Supporting Information to:

The importance of calcium and amorphous silica for Arctic soil CO_2 production

Peter Stimmler [1], Mathias Göckede [2], Susan M. Natali [3], Oliver Sonnentag [4], Benjamin S. Gilfedder [5], Nia Perron [4], Jörg Schaller [1,*]

[1] Centre for Agriculture Landscape Research e.V. (ZALF), Müncheberg, Germany

[2] Max Planck Institute for Biogeochemistry, Jena, Germany

[3] Woodwell Climate Research Center, Falmouth, USA

[4] Département de géographie, Université de Montréal, 1375 Avenue Thérèse-Lavoie-Roux, Montréal, QC H2V 0B3, Canada

[5] Limnological Station, Bayreuth Center of Ecology and Environmental Research (BAYCEER), University of Bayreuth, Bayreuth, Germany

*** Correspondence:**

Jörg Schaller

Joerg.Schaller@zalf.de

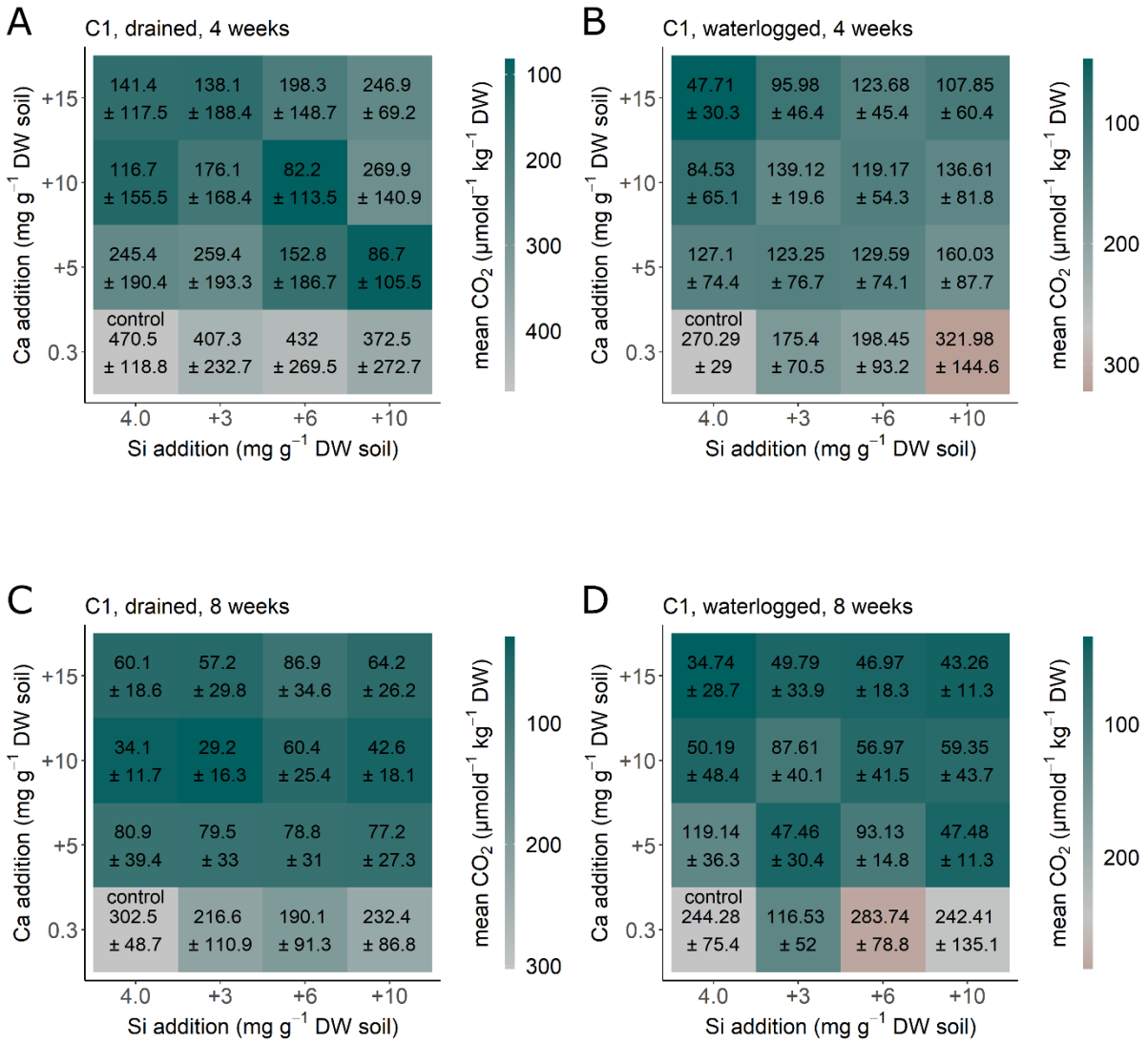

Fig. S1: CO_2 production for the soil from Siberia Chersky C1, NE-Russia after 4 weeks (A+B) and 8 weeks (C+D) under drained (A+C) and waterlogged (B+D) conditions. Each square represents a treatment (n=5) with Si (+0, +3, +6, and +10 mg g^{-1} DW) and Ca (+0, +5, +10, and +15 mg g^{-1} DW). Colour represents differences between the treatment CO_2 production in comparison to the control treatment, with green-blue showing a decreased CO_2 production and red showing an increased CO_2 production in comparison to the control treatment.

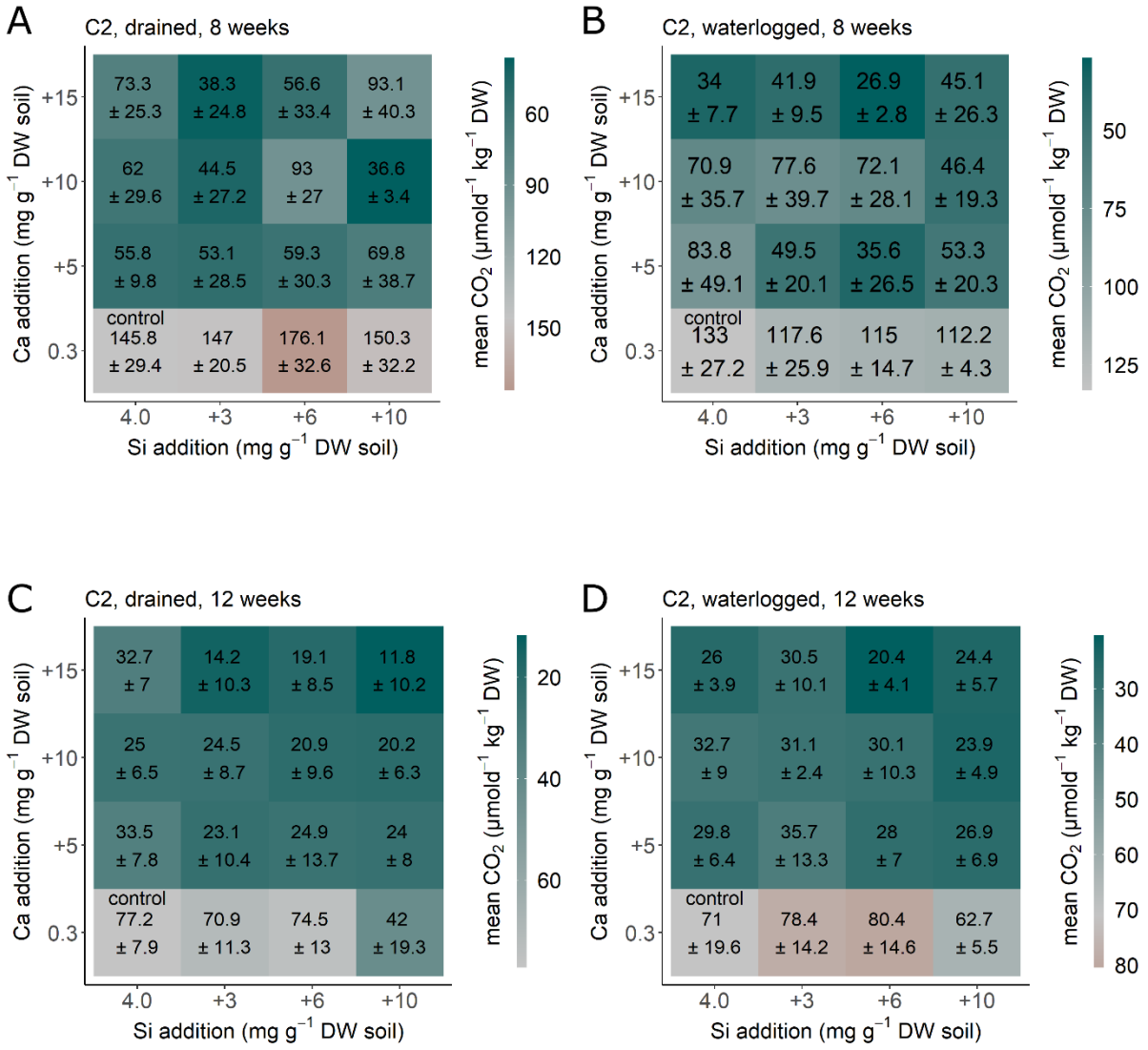

Fig. S2: CO_2 production for the soil from Siberia Chersky C2, NE-Russia after 8 weeks (A+B) and 12 weeks (C+D) under drained (A+C) and waterlogged (B+D) conditions. Each square represents a treatment (n=5) with Si (+0, +3, +6, and +10 mg g^{-1} DW) and Ca (+0, +5, +10, and +15 mg g^{-1} DW). Colour represents differences between the treatment CO_2 production in comparison to the control treatment, with green-blue showing a decreased CO_2 production and red showing an increased CO_2 production in comparison to the control treatment.

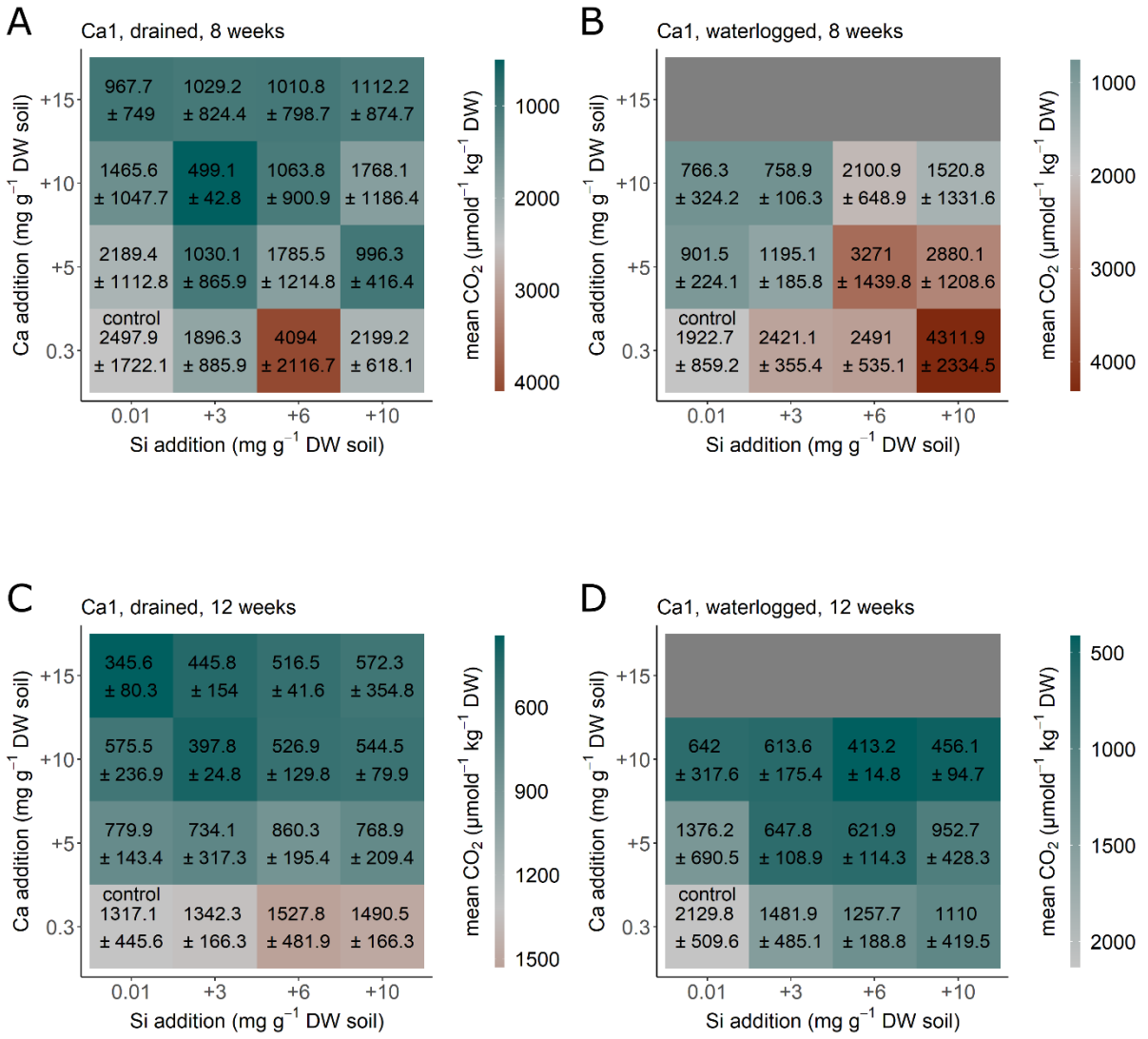

Fig. S3: CO_2 production for the soil Ca1 from the Canadian after 8 weeks (A+B) and 12 weeks (C+D) under drained (A+C) and waterlogged (B+D) conditions. Each square represents a treatment (n=5) with Si (+0, +3, +6, and +10 mg g^{-1} DW) and Ca (+0, +5, +10, and +15 mg g^{-1} DW). Colour represents differences between the treatment CO_2 production in comparison to the control treatment, with green-blue showing a decreased CO_2 production and red showing an increased CO_2 production in comparison to the control treatment.

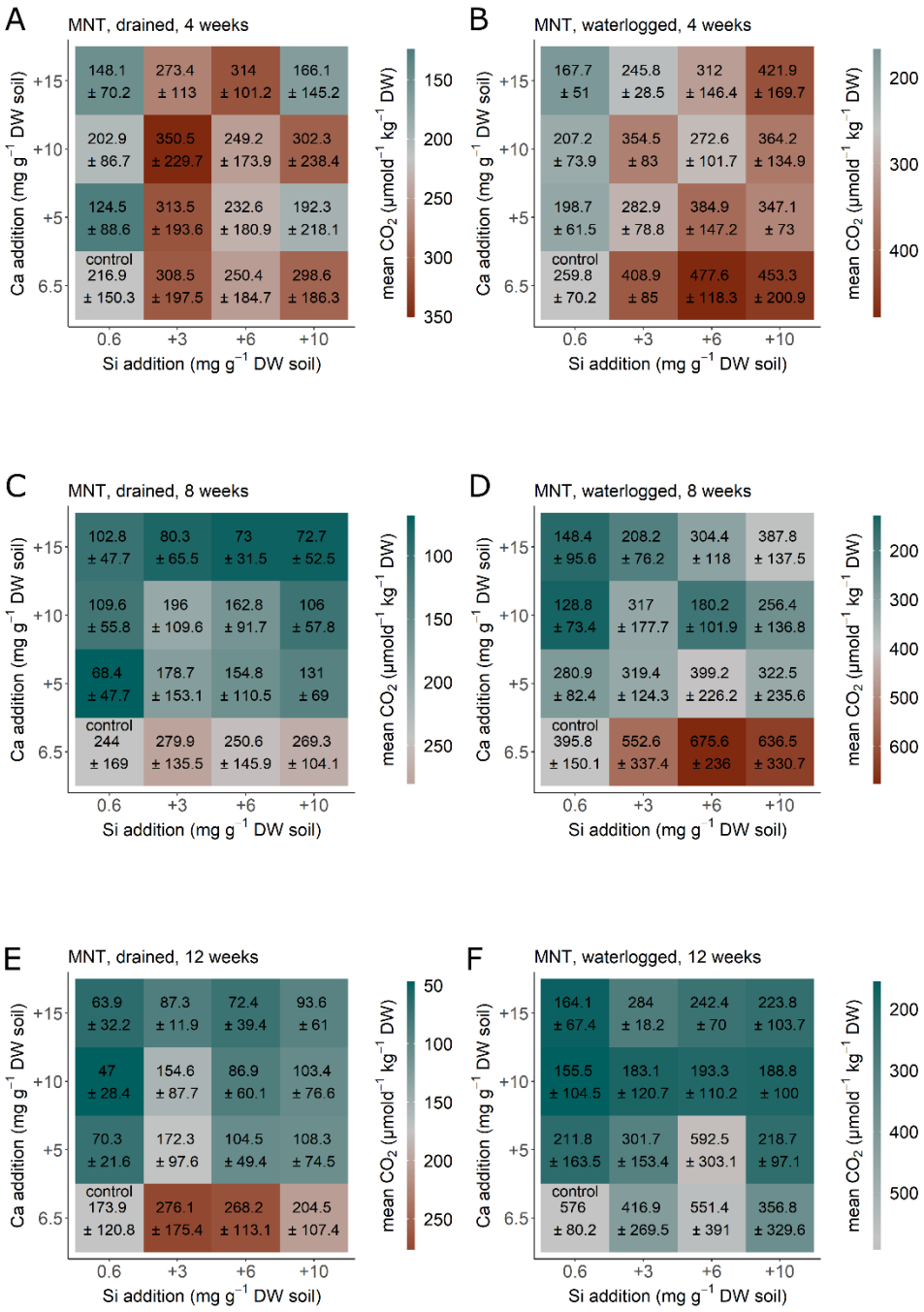

Fig. S4: CO_2 production for the soil from the moist acidic tundra (MAT), Alaska after 4 weeks (A+B), 8 weeks (C+D)and 12 weeks (E+F) under drained (A+C+E) and waterlogged (B+D+F) conditions. Each square represents a treatment (n=5) with Si (+0, +3, +6, and +10 mg g^{-1} DW) and Ca (+0, +5, +10, and +15 mg g^{-1} DW). Colour represents differences between the treatment CO_2 production in comparison to the control treatment, with green-blue showing a decreased CO_2 production and red showing an increased CO_2 production in comparison to the control treatment.

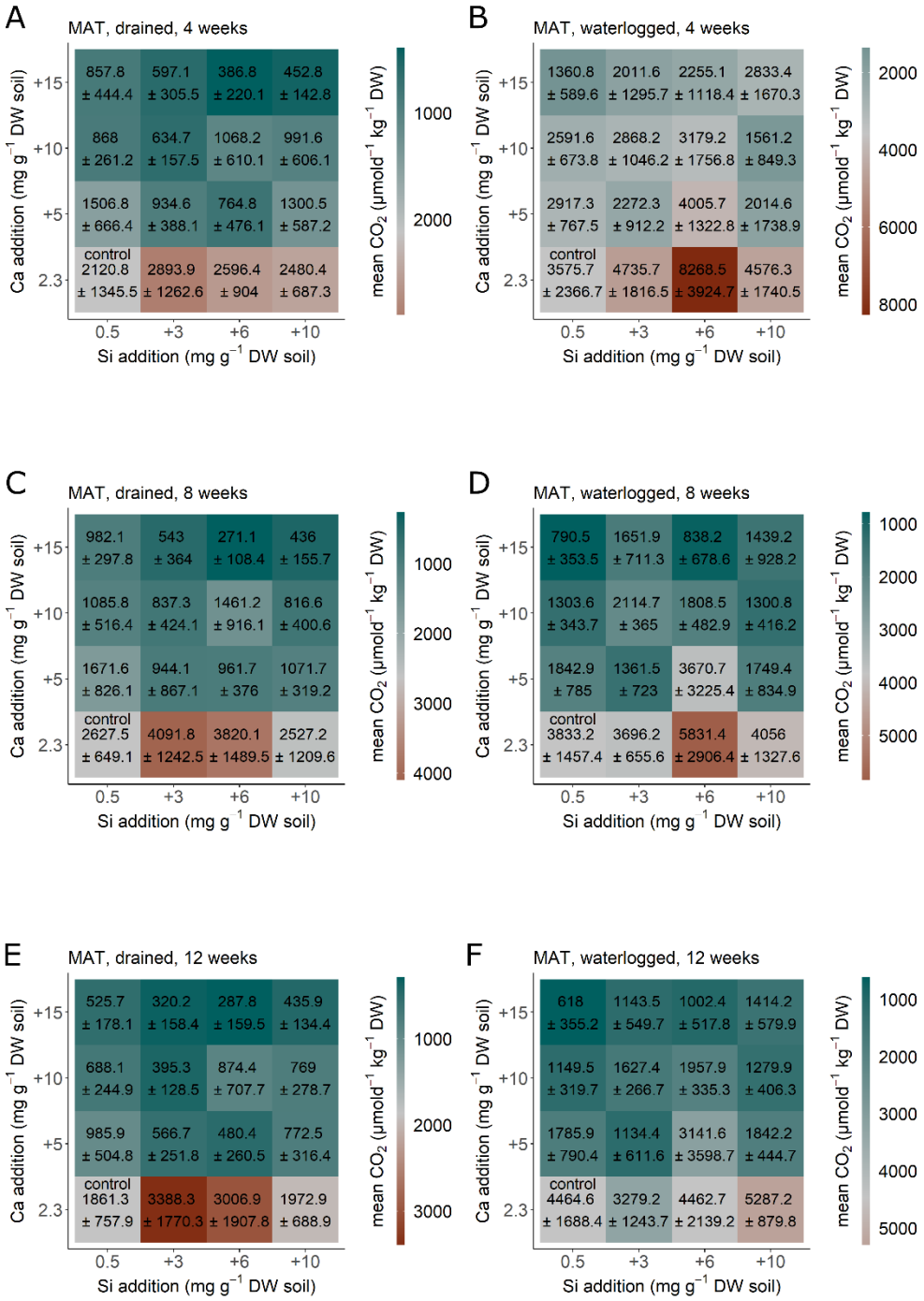

Fig. S5: CO_2 production for the soil from the moist non-acidic tundra (MNT), Alaska after 4 weeks (A+B), 8 weeks (C+D)and 12 weeks (E+F) under drained (A+C+E) and waterlogged (B+D+F) conditions. Each square represents a treatment (n=5) with Si (+0, +3, +6, and +10 mg g^{-1} DW) and Ca (+0, +5, +10, and +15 mg g^{-1} DW). Colour represents differences between the treatment CO_2 production in comparison to the control treatment, with green-blue showing a decreased CO_2 production and red showing an increased CO_2 production in comparison to the control treatment.