

Inclination controls CO₂ and N₂O fluxes, but not CH₄ uptake, from a temperate upland forest soil – Supplementary material

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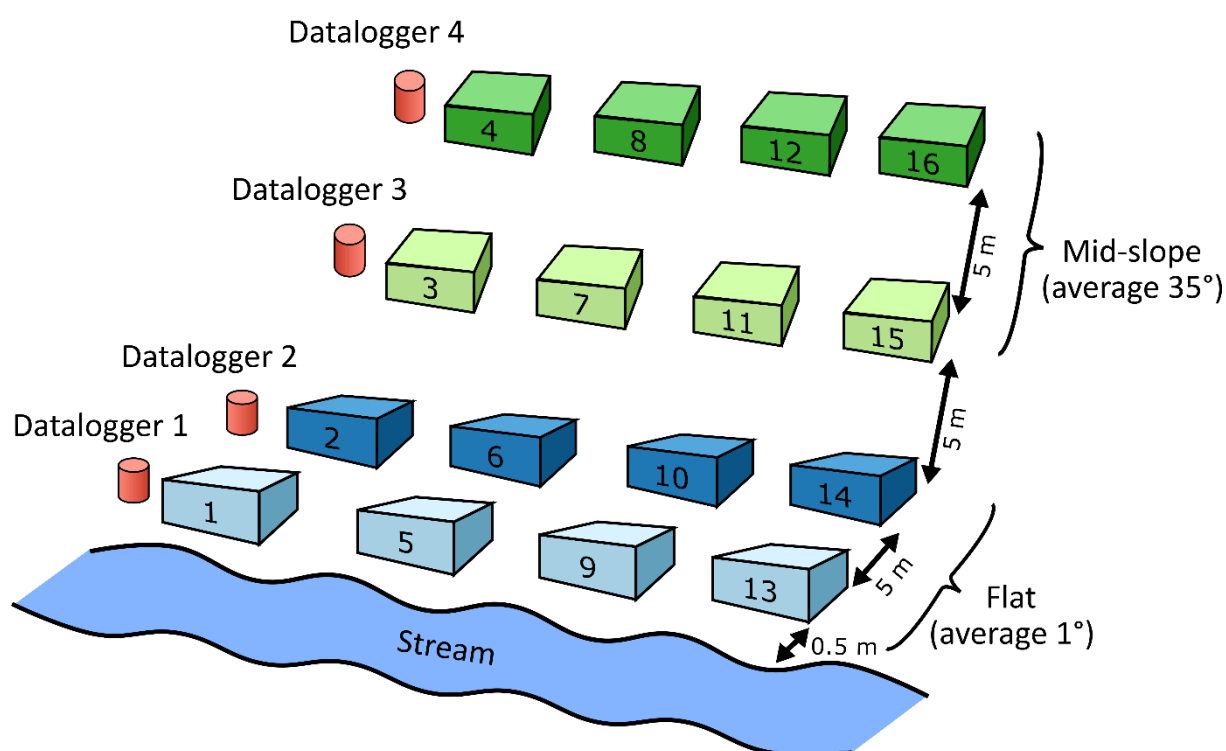


Figure S1: Schematic overview of the experimental setup at Rosalia, with 4x4 replicates at 0.5 m (chambers 1, 5, 9, and 13), termed Chamber Group 0.5 (CG0.5); 5 m (chambers 2, 6, 10, and 14), termed Chamber Group 5 (CG5); 10 m (chambers 3, 7, 11, and 15), termed Chamber Group 10 (CG10); and 15 m (chambers 4, 8, 12, and 16), termed Chamber Group 15 (CG15) away from the stream. Datalogger 1 was placed at the stream, followed by dataloggers 2, 3,

23 and 4 at distances 5 m, 10 m, and 15 m from the stream, respectively. Chambers 3 and 4 the
24 showed an inclination of 31° , chambers 7 and 8 of 34° , chambers 11 and 12 of 35° , and
25 chambers 15 and 16 of 36° . For the flat chambers, the slope did not exceed 2° .

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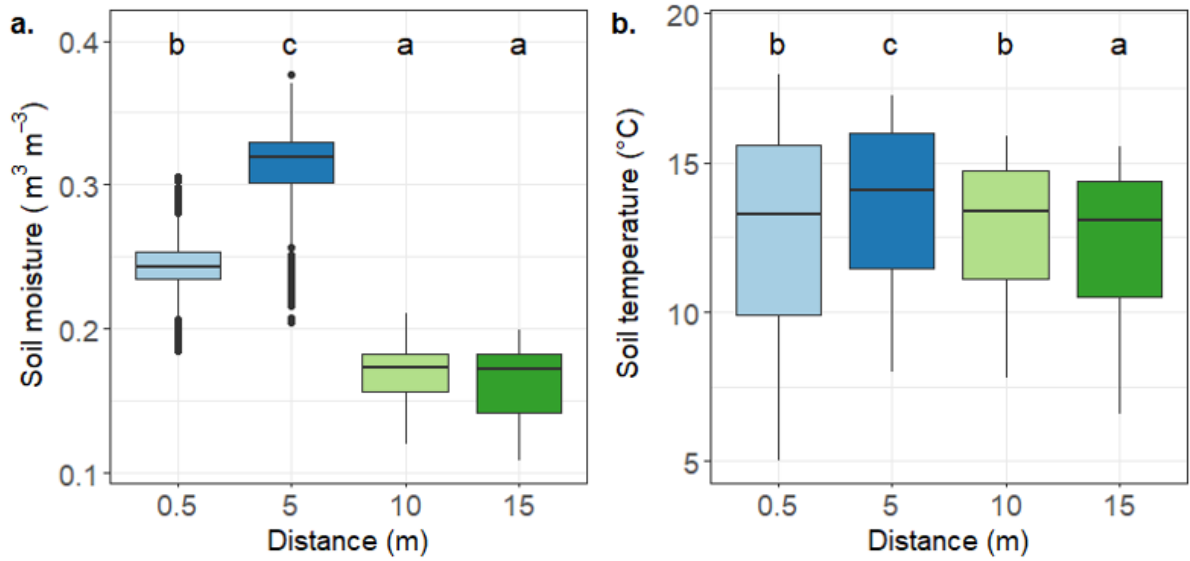


Figure S2: Boxplots of soil moisture ($\text{m}^3 \text{m}^{-3}$) and soil temperature ($^{\circ}\text{C}$) at the different distances (m) from the stream, with flat locations 0.5 m and 5 m away from the stream indicated in light and dark blue, and sloped locations 10 m and 15 m away from the stream indicated in light and dark green. Letters indicate differences between distances (Dunn multiple comparison test after Kruskal–Wallis test, $p < 0.05$; Kruskal–Wallis results were significant, i.e., $p < 0.05$, for both soil moisture and soil temperature).

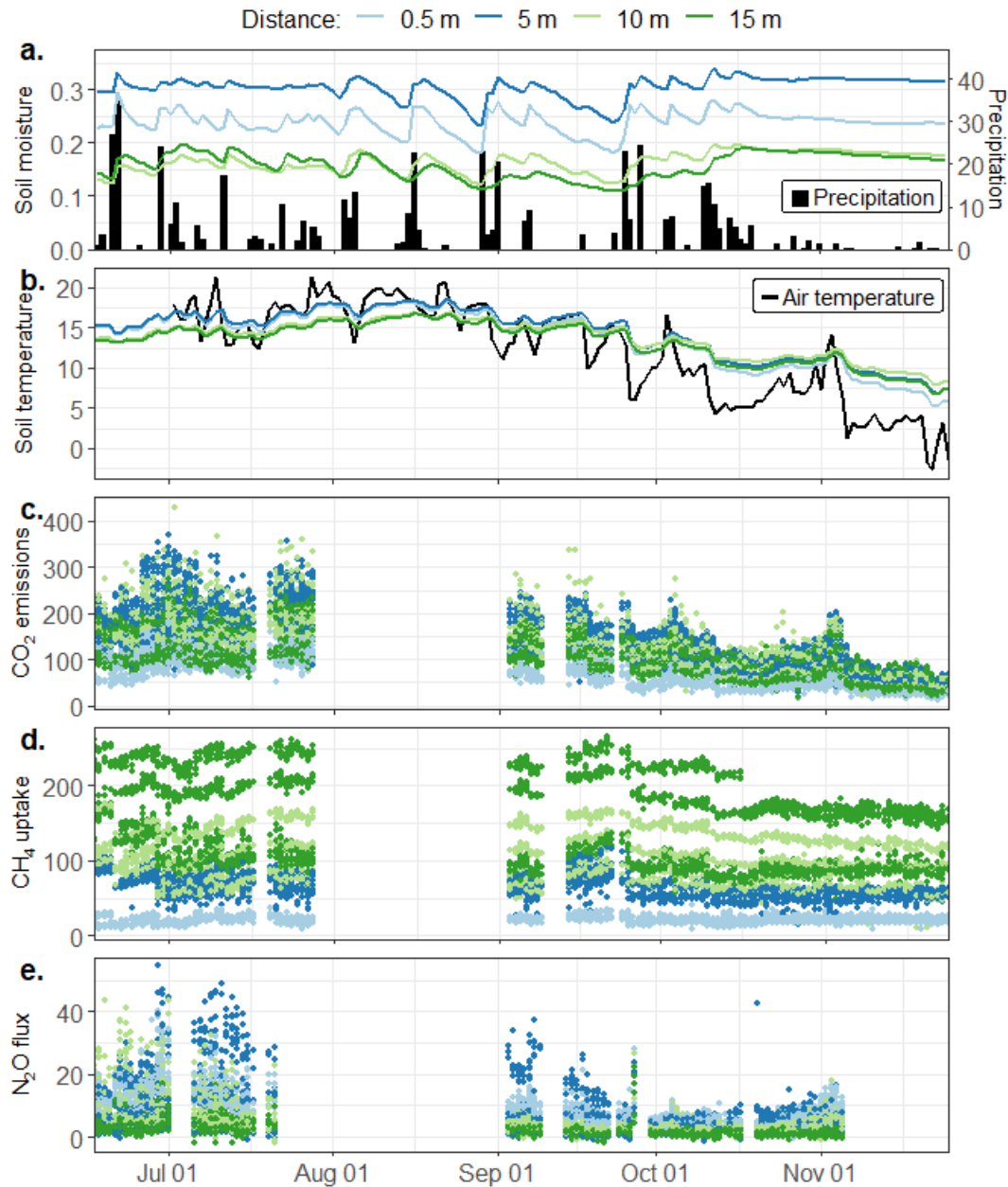


Figure S3: Temporal overview of **a.** soil moisture ($\text{m}^3 \text{m}^{-3}$; coloured lines) and total daily precipitation (mm; black bars), **b.** soil temperature ($^{\circ}\text{C}$; coloured lines) and daily average air temperature ($^{\circ}\text{C}$; black line), **c.** CO_2 emissions ($\text{mg CO}_2\text{-C m}^{-2} \text{h}^{-1}$), **d.** CH_4 uptake ($\mu\text{g CH}_4\text{-C m}^{-2} \text{h}^{-1}$), and **e.** N_2O fluxes ($\mu\text{g N}_2\text{O-N m}^{-2} \text{h}^{-1}$) measured in 2020. The colours represent the four distances from the stream: light blue = 0.5 m, dark blue = 5 m, light green = 10 m, and dark green = 15 m. Blue and green colours also represent the flat locations and sloped locations, respectively.

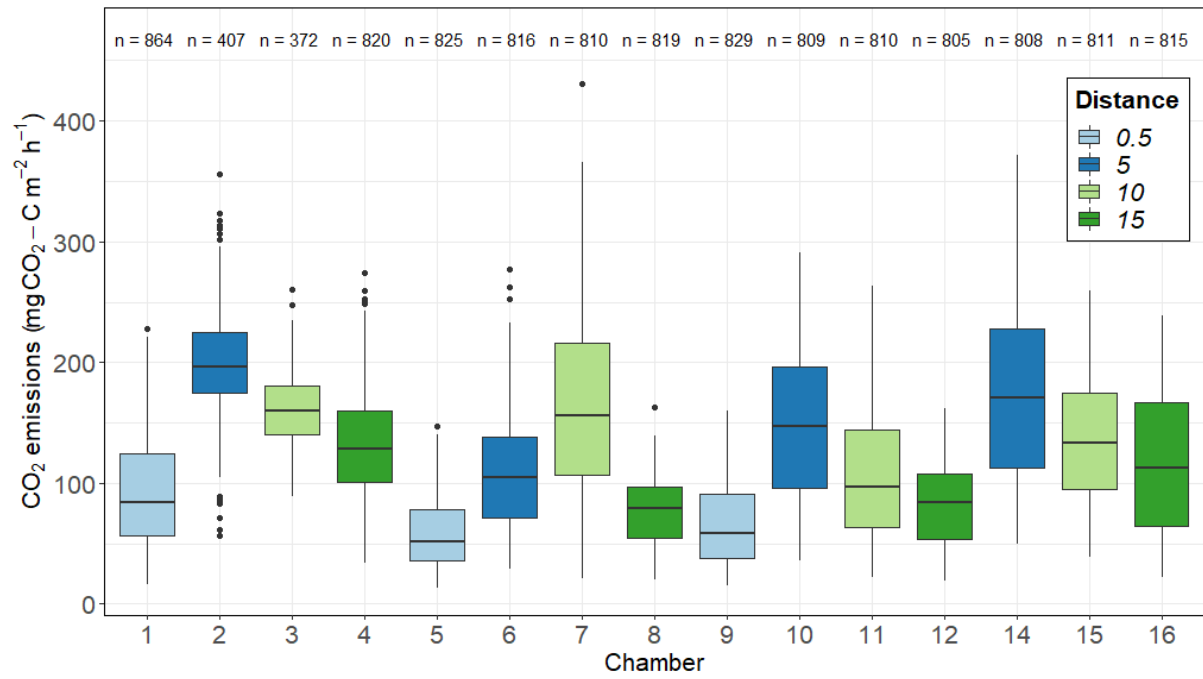


Figure S4: Average CO₂ emission rate (n=11,420) by chamber. Light and dark blue represent flat locations (0.5 m and 5 m from the stream), and light and dark green represent mid-slope locations (10 m and 15 m from the stream). Numbers above the boxplots indicate the number of observations (n).

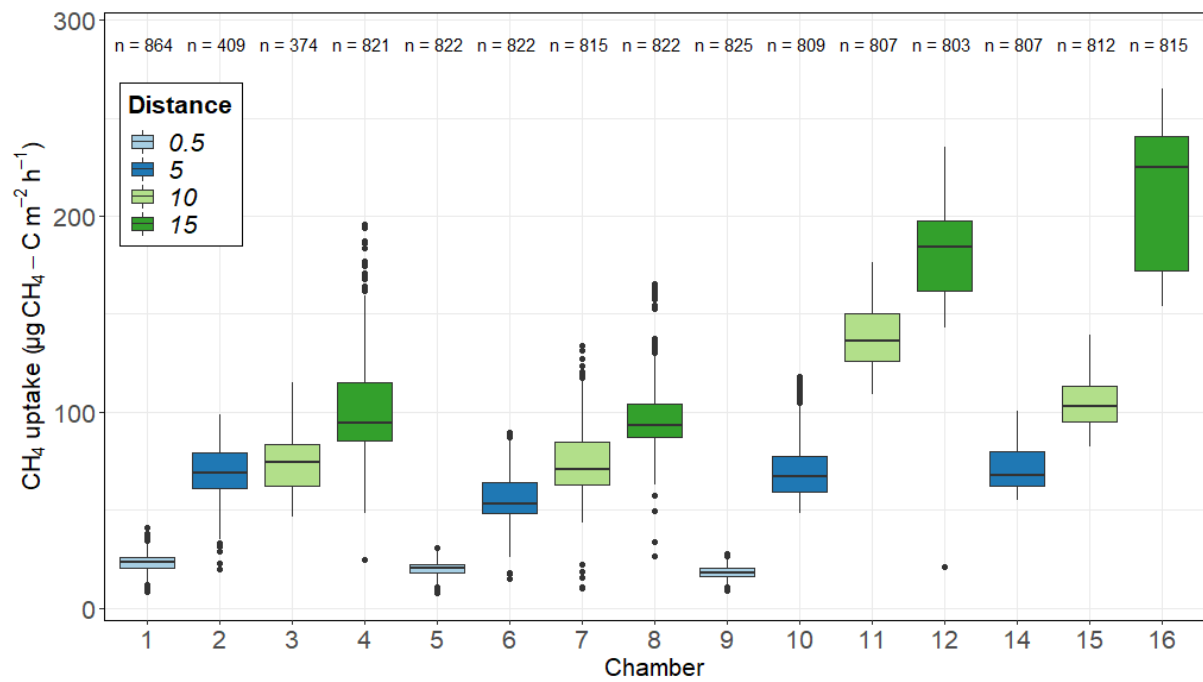


Figure S5: Average CH₄ uptake rates (n=11,427) by chamber. Light and dark blue represent flat locations (0.5 m and 5 m from the stream), and light and dark green represent mid-slope locations (10 m and 15 m from the stream). Numbers above the boxplots indicate the number of observations (n).

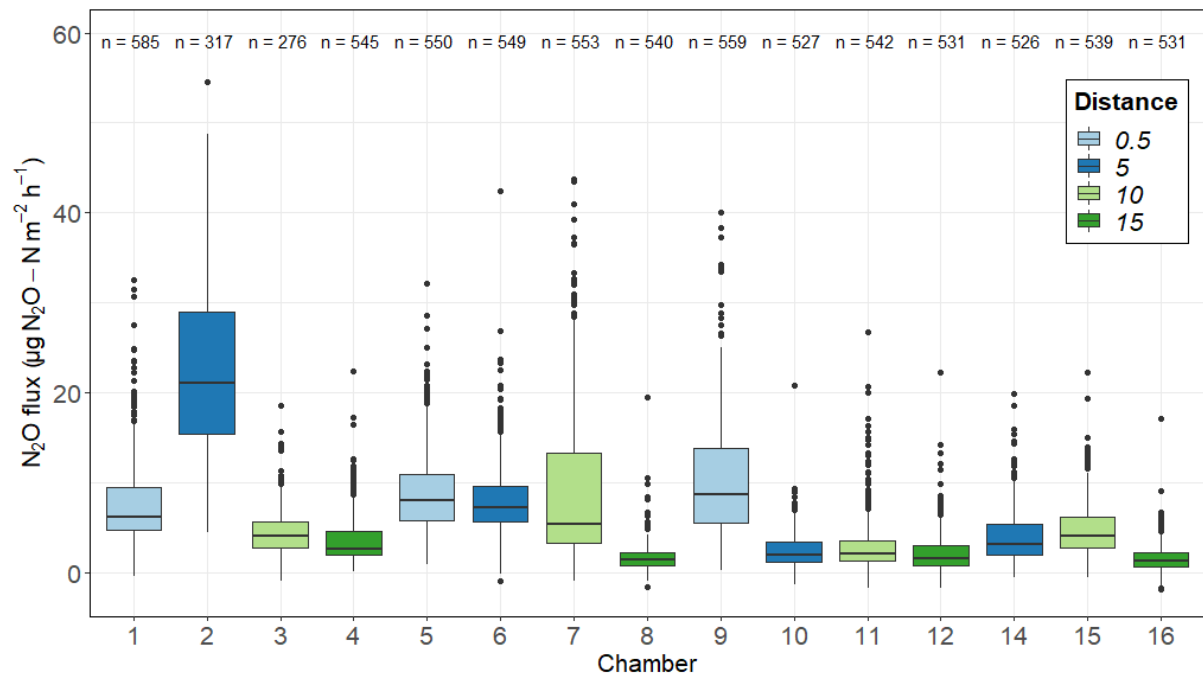


Figure S6: Average N_2O flux rates (n=7,670) by chamber. Light and dark blue represent flat locations (0.5 m and 5 m from the stream), and light and dark green represent mid-slope locations (10 m and 15 m from the stream). Numbers above the boxplots indicate the number of observations (n).