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CET/Paris time
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LIA FORESTIA
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2021

#2

WHICH LEAF TRAITS CAN BE USED TO ADDRESS VULNERABILITY OF TREES TO DROUGHT?

First results

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Studies on climate change for 2050 predict for South-West France an increase in precipitation during the winter, but a strong reduction in summer (Dayon et al. 2015) with in the long term (2100), a change in the type of climate at the regional level, shifting towards a mediterranean-like climate with hot and dry summers (Beck et al. 2018). These changes are already leading to an increase in summer droughts and heat waves both in number and severity (Spinoni et al. 2014).

The vulnerability to drought of trees has been related to the vulnerability of xylem to cavitation (Brodrribb et al. 2010). It thus appears as a useful trait to evaluate species at risk in the future. For instance, at the southern limit of its distribution area in the Aquitaine plain, xylem cavitation vulnerability of *Quercus robur* results in a null hydraulic safety margin under current summer drought conditions, and suggests a local decline under future climate (Urli et al. 2013, 2014).

We are testing several methodologies to characterize leaf traits on trees submitted to drought. Vulnerability to cavitation can be achieved on stems but also leaves using the Optic Technic (Brodrribb et al. 2015) although the method is still limited depending on vessel length. Indicators related to leaf functioning were also tested using changes in fluorescence measurements and leaf coloration in response to drought.

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