

Prediction of *Eucalyptus grandis* chemical compounds using hyperspectral imaging for drought and fertilization impact studies on wood formation

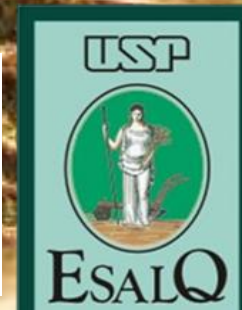
Mariana Pires Franco

Gilles Chaix

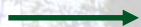
Mario Tomazello

Jean-Michel Roger

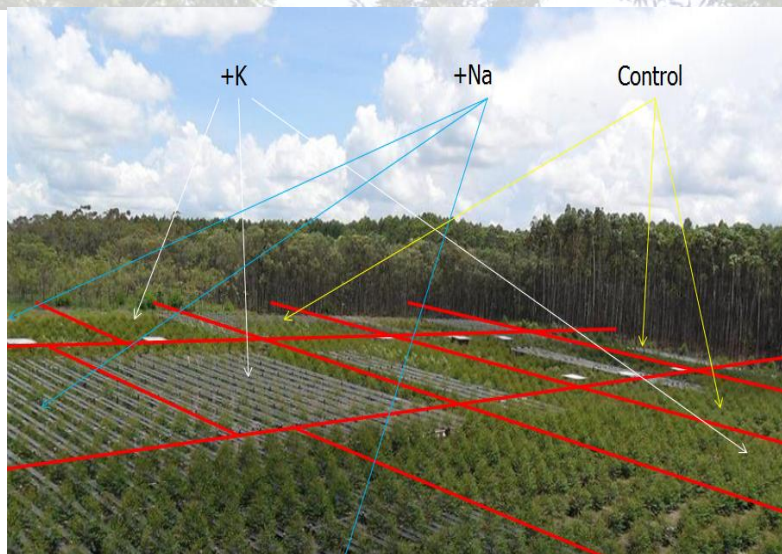
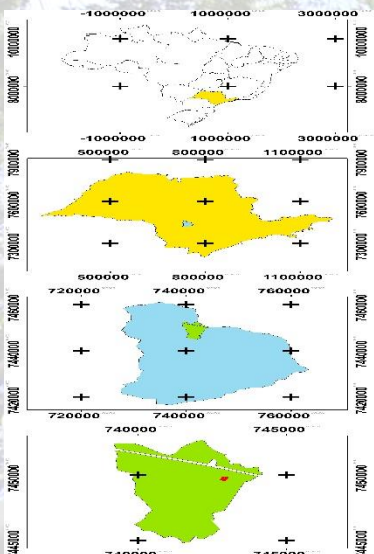
Nathalie Gorretta



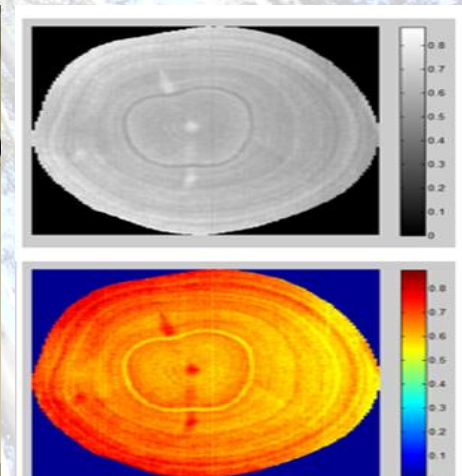
GENERAL CONTEXT



MATERIAL AND METHODS



RESULTS





MERCI!

Poster C2

6^{èmes} journées du GDR « Sciences du bois » - Nantes, 21-23 novembre 2017

Who are involved?
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What is our objective?
 The study of chemical wood to explain the response of trees to environmental variation is conducted by retrospective analysis. We focused our approach on wood variability induced during the process of adaptation to seasonal variations according to climate changes. As for wood anatomical, trees produce specific metabolites to help themselves face to water and nutrient stress. Here, hyperspectral imaging (HSI) in near infrared could be useful for the prediction of several chemical components on wood based on previous calibrations. Our objective is to better understand how water constraints influence wood chemicals and their spatial variability.

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Which are material and methods used?
 Itatinga experimental design
 Total extractives of fibrations on HSI
 SilcoNEMA, Specim[®] from 900 to 1500 nm with a pixel size of 635 x 635 µm

And what about the results?
 Based on HSI calibration, we predicted the total extractives for each pixel to produce image for the wooden disks.
 We compared total extractive profiles from predicted images according to growth conditions and treatments (4W4K, 4W4K, 4W4K). The results showed that the trees under stress conditions show a higher heterogeneous chemical profile from the pith to bark of the wooden disks. Our results seem to show different patterns of chemical compound distribution according to the growth conditions controlled both by precipitation and by fertilization.

ACKNOWLEDGEMENTS