



Supplement of

Responses of dissolved organic carbon to freeze–thaw cycles associated with the changes in microbial activity and soil structure

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Table S1: Basic characteristics of the organic soil collected from the field site of Council, Alaska

| Soil texture | | | BD | VWC | Total C | Total N | DOC | TDN | SUVA ₂₅₄ | A ₂₅₄ /A ₃₆₅ |
|--------------|-------|-------|-----------------------|-------------------------------------|---------------------------|---------|----------------------------|--------|---------------------------------------|------------------------------------|
| Sand | Silt | Clay | | | | | | | | |
| (% w/w) | | | (g cm ⁻³) | (cm ³ cm ⁻³) | (g kg ⁻¹ soil) | | (mg kg ⁻¹ soil) | | (L mg ⁻¹ m ⁻¹) | |
| 34.4 | 57.4 | 8.3 | 0.72 | 0.49 | 259.2 | 11.4 | 688.63 | 39.62 | 1.77 | 4.28 |
| (3.4) | (3.0) | (0.7) | (0.01) | (0.04) | (21.8) | (1.2) | (50.36) | (2.59) | (0.14) | (0.11) |

Note: The numbers in parentheses are standard errors (n=3).

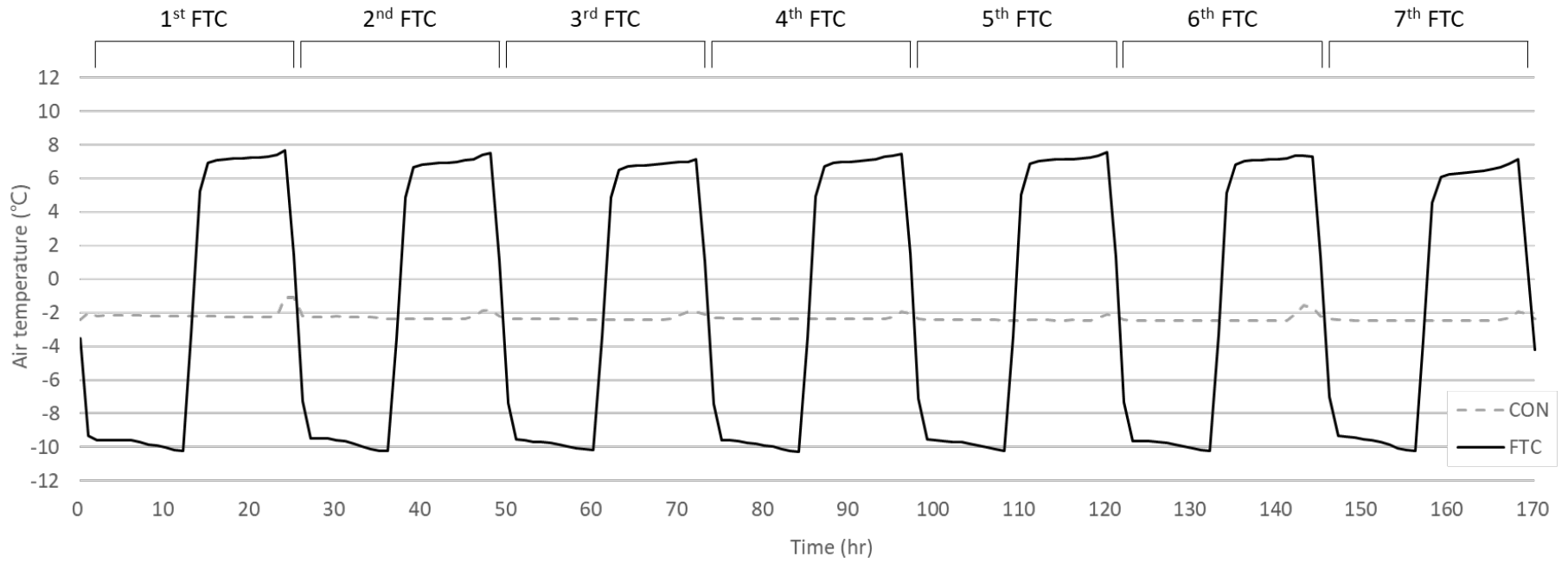


Figure S1. Air temperature during the freeze-thaw cycles (FTCs).

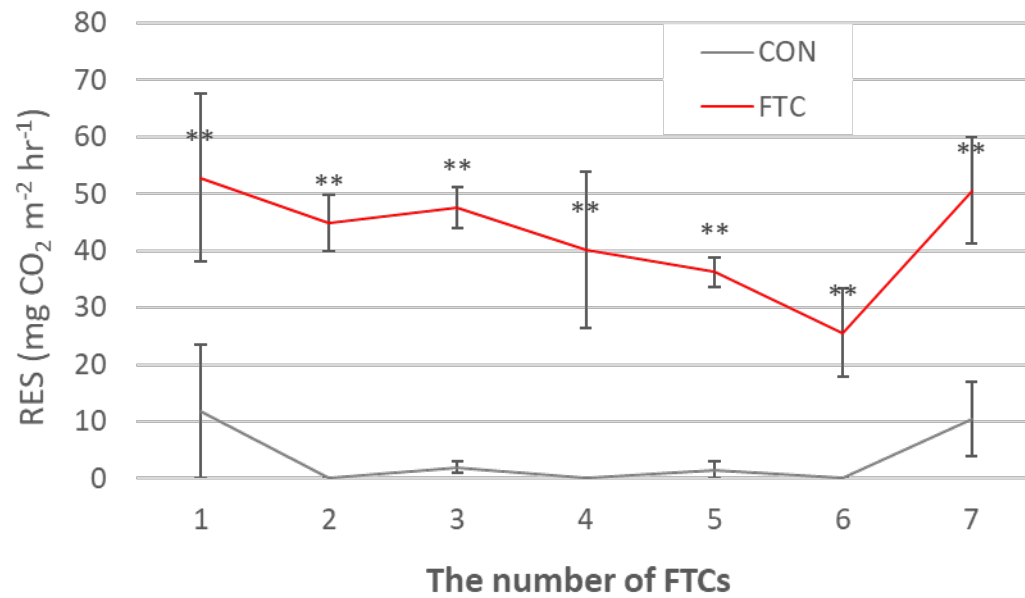


Figure S2: Temporal changes in soil respiration (RES) in the FTC and CON soils. The asterisks ** and * indicate significant differences between treatments at the $p < 0.05$ and $p < 0.10$ levels, respectively. The vertical lines represent standard errors (n=3)

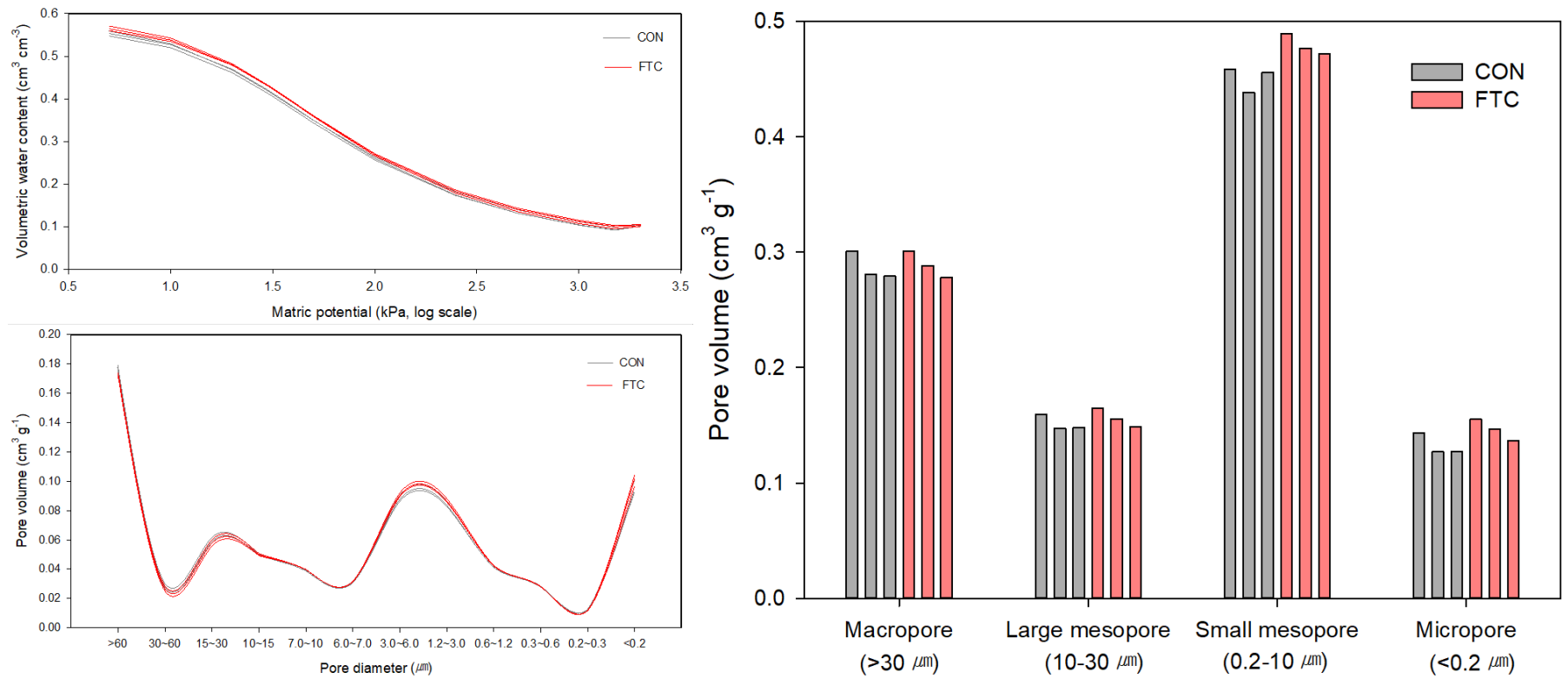


Figure S3. Water release curves and pore size distribution in the FTC and CON soils.