



Supplement of

Extending a land-surface model with Sphagnum moss to simulate responses of a northern temperate bog to whole ecosystem warming and elevated \mathbf{CO}_2

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Figure S1. The differences between the elevated and ambient CO₂ with warming conditions (ECO₂-ACO₂) for modeled potential GPP for *Larix* and shrub species.



Figure S2 predicted *Sphagnum* canopy evaporation response to warming with ambient atmospheric CO_2 (a-b, solid lines) and warming with elevated atmospheric CO_2 concentration (c-d, dash lines), the black solid line TAMB is the ambient temperature and CO_2 case, T0.00 to T9.00 means increasing temperature from 0°C to 9°C



Figure S3 predicted Sphagnum canopy evaporation relationship with the differences between the vegetation temperature of Sphagnum and 2m air temperature (vegetation temperature of Sphagnum minus 2m air temperature) from the ambient simulation of year 2015.



Figure S4 predicted MR response to warming with ambient atmospheric CO2 (a-b, solid lines) and warming with elevated atmospheric CO_2 concentration (c-d, dash lines), the black solid line TAMB is the ambient temperature and CO_2 case, T0.00 to T9.00 means increasing temperature from 0°C to 9°C.



Figure S5 predicted leaf area index response to warming with ambient atmospheric CO_2 (a-b, solid lines) and warming with elevated atmospheric CO_2 concentration (c-d, dash lines), the black solid line TAMB is the ambient temperature and CO_2 case, T0.00 to T9.00 means increasing temperature from 0°C to 9°C.