Different water uptake strategies of oak and beach trees driven by ecohydrological controls

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Research questions and hypotheses

How does landscape position affect the spatial and temporal patterns of tree water use?

How do two co-occuring species with different physiological sensitivity respond to a variable water supply over the growing season?

beech
(Fagus sylvatica)

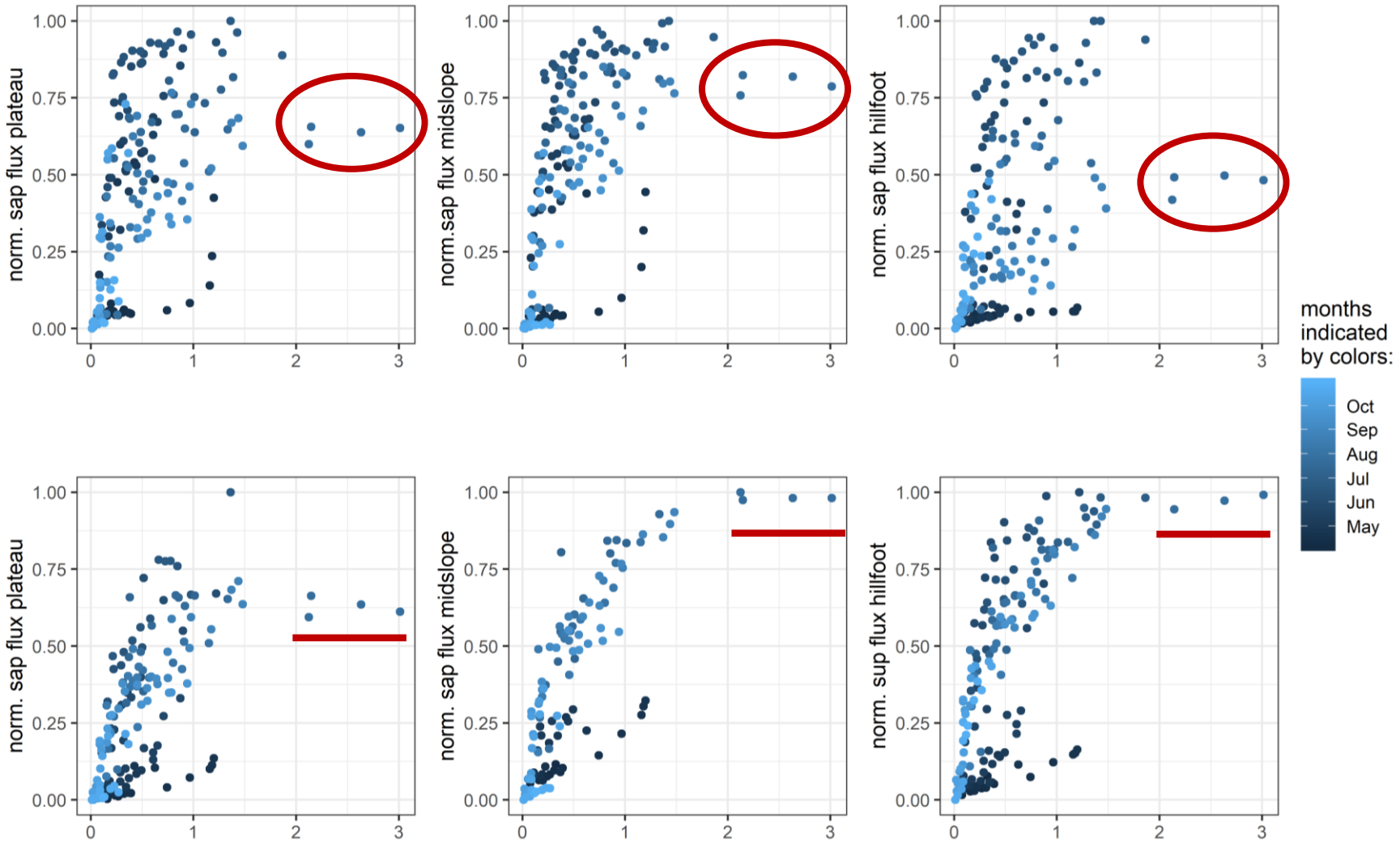
oak
(Quercus petraea)

We test the hypothesis that the physiological response of oak and beech trees along a hillslope in a temperate forest is dependent on different water exploitation strategies.

Relationship between normalised daily maximum sap flux and daily average VPD

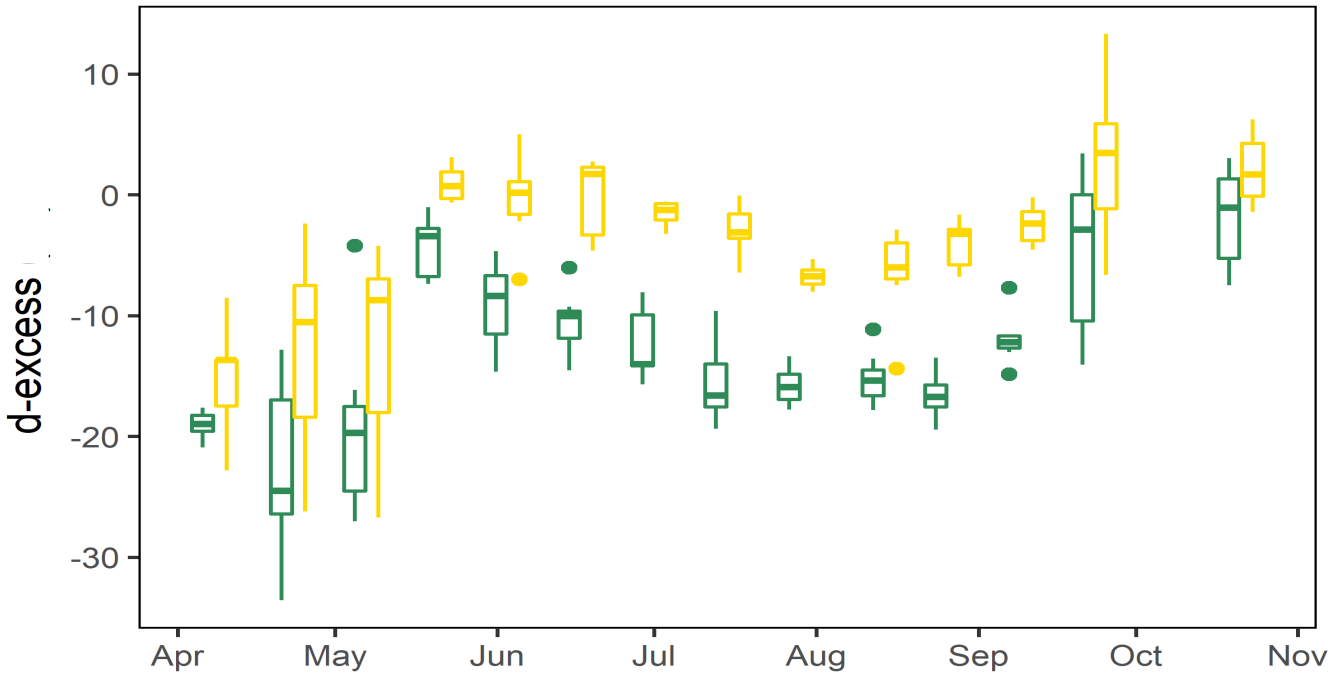
Beech

Oak



different sensitivity to vapour pressure deficit

Boxplots of xylem water deuterium-excess grouped by species



different xylem isotopic composition

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different water use

Agreement with root architecture studies:

Fagus syvatica: shallow rooted

Quercus petraea: deep rooted

Thank you!

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