

# **Climate and soil factors influencing individual tree resin yield**

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Coordinator



Partners



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# What kind of data?



**“Resin resource monitoring & modelling in a context of climate change”**

**Inter-regional workshop, INIA Madrid, January 21/22, 2019**

**Which assessment  
systems are  
available or can be  
developed? What  
data are needed?  
Are they available?**



*Study 1*  
*Study 2*



## *Data Study 1*

Sample: 398 *P. pinaster*

Method: Traditional

Time: 4 tapping seasons

Variables:

- Production (fortnightly)

- Climate 11 (daily)

## *Data Study 2*

Sample: 2 *P. sylvestris*

Method: no tapped tree

Time: 3 months

Variables:

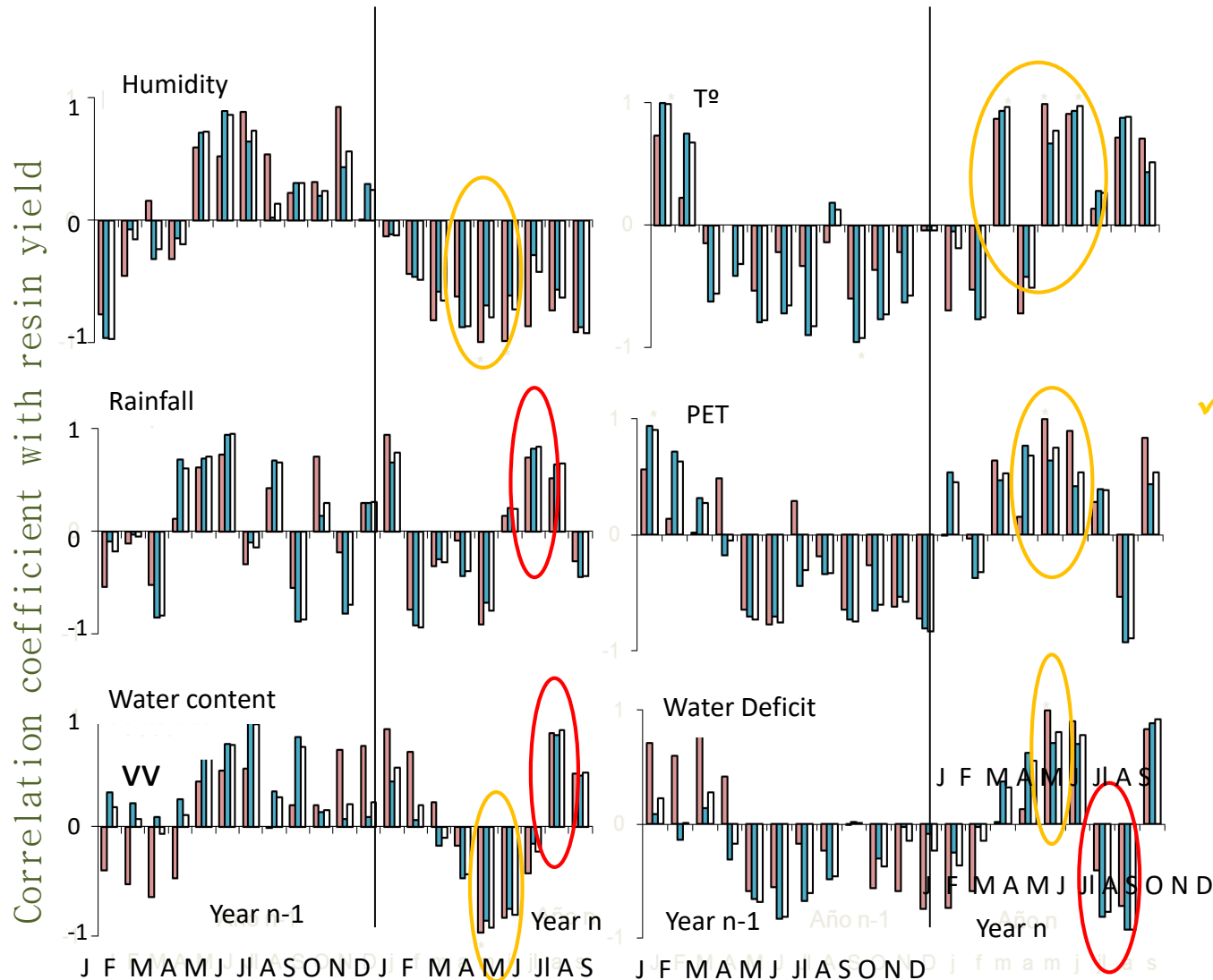
- OEP(Oleoresin exudation pressure)(10 min)

- Physiological (5-15 min)

- enviromental (5-15 min)



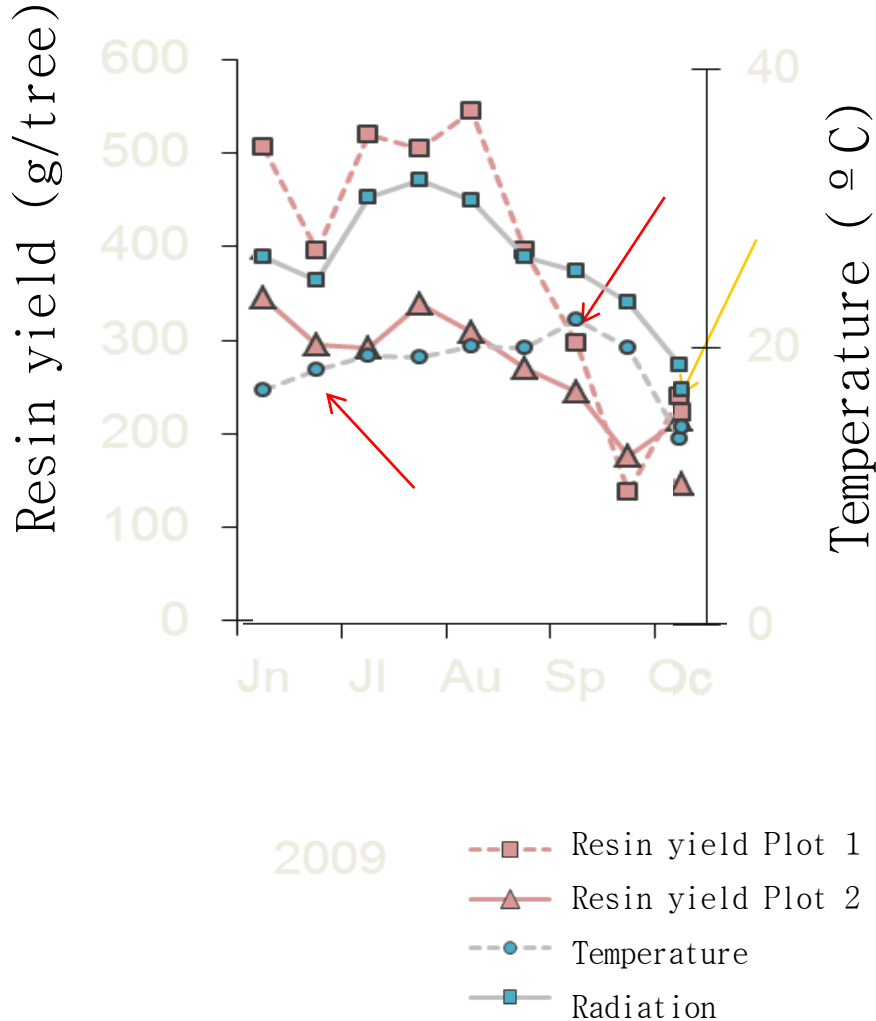
## Analysis inter-annual



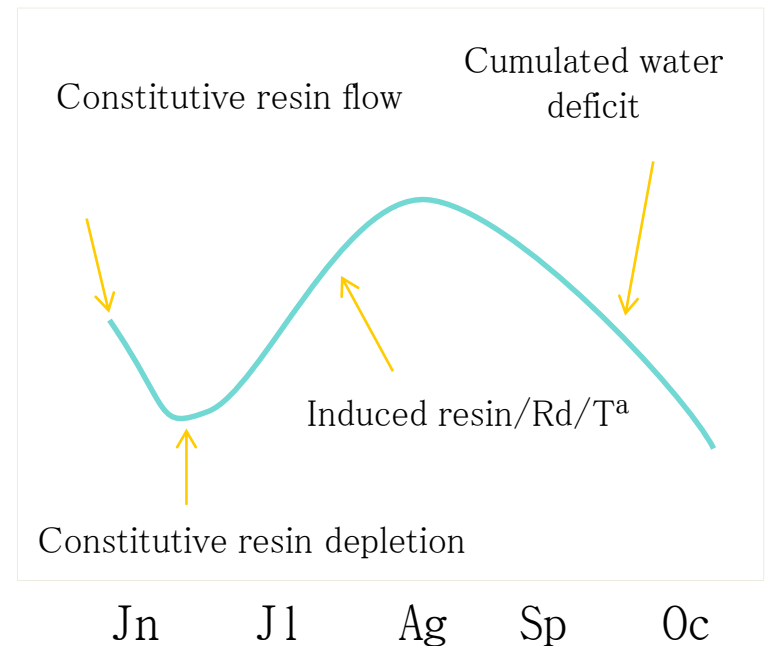
- ✓ Spring Water deficit and high temperatures stimulate resin yield and canal formation.

- ✓ Severe summer drought exceeds physiological thresholds, which reduces resin yield and canal formation.

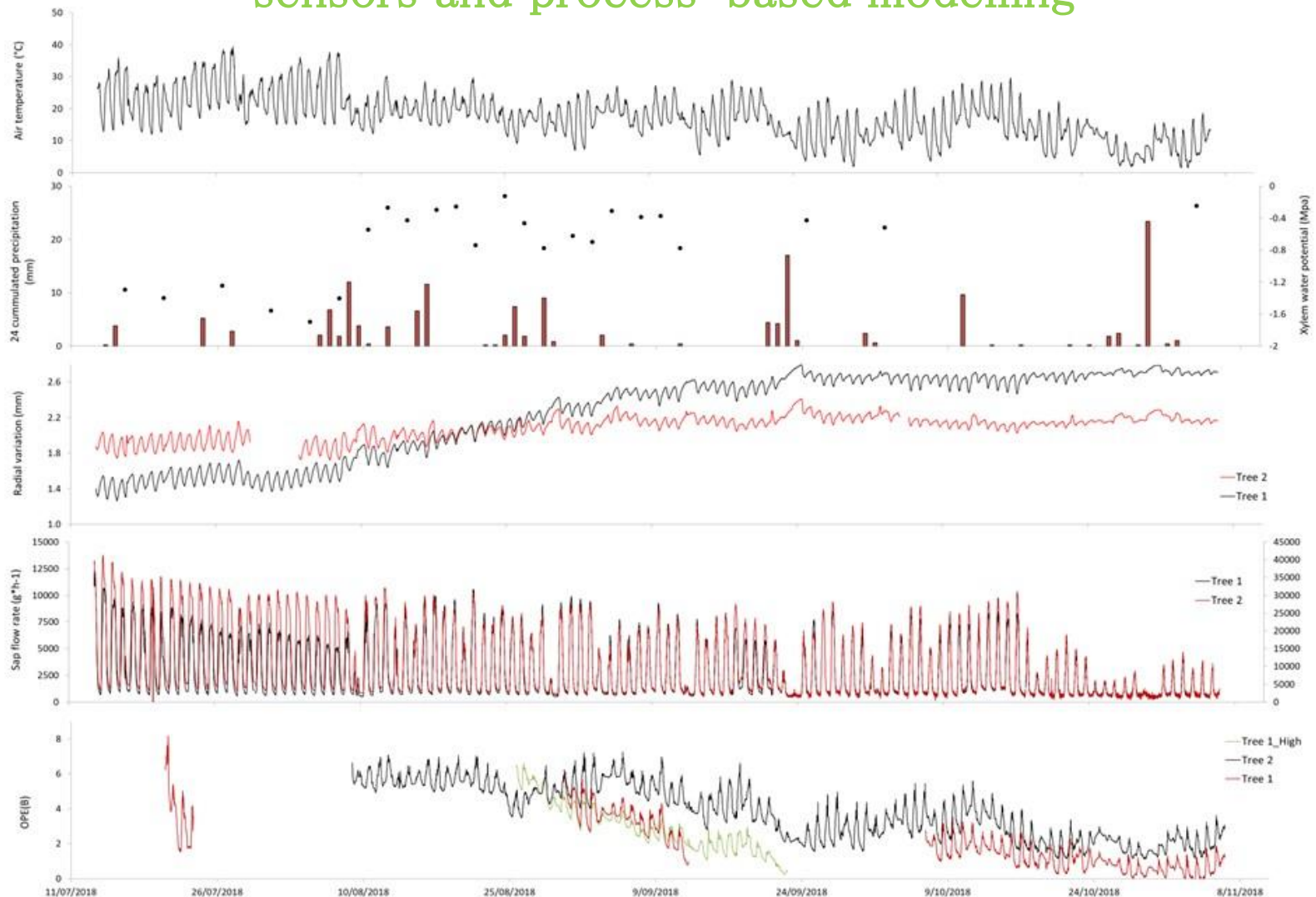
## *Analysis intra-annual*



- ✓ PET, radiation, temperature
- ✓ Water deficit vs cumulated water deficit



## Real-time tree monitoring with high-tech plant sensors and process-based modelling



## ATTENTION! Preliminary data only

- ✓ Preliminary results showed a clear daily pattern for OEP with the maximum values between midday and afternoon and the minimum at early morning.
- ✓ Positive relationships were found between the OEP and the mean temperature and the daily sap flow rate.
- ✓ Negative relationships were observed with air humidity, diameter variation and soil water content.
- ✓ During the dry period, sub daily analyses showed less and lower relationships



## Some reflections...

- Is it feasible to predict the evolution of the natural resin sources under a global change scenery?
    - Yes, but it is essential **to support long term research projects.**
- Good understanding about complexity of physiological processes needs time!

...and for the long term resource availability in context of global change...

# Thank you!

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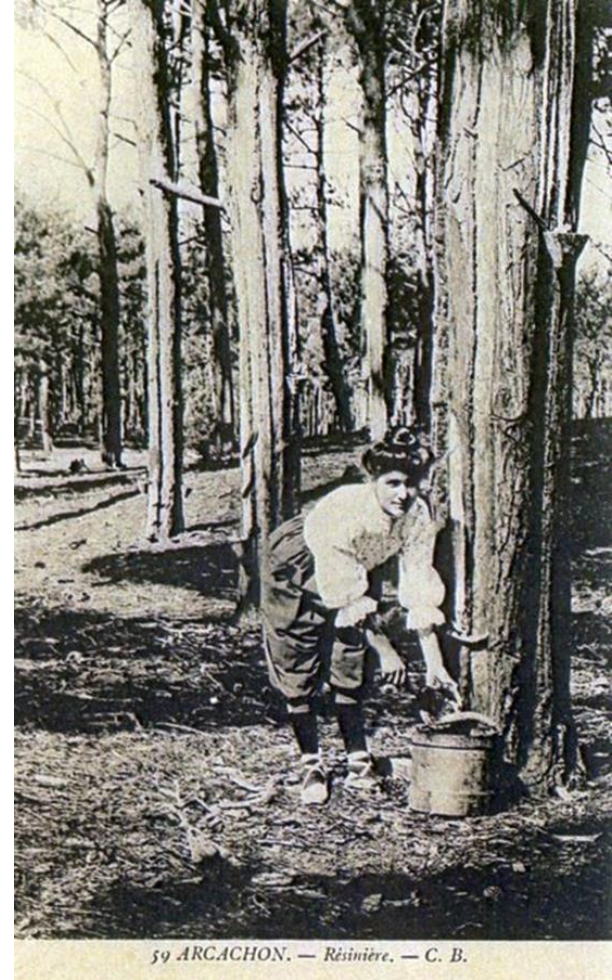
**Forestas**

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Agencia forestal regionale per lo sviluppo del  
territorio e dell'ambiente della Sardegna  
**SardegnaForeste**



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