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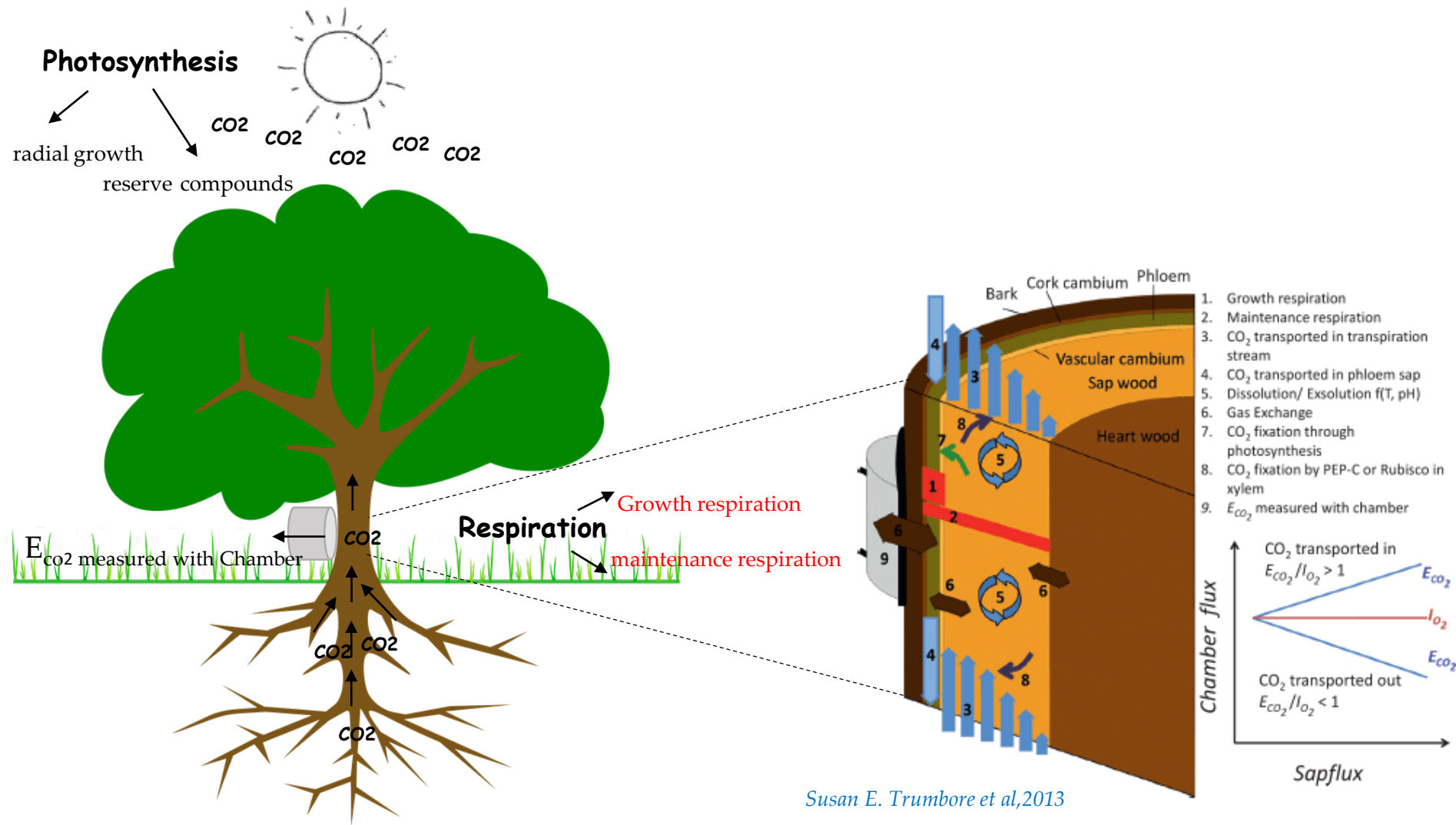
National Research
Council of Italy

Frost and drought: effects of extreme weather events on Stem Carbon dynamic in a Mediterranean beech forest

Negar Rezaie , Ettore D'Andrea, Jožica Gričar, Jan Muhr, Peter Prislan, Alessio Collalti,
Giorgio Matteucci



Carbon allocation and respiration



Remote Sensing of Environment 225 (2019) 431–440

Contents lists available at ScienceDirect

Remote Sensing of Environment

journal homepage: www.elsevier.com/locate/rse

Canopy damage by spring frost in European beech along the Apennines: effect of latitude, altitude and aspect

Emilia Allevato^{a,*}, Luigi Saulino^a, Gaspare Cesarano^a, Giovanni Battista Chirico^a, Guido D'Urso^a, Salvatore Falanga Bolognesi^a, Angelo Rita^{a,b}, Sergio Rossi^{c,d}, Antonio Saracino^a, Giuliano Bonanomi^a

Contents lists available at ScienceDirect

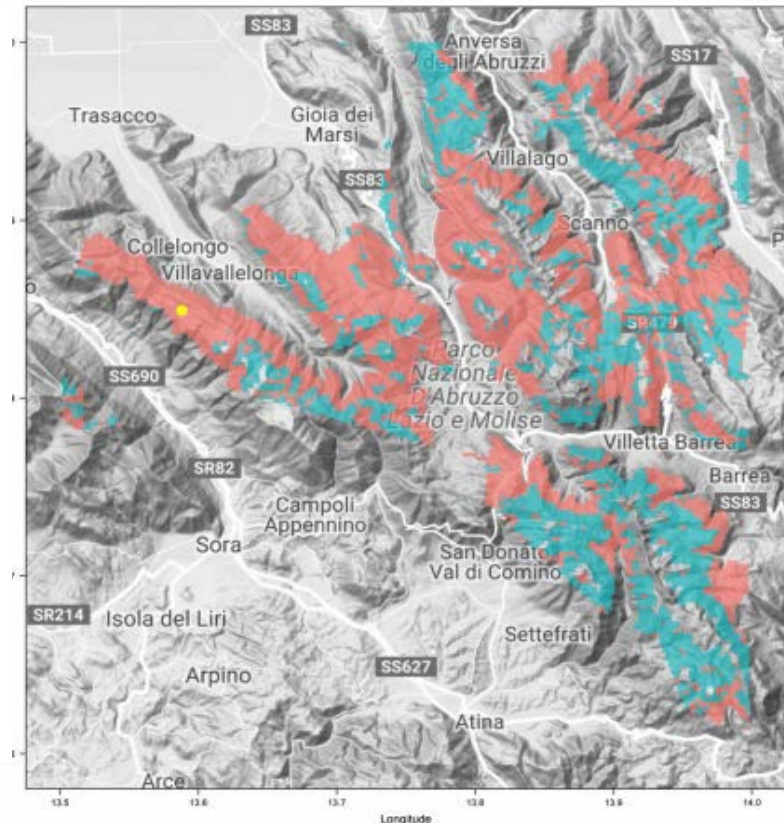
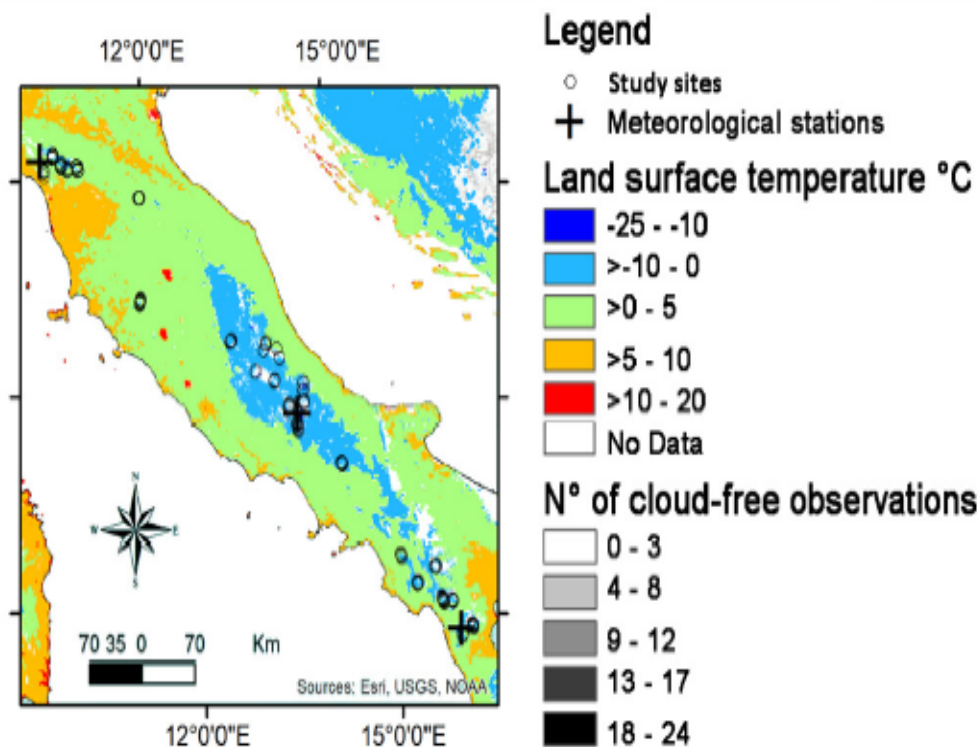
Agricultural and Forest Meteorology

journal homepage: www.elsevier.com/locate/agrformet

Research paper

Assessing spring frost effects on beech forests in Central Apennines from remotely-sensed data

Marco Bascietto^a, Sofia Bajocco^{b,*}, Francesco Mazzenga^c, Giorgio Matteucci^d



Late frost of 25th of April



19 April 2016



5 May 2016



15 June 2016



4 July 2016



18 July 2016



4 August 2016

RITA ET AL.





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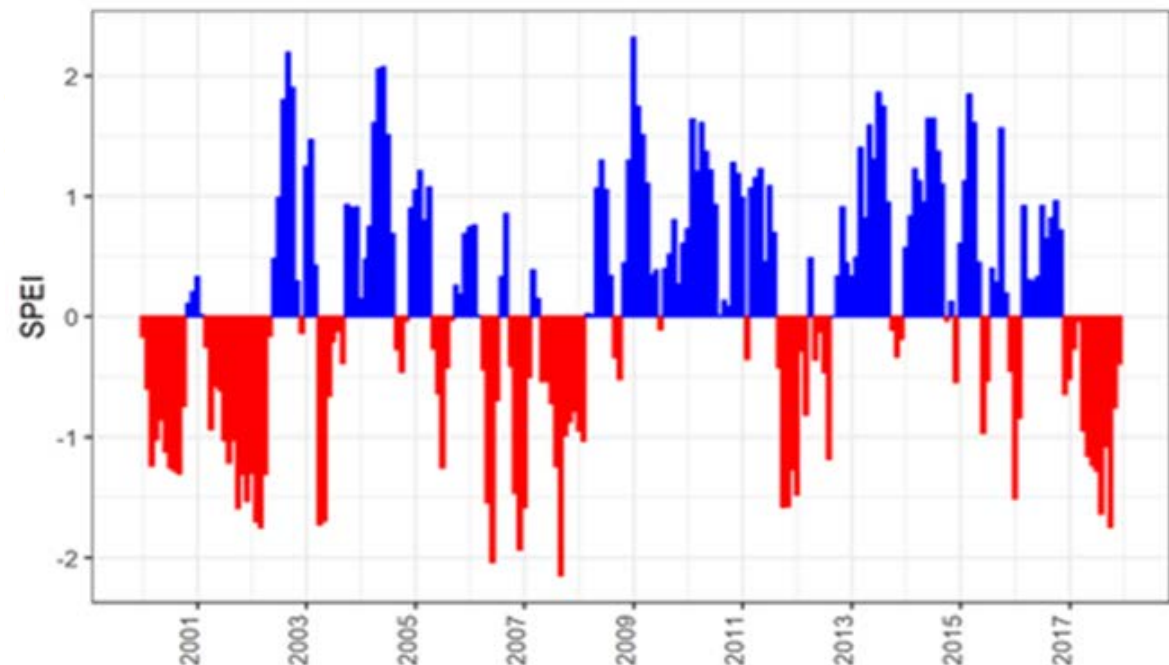
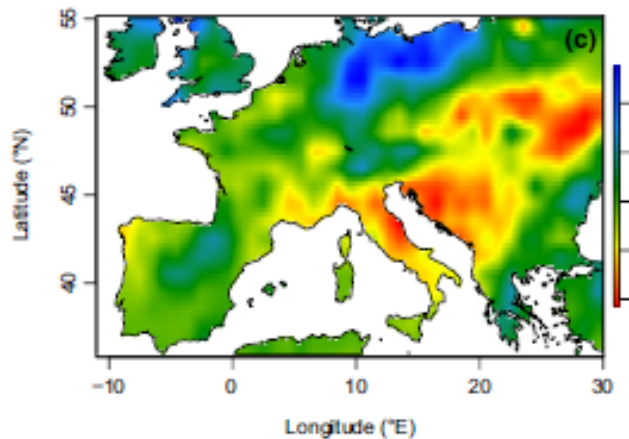
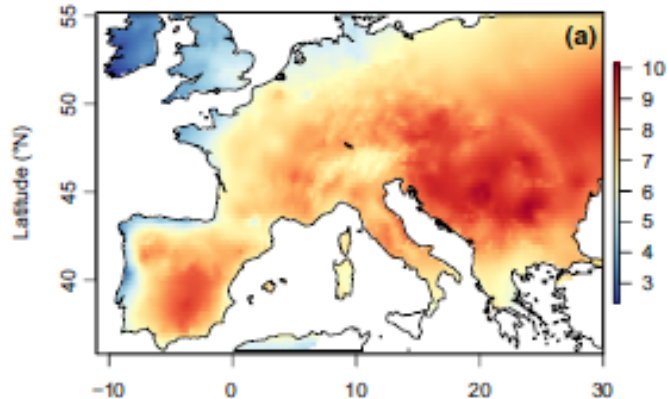
DOI: 10.1111/gcb.14825

PRIMARY RESEARCH ARTICLE

Global Change Biology WILEY

The impact of drought spells on forests depends on site conditions: The case of 2017 summer heat wave in southern Europe

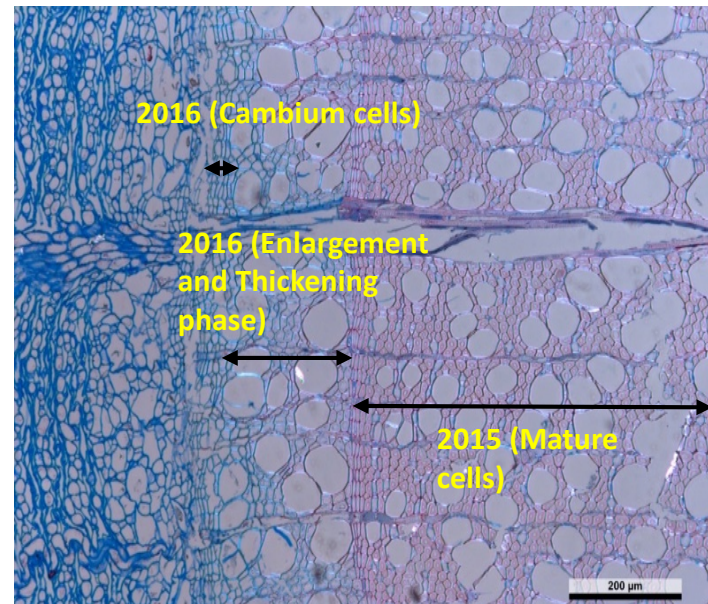
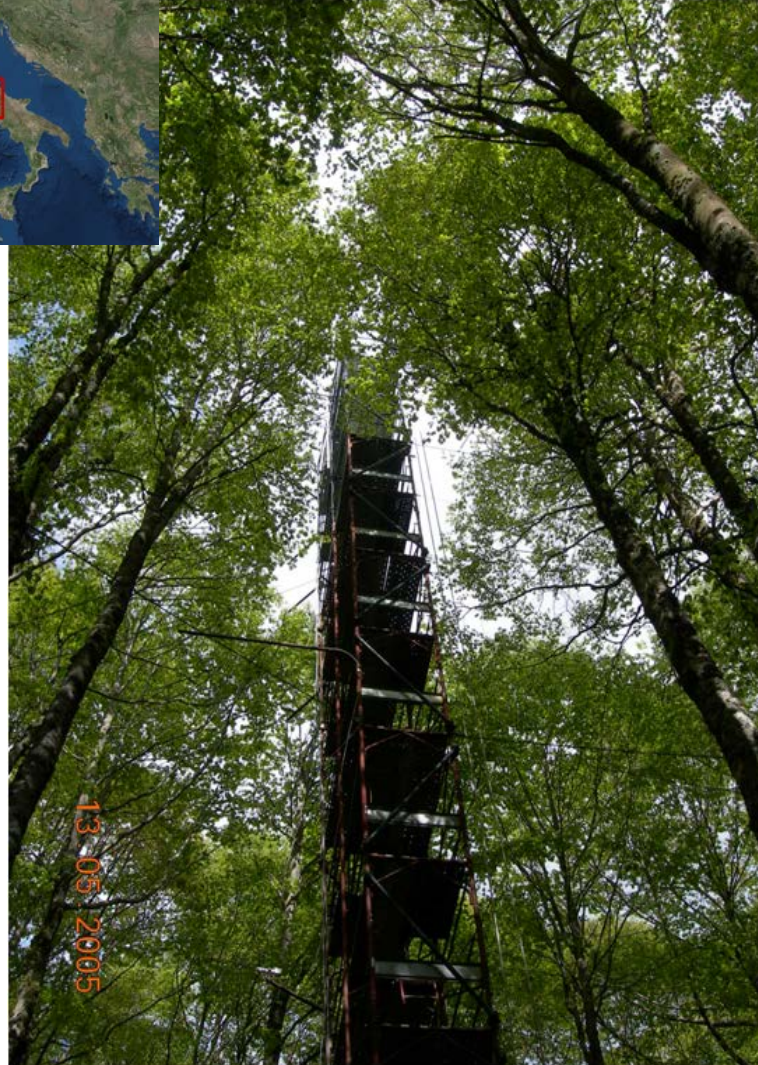
Angelo Rita¹  | Jesus Julio Camarero²  | Angelo Nolè¹  | Marco Borghetti¹  | Michele Brunetti³ | Nicola Pergola⁴ | Carmine Serio⁵ | Sergio M. Vicente-Serrano² | Valerio Tramutoli⁵ | Francesco Ripullone¹

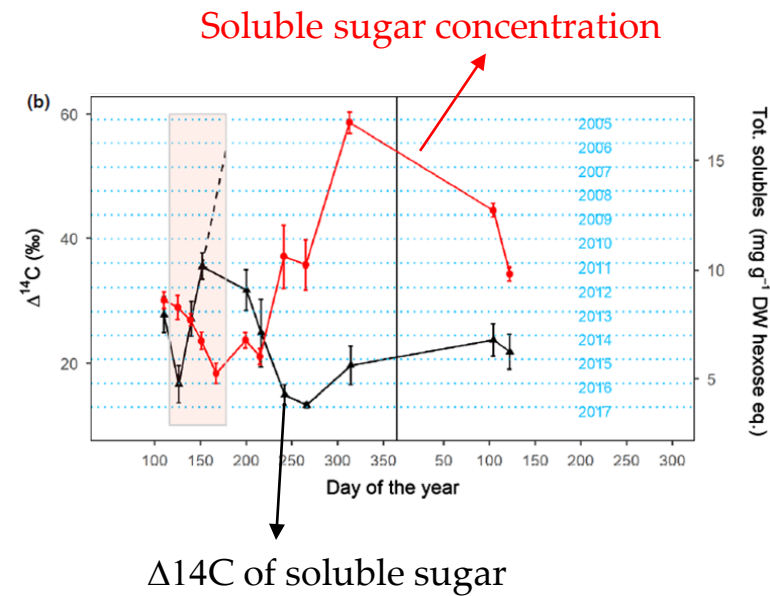
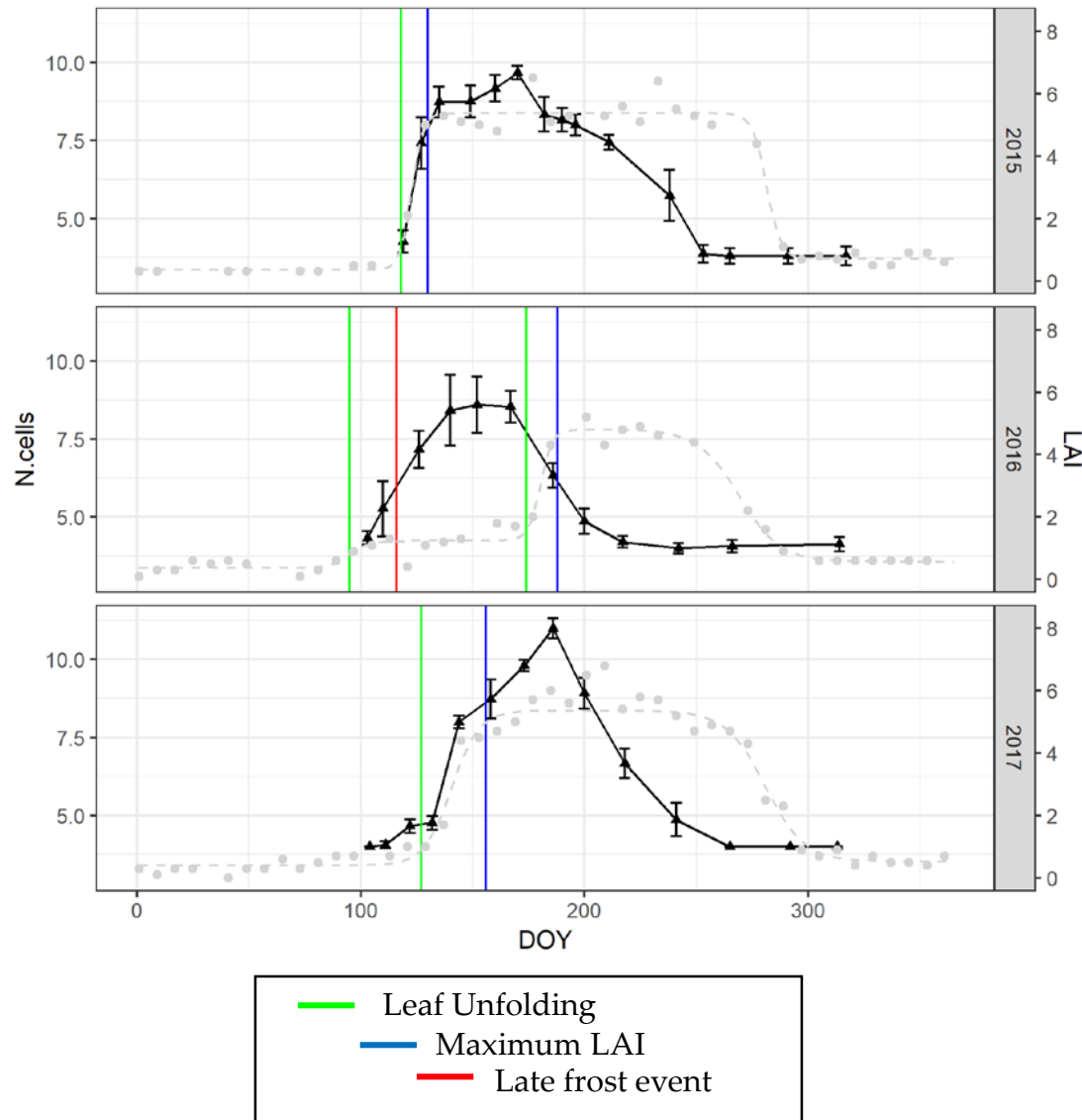


Unravelling the intra-annual C dynamics in stems under different climatic conditions and in response to extreme weather events

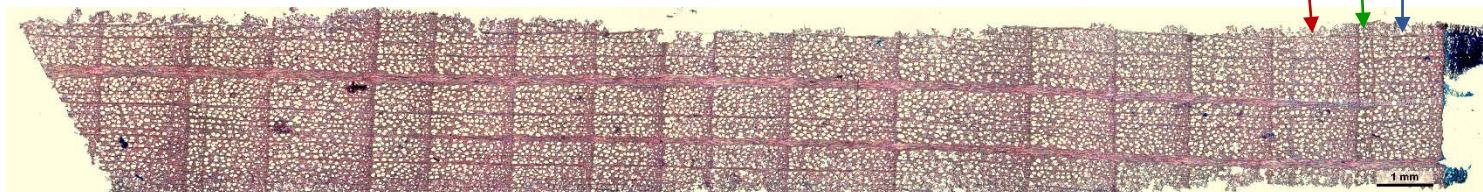
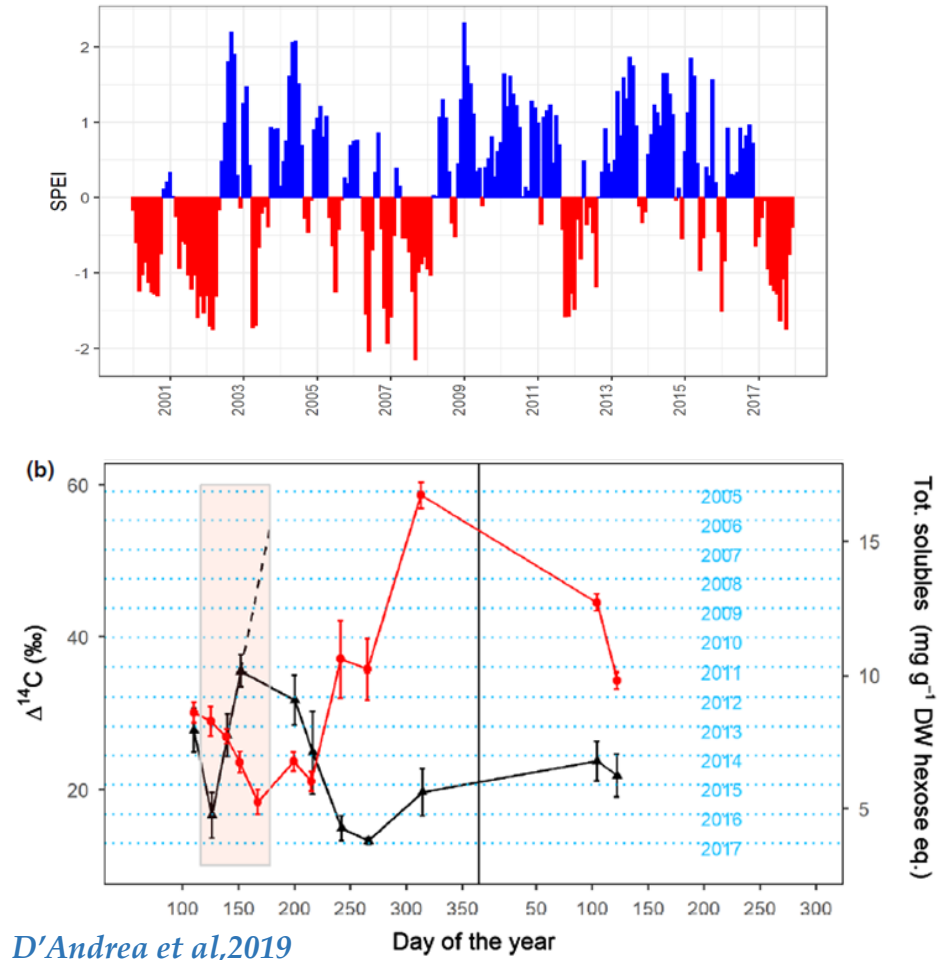
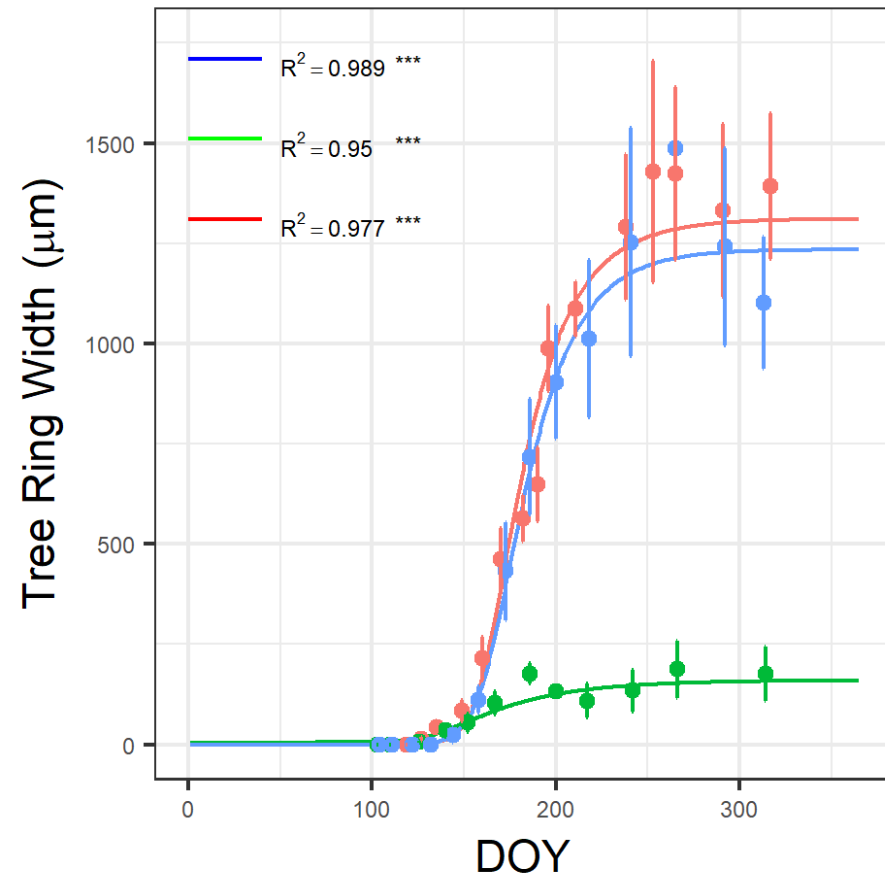


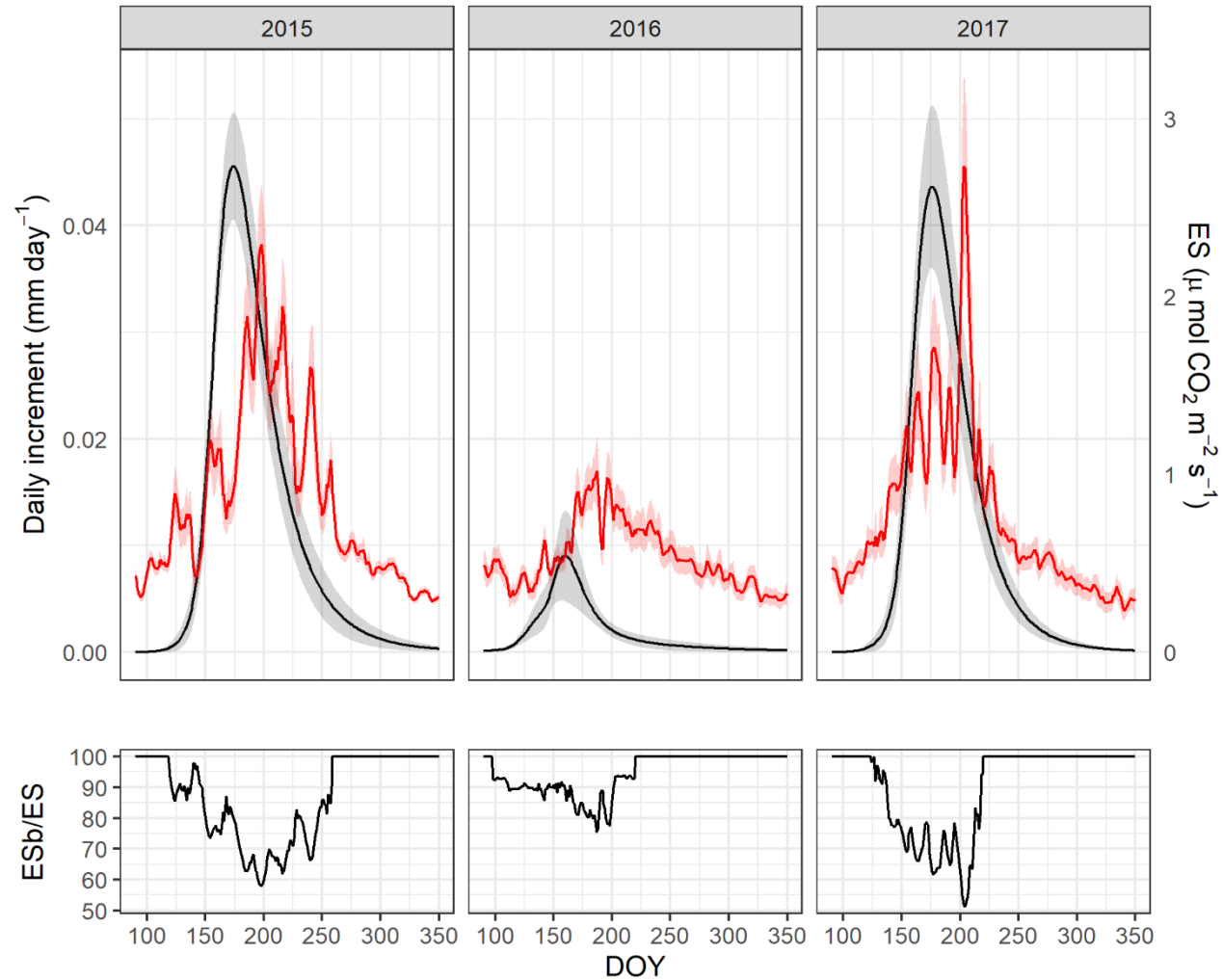
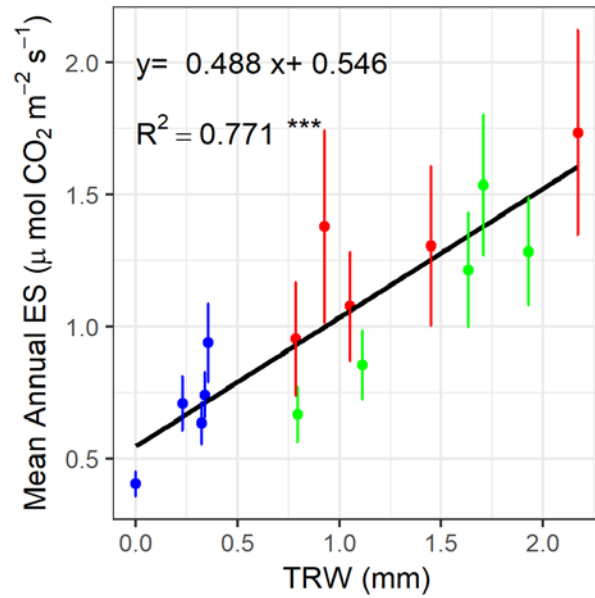
Study site & Methods





D'Andrea et al, 2019

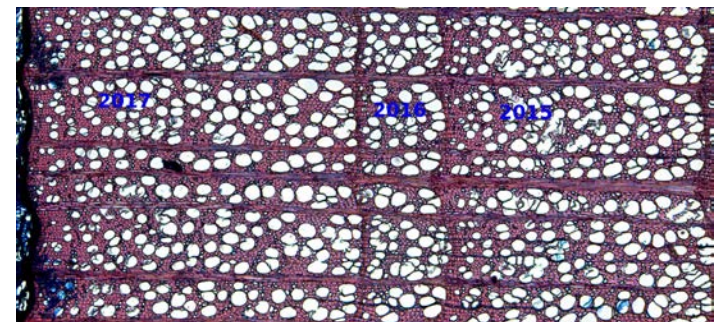




ES: Stem CO₂ Efflux

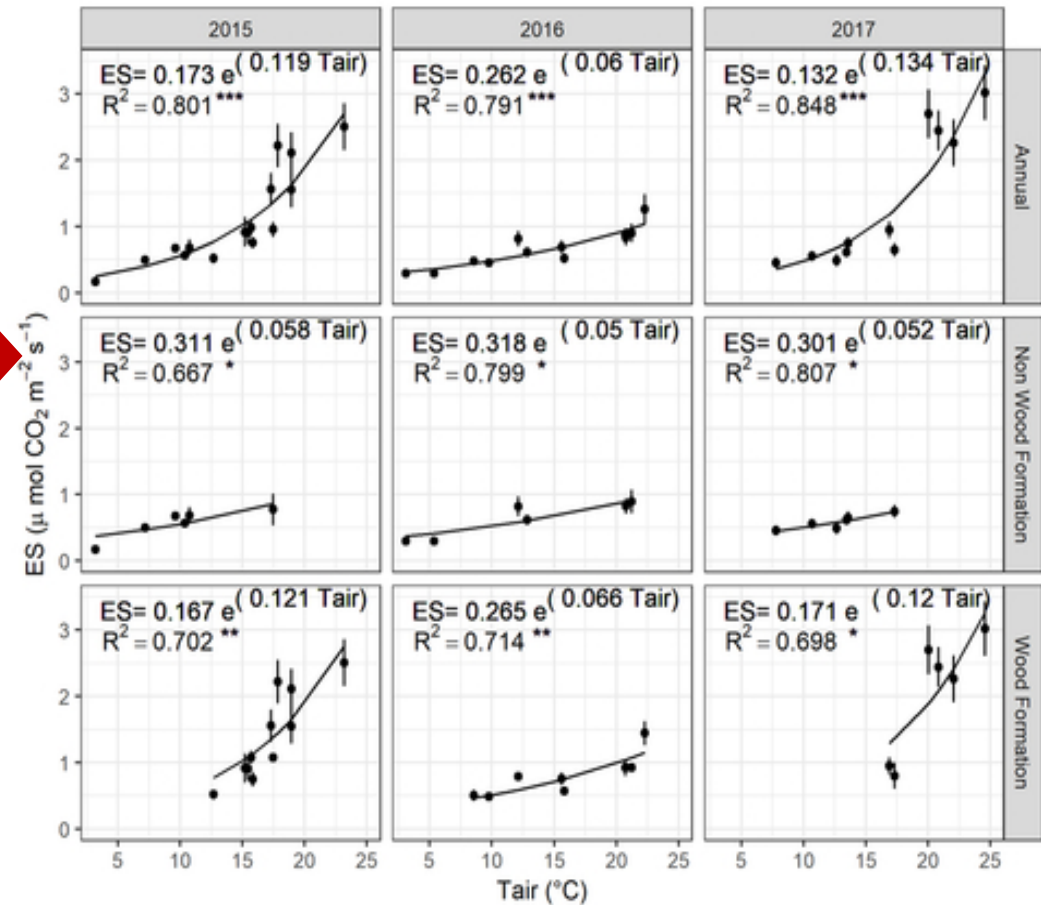
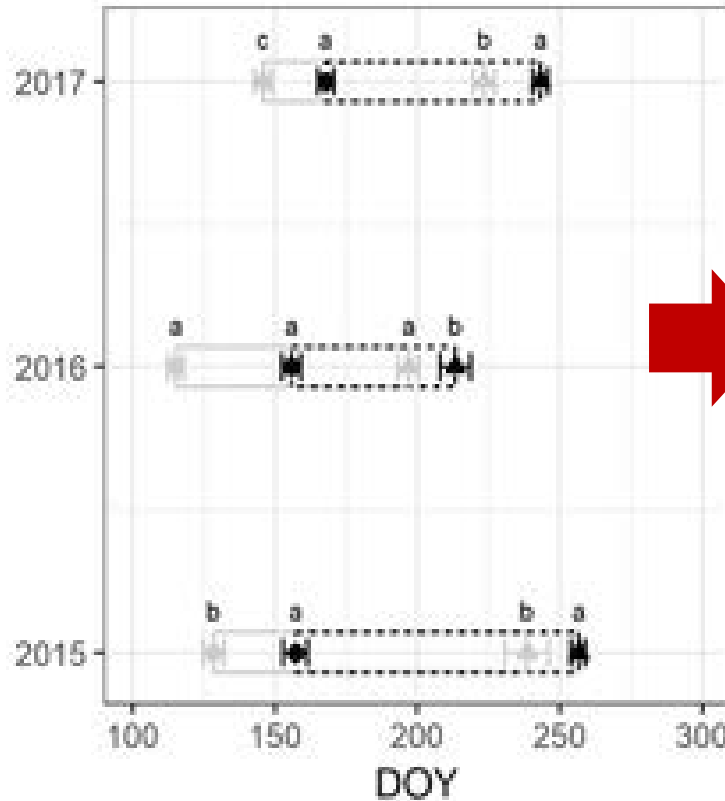
ESb: Stem CO₂ Efflux related with Maintenance respiration

- Cambial activity, radial growth, and stem C efflux were affected only by the spring late frost.
- Even though late spring frost had a devastating impact on beech physiology in the current year, trees fully recovered in the following growing season, indicating high resilience of beech to this stressful event.



Thank you

Radial growth



$$ES_{nw} \equiv ESb = ES_{15nw} \times Q_{10nw}^{\frac{(T_{air}-15)}{10}}$$

$$ES_w = ES_{15w} \times Q_{10w}^{\frac{(T_{air}-15)}{10}}$$

$$ESg = ES_w - ESb$$