

Rationale

Elevated CO₂ (eCO₂) might affect soil water content (through increasing water use efficiency) and the amount of carbohydrates exuded by roots (resulting from higher photosynthetic rates), factors that could modify CH₄ production and consumption in soils and in the stems. However, the effect of eCO₂ on *temporal and spatial variability* of CH₄ stem fluxes has never been studied before.

Hypothesis

- Stem fluxes presented a clear temporal pattern
- CH₄ fluxes decreased with stem height
- eCO₂ affect stem CH₄ fluxes

Materials and methods

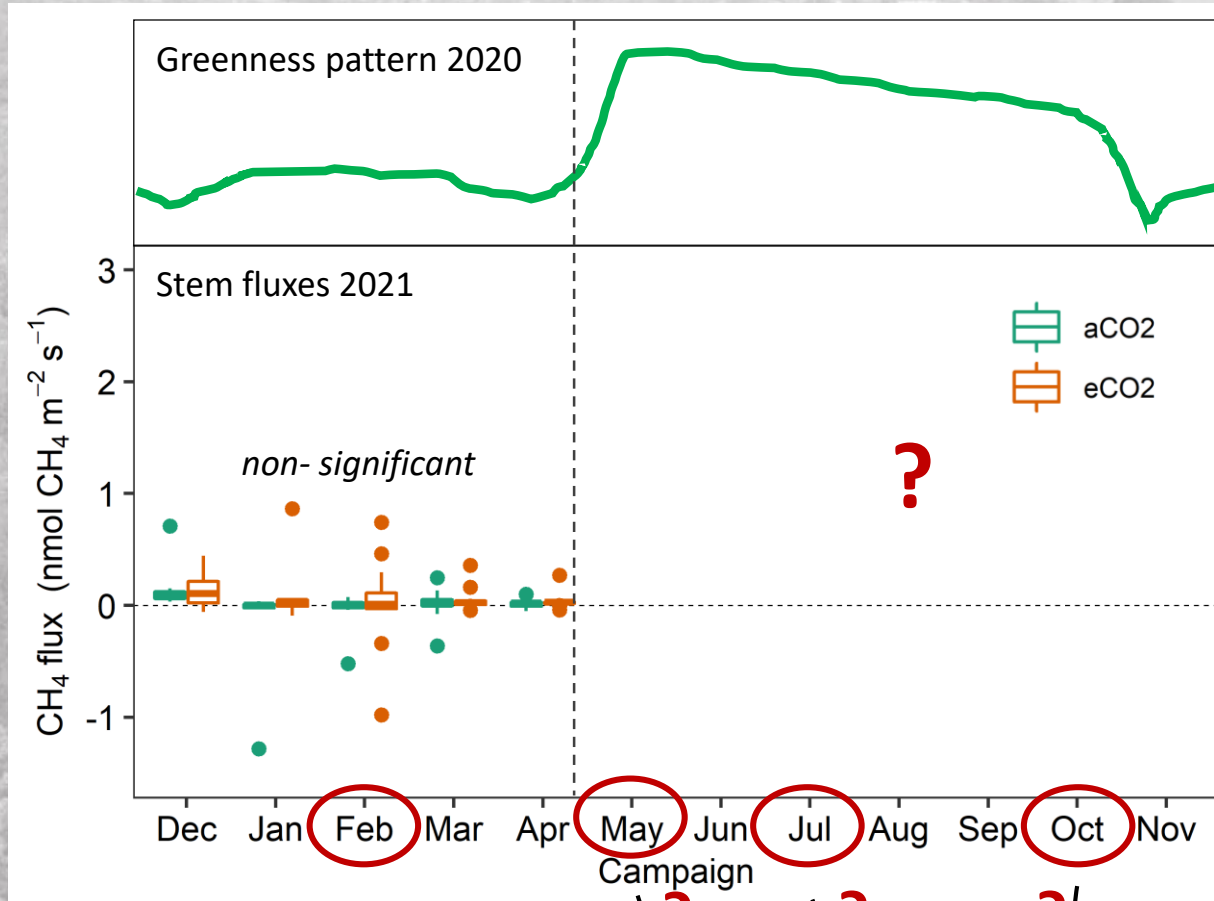
- BIFoR FACE, temperate forest, UK
- Ambient (aCO₂) and +150ppm (eCO₂)
- *Quercus robur* (15 trees under eCO₂ and 15 under aCO₂)

Gas analyser: M-GGA-918, Los Gatos

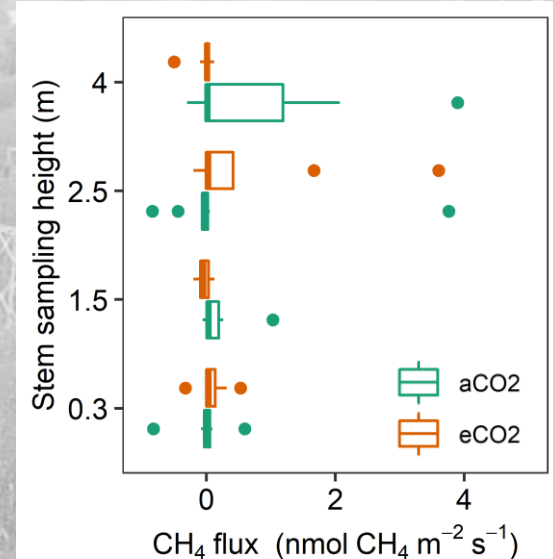
Monthly campaigns -> measurements at 0.7 m

Seasonal campaigns -> measurements at 0.3, 0.7, 1.5, 2.5 and 4 m

Stem CH₄ fluxes – temporal pattern (Dec'20 – Apr'21)



Stem CH₄ fluxes vertical pattern (Feb'21)



- No vertical pattern
- No differences between aCO₂ and eCO₂

Are temporal and spatial patterns of stem CH₄ fluxes going to change during the growing season?