

Supplementary information

Global atmospheric methane uptake by upland tree woody surfaces

In the format provided by the authors and unedited

Supplementary Information Guide.

Supplementary Table. Table S1. Summary of studies measuring tree stem CH₄ fluxes in upland (free-drained soil) boreal, temperate and tropical ecosystems. Page 1

Supplementary Acknowledgments. Acknowledgements for CTFs/ForestGeo site data use. Page 2.

Supplementary References. Page 4

Table S1

Summary of studies measuring tree stem CH₄ fluxes in upland (free-drained soil) boreal, temperate and tropical ecosystems. Most of the studies reporting mean net emissions also presented CH₄ uptake by tree stems, but this is rarely discussed.

Reference	Climatic region	Reported uptake	Discussed uptake	Measurement height	Tree species	Num of trees	Notes
This study	Boreal, Temperate, Tropical	Yes	Yes	20, 30, 60, 75, 100, 130, 140, 180, 200 cm*	Multiple	274	Not all stem heights were measured in all trees and locations
Sundqvist et al., 2012	Boreal	Yes	Yes	NA	Multiple (4 species)	7	Fluxes measured on branches with leaves Mean flux: -10.9 µg m ⁻² h ⁻¹
Machacova et al., 2016	Boreal	Yes	No	20 cm	<i>Pinus sylvestris</i>	12	
Wang et al., 2016	Temperate	No	-	50, 130, 230, 450 cm	Multiple (3 species)	NA	
Pitz et al., 2017	Temperate	Yes	No	45 cm	Multiple (7 species)	17	Mean uptake: -1.09 µg m ⁻² h ⁻¹ 9% of measurements were uptake
Warner et al., 2017	Temperate	Yes	No	140 cm	Multiple (6 species)	16	
Wang et al., 2017	Temperate	No	-	150cm	<i>Populus davidiana</i>	15	
Welch et al., 2018	Tropical	Yes	No	30 cm	Multiple (2 species)	24	
Pitz et al., 2018	Temperate	Yes	No	45 cm	Multiple (7 species)	19	
Maier et al., 2018	Temperate	No	-	40, 120, 200 cm	<i>Fagus sylvatica</i>	10	
Plain et al., 2019	Temperate	No	-	25 cm	<i>Quercus petraea</i>	3	
Barba et al., 2019	Temperate	Yes	No	75, 150 cm	<i>Carya cordiformis</i>	1	
Vainio., 2019	Boreal	Yes	No	20 - 730 cm	Multiple (3 species)	17	
Schindler et al., 2020	Temperate	No	-	0, 80, 170 cm	<i>Alnus incana</i>	13	
Flanagan et al., 2020	Temperate	No	-	50 cm	Multiple (2 species)	5	
Iddris, 2020	Tropical	No	-	130 cm	Multiple (NA)	144	
Megonigal et al., 2020	Temperate	No	-	NA	Multiple (3 species)	11	
Machacova et al., 2020	Tropical	Yes	Yes	40, 110, 182 cm	Multiple (6 species)	24	Mean flux: -15.6 ± 2.02 µg m ⁻² h ⁻¹
Barba et al., 2021	Temperate	Yes	No	50, 100, 150 cm	<i>Carya cordiformis</i>	18	20% of measurements were uptake
Moldaschl et al., 2021	Temperate	Yes	No	30, 160, 360 cm	<i>Fraxinus excelsior</i>	6	Flux range: -1.08 to 1.34 µg m ⁻² h ⁻¹ (non-flooded plots)
Plain et al., 2021	Temperate	No	-	20 cm	Multiple (2 species)	2	
Bréchet et al., 2021	Tropical	Yes	No	130 cm	<i>Eperua falcata</i>	1	
Feng et al., 2022	Subtropical	No	na	50, 100, 150 cm	<i>Populus deltoides</i> x <i>P. euramericana</i>	12	
Han et al. 2022	Subtropical / temperate	No	na	50, 100, 150 cm	Multiple (2 species)	24	Flux range: 1.12 to 1357.01 µg m ⁻² h ⁻¹
Warren et el., 2022	Tropical	Yes	No	130 cm	Multiple	20	Median flux and quartiles: -4.08 (11.76, -13.48) µg m ⁻² h ⁻¹
Vainio et al., 2022	Boreal	Yes	No	30, 350, 750 cm	<i>Betula pubescens</i>	1	
Epron et., 2023	Temperate	No	na	80, 160, 350 cm	Multiple (5 species)	10	Flux range: 0 to 13.32 µg m ⁻² h ⁻¹
Machacova et al., 2023	Temperate	Yes	No	40, 120, 200 cm	<i>Fagus sylvatica</i>	20	Flux range: -4.37 and 173.97 µg m ⁻² h ⁻¹

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