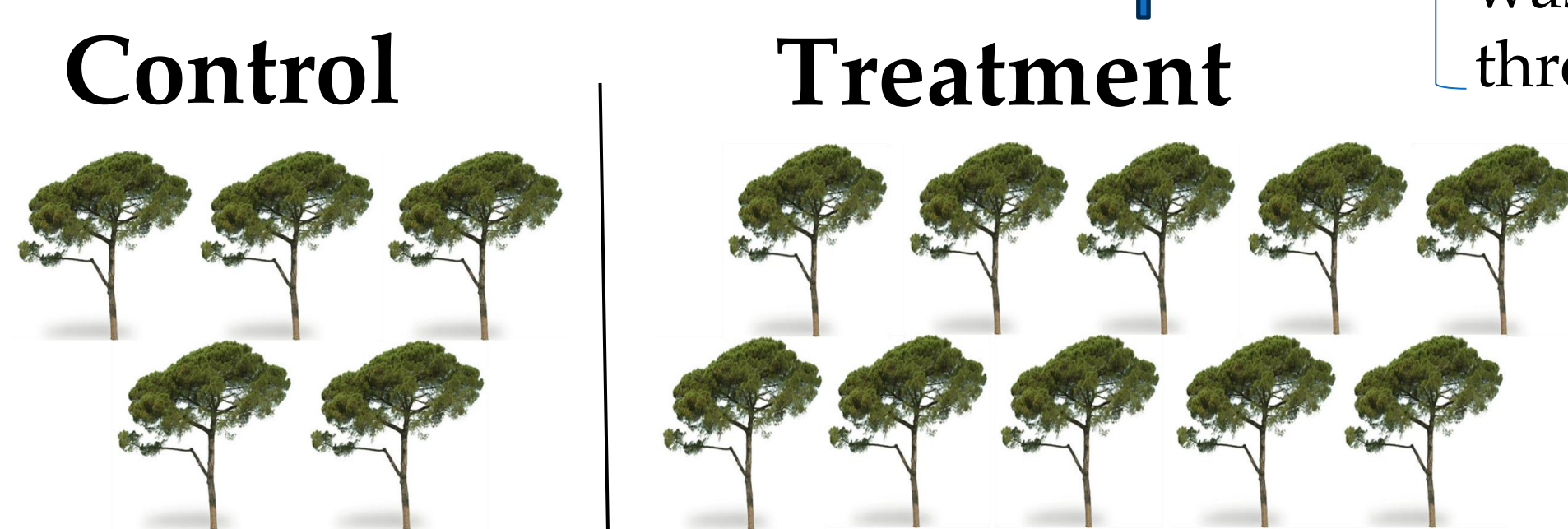
Materials & Methods

Target species: *Pinus pinaster*

Tocchi (Tuscany, Italy)



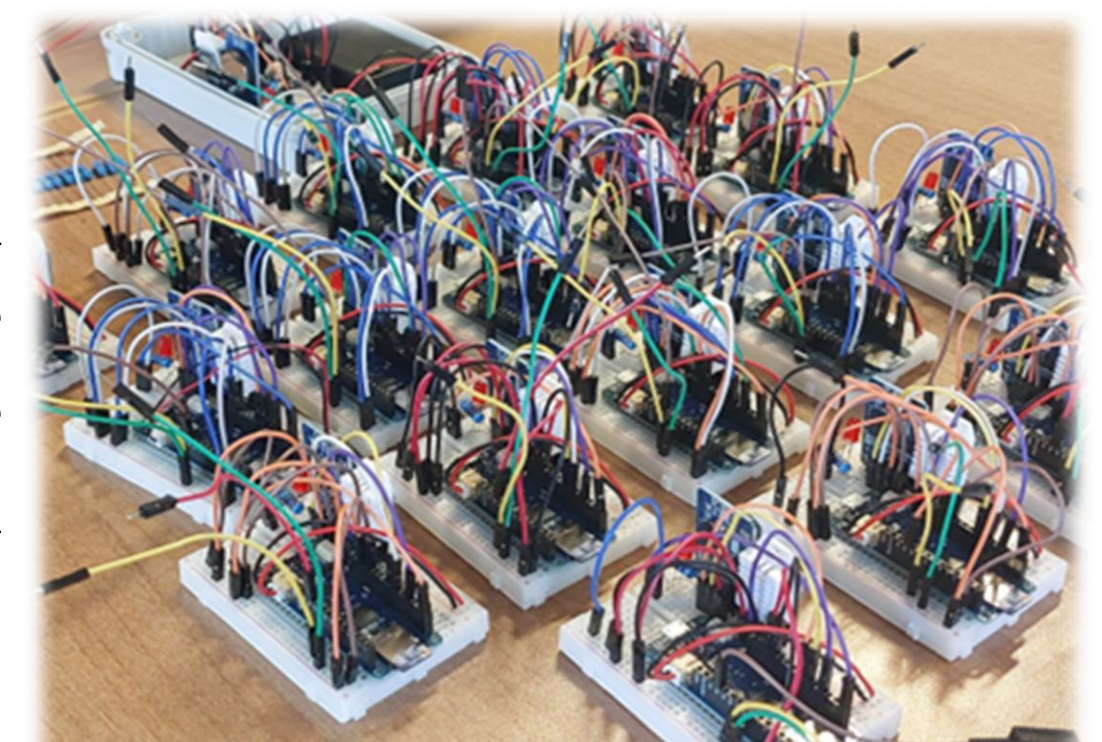
Experimental design



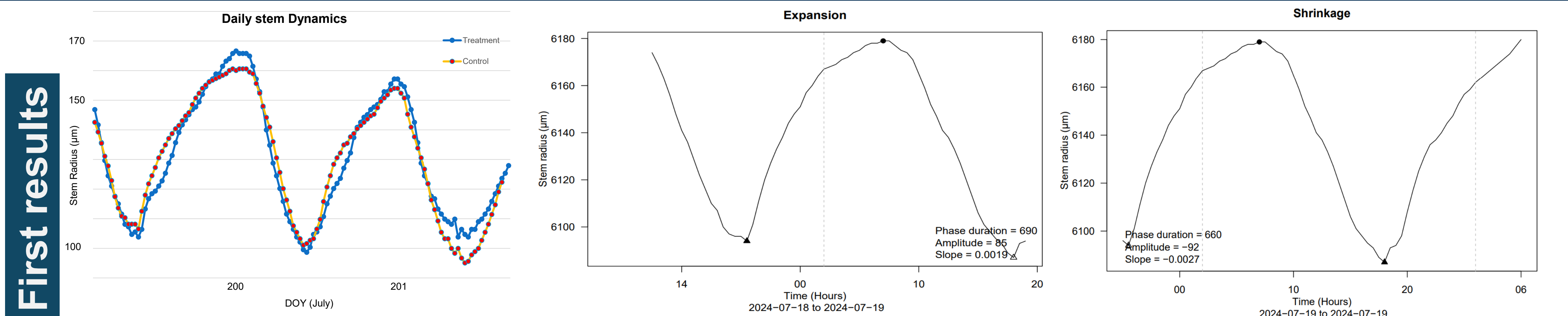
We set up 2 areas equipped with one dendrometer per trees. A «control» area was unsubjected to prescribed fire, while a «treated» area was exposed to three different intensities of prescribed fire.

Dendrometer

Dendrometers were built by a collaboration between the University of Florence and the National Research Council using Arduino-based technology



Prescribed fire



We expect an increasing daily stem growth overnight (Expansion) and decreasing (Shrinkage) during the day because of the transpiration. Water potential and turgor pressure in the cambium is reduced, thus inhibiting cell division and cell expansion.