co-carbon

Urban grasslands

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Background

Urban grasslands are predominant in cities but:

- Lack of information regarding the urban grassland CO_2 budget
- Maintenance practices – impact on CO_2 flux?
- Transformation from a lawn to a meadow – impact on GHG fluxes?

1. Study over a lawn

By Joyson Ahongshangbam

In Otaniemi, Espoo

OBJECTIVE:

- to estimate the annual net CO_2 budget of an urban lawn
- to understand the effect of construction practices and maintenance on CO_2 sequestration

Figure 1. Eddy Covariance setup in Otaniemi, Espoo. © Joyson Ahongshangbam

Results

1

2

NOT YET AVAILABLE

2. Lawns & meadows

By Justine Trémeau

Around Helsinki Metropolitan Area

OBJECTIVE:

- to compare annual CO_2 budget of urban lawns and meadows and GHG emissions in a conversion process
- to estimate the resistance of urban grasslands under extreme drought events

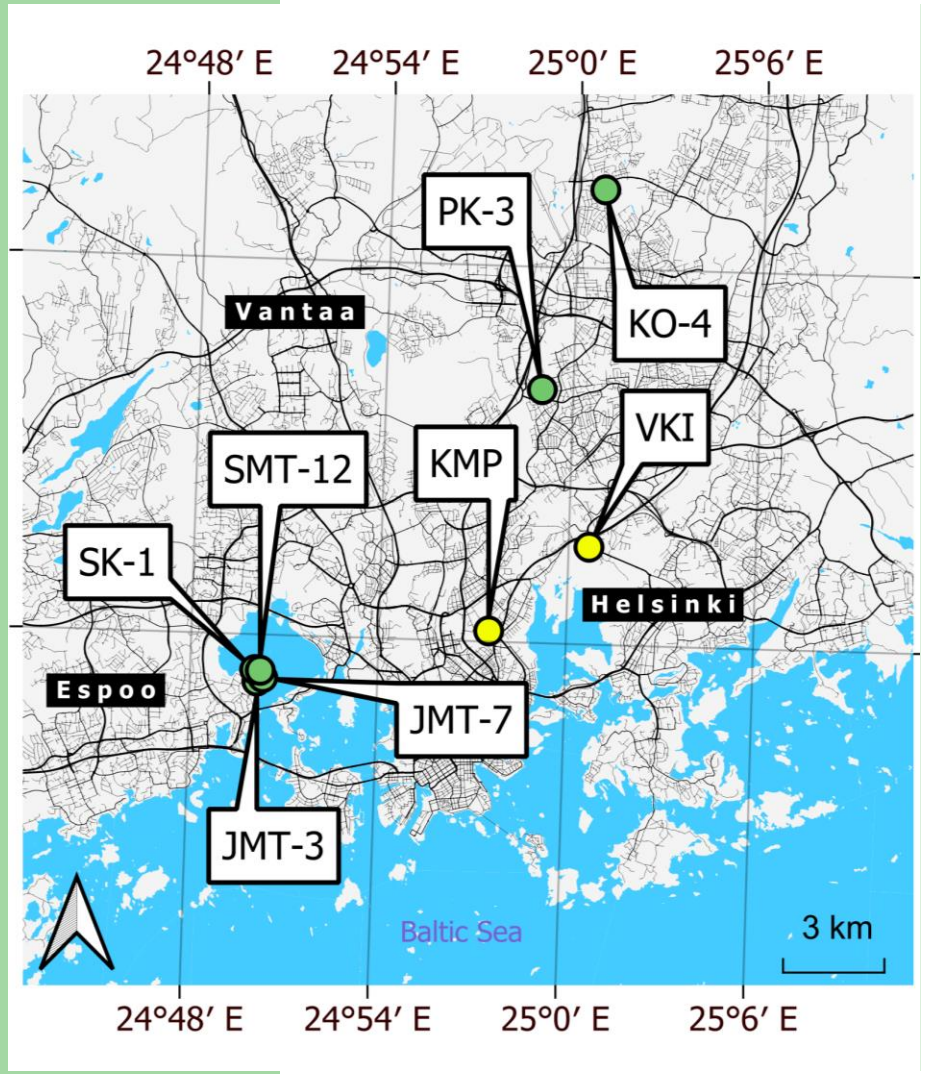

Figure 4. Study sites around Helsinki Metropolitan Area. @ Esko Karvinen

Results

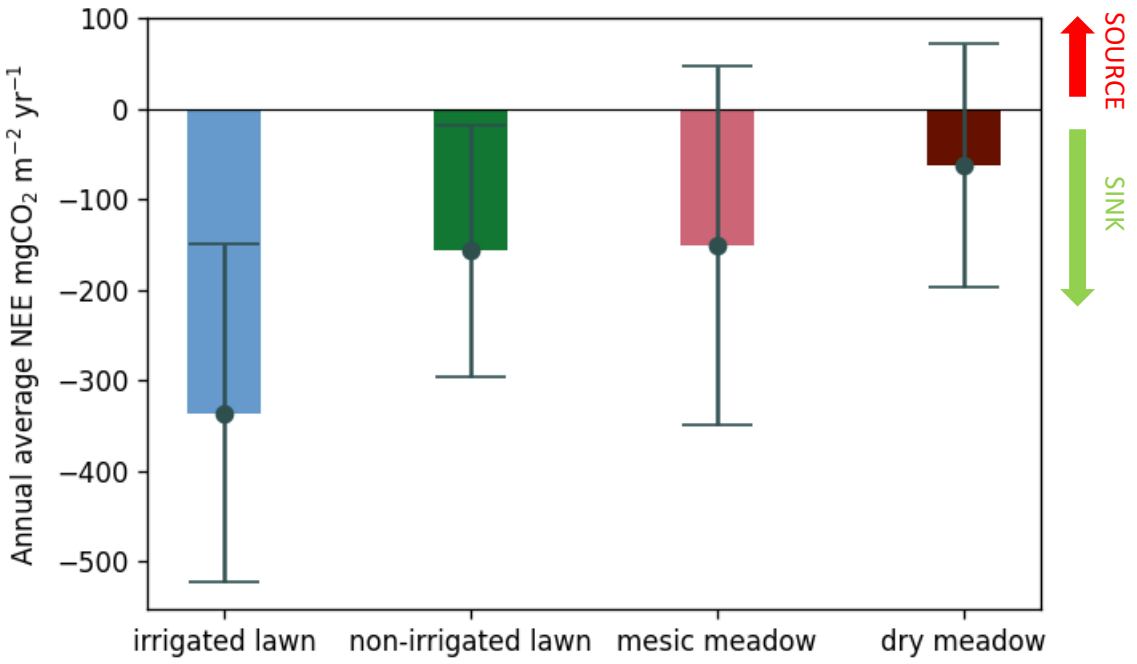

Figure 5. Mean annual (± standard deviations calculated for 2005–2022) of net ecosystem exchange (NEE) modeled with JSBACH at the four intensive sites during the years 2005–2022. © Leif Backman

1

No significant differences
in GHG emissions between lawns and meadows
after conversion.

2

Urban grasslands are mainly sink 63–336 gCO_2 m^{-2} yr^{-1}
Lawns are clear sink vs meadows are more unstable.

3

Meadows are more resistant
to extreme drought events than unirrigated lawns.

Justine Trémeau, Beñat Olascoaga, Leif Backman, Esko Karvinen, Henriikka Vekuri, and Liisa Kulmala. (2023). *Lawns and meadows in urban green space – A comparison from greenhouse gas, drought resilience and biodiversity perspectives*

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Conclusion

- Lawn are acting as sink, whereas meadows are more instable in the long run
- Converting a lawn into a meadow does not imply more GHG emissions at least in the first two years
- Meadows are more resistant to extreme drought events than lawns

-> do not hesitate to transform a lawn into a meadow

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Thank you!

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