

Supplementary Information

Anaerobic respiration pathways and response to increased substrate availability of Arctic wetland soils

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Table S1. Incubation experimental setup and concentrations of amendments added to each experimental treatment. All microcosms contained 3 g soil (wet weight) and were capped with a thick rubber septum and sealed with an aluminum crimp. The headspace was flushed with N₂ for 10 min before incubation at 8 °C.

Treatment	Amendments	Acetate concentration ^a μmol g ⁻¹	Inhibitor or sulfate concentration ^a μmol g ⁻¹
1	DI water (control)	0	0
2	Sodium acetate	9.2	0
3	Sodium acetate+BES ^b	9.2	7.1
4	Sodium acetate + sodium molybdate	9.2	1.4

Notes:

^a Final concentration in microcosms after amendment based on soil wet weight.

^b BES indicates 2-bromoethanesulfonate.

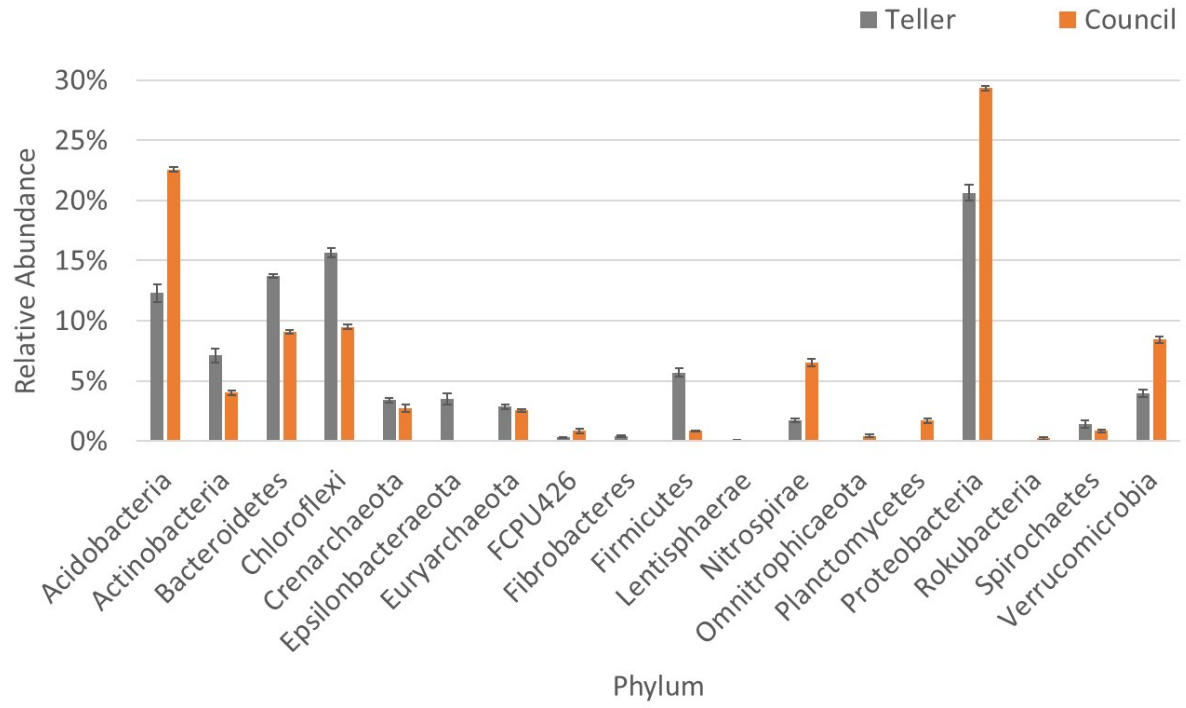


Figure S1. Differences in relative abundance (%) of microbial populations at phylum level in soil samples collected from Teller and Council sites. Error bars indicate the variability among the three technical replicates.

Euryarchaeota Council vs Teller

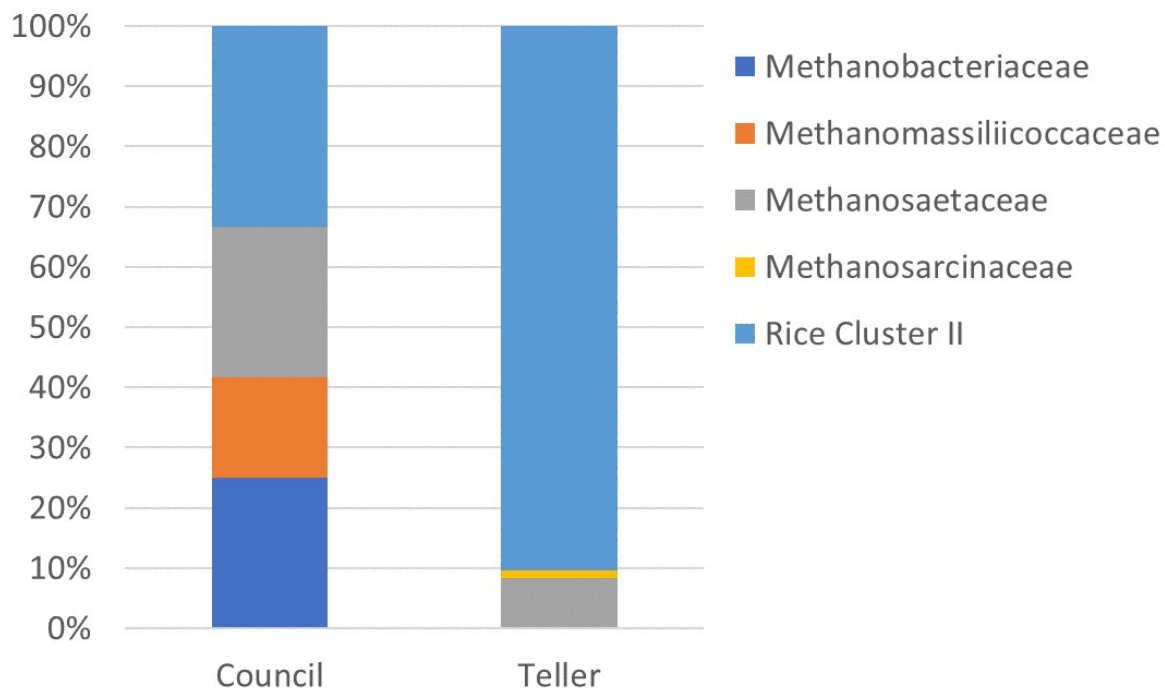


Figure S2. Relative abundance of *Euryarchaeota* in the initial soil communities of the Teller and Council soils.

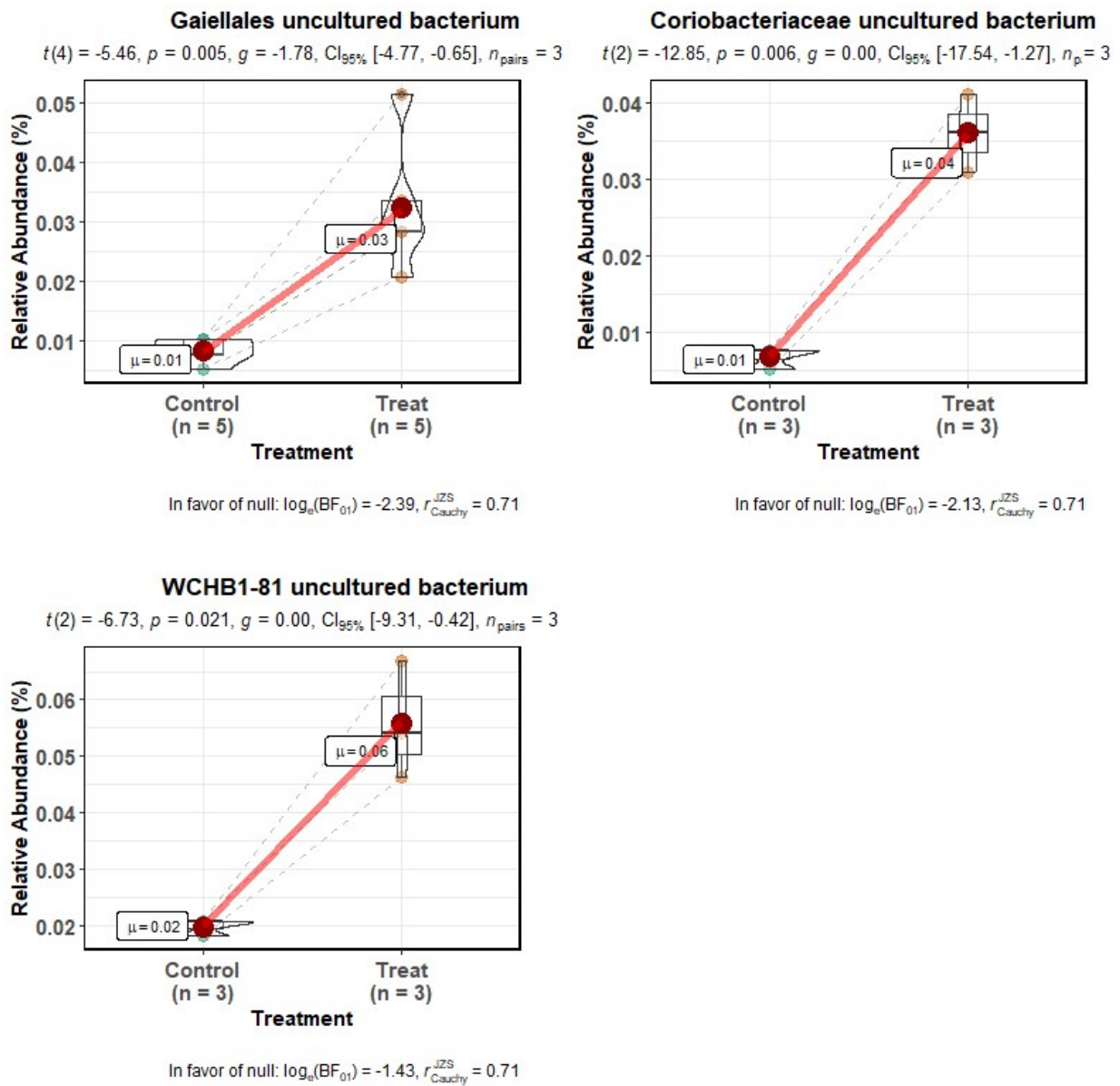


Figure S3. Changes in relative abundance of novel *Actinobacteria* at genus level in Teller soils amended with acetate (Treat) and control soils at Day 60.

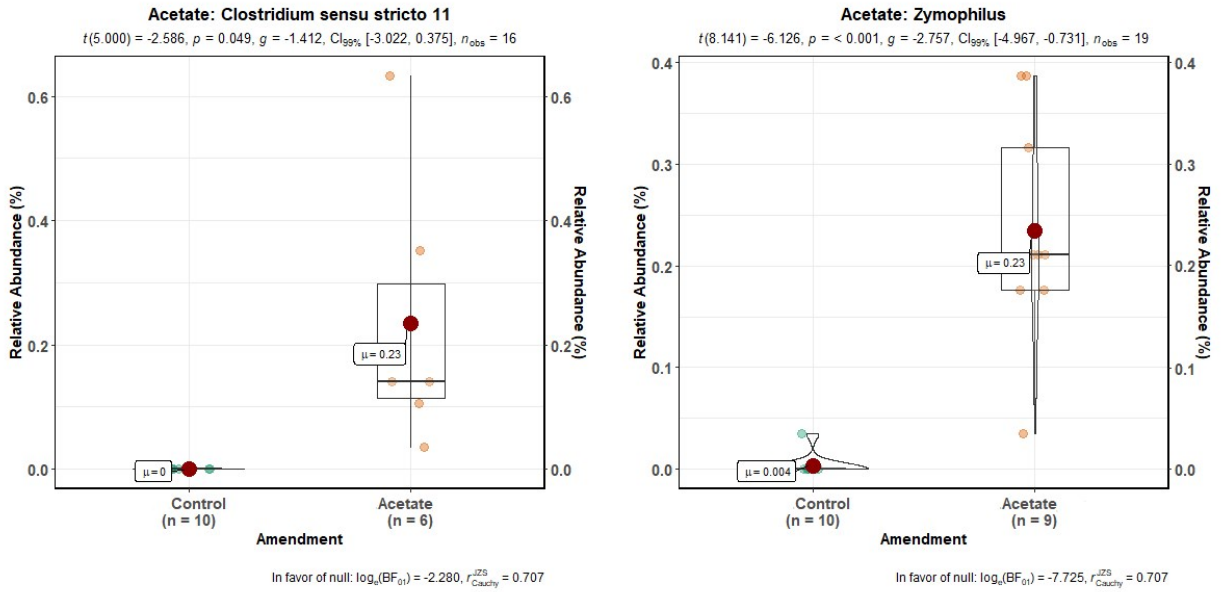


Figure S4. Changes in relative abundance of *Clostridium sensu stricto* 11 and *Zymophilus* in Teller soils amended with acetate and control soils at Day 60.

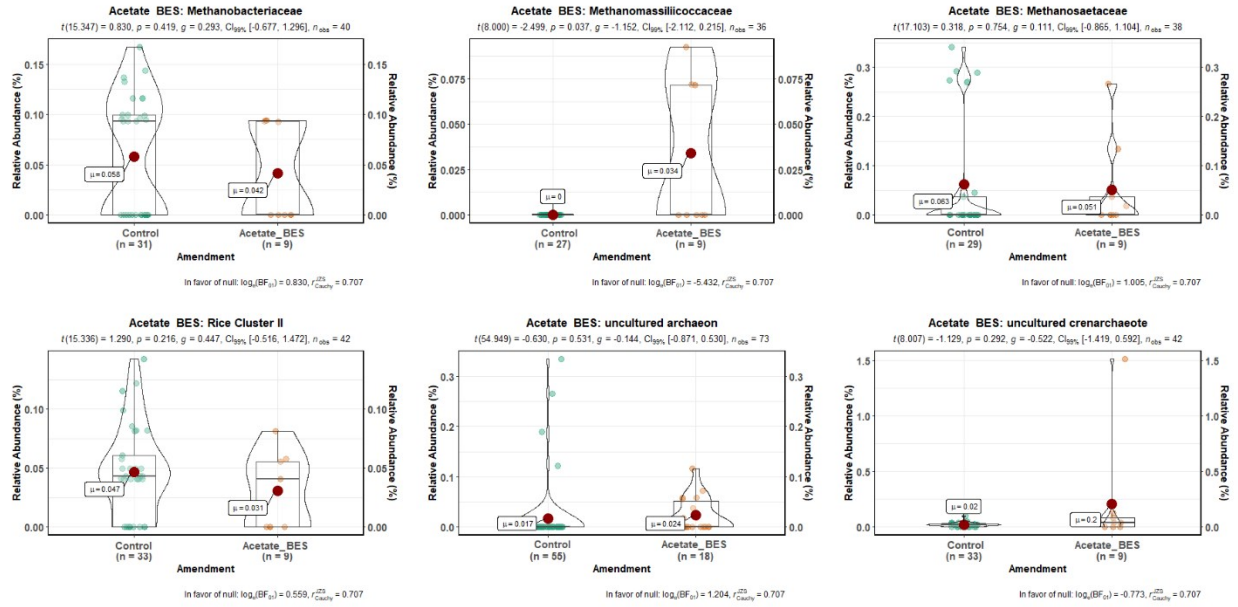


Figure S5. Changes in relative abundance of methanogenic archaea at genus level from acetate and BES added incubation and control soils from Council at Day 60.