Supplement of Biogeochemical and plant trait mechanisms drive enhanced methane emissions in response to whole-ecosystem warming

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Table S1. Calculated limit of detection (LOD$_{\text{flux}}$) of chamber flux system.

<table>
<thead>
<tr>
<th># of stacked chambers</th>
<th>LOD$_{\text{flux}}$ (µmol CH$_4$ m$^{-2}$ d$^{-1}$)</th>
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</tr>
<tr>
<td>2</td>
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<td>3</td>
<td>26.1</td>
</tr>
<tr>
<td>4</td>
<td>34.9</td>
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<td>Plot</td>
<td>Temperature Treatment</td>
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<td>-----------------------</td>
</tr>
<tr>
<td>310</td>
<td>Ambient</td>
</tr>
<tr>
<td>320</td>
<td>+1.7 °C</td>
</tr>
<tr>
<td>330</td>
<td>+1.7 °C</td>
</tr>
<tr>
<td>311</td>
<td>+3.4 °C</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>462</td>
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</table>
Figure S1. SMARTX plots in (a) the C$_3$ community (dominated by *Schoenoplectus americanus*) and (b) the C$_4$ community (dominated by *Spartina patens* and *Distichlis spicata*). Photos taken by G. Noyce.
Figure S2. Stacked modular flux chambers. Photo taken by G. Noyce.

Figure S3. All raw CH$_4$ flux data.
Figure S4. *Schoenoplectus* phenological data for 2017 – 2019 in ambient temperature plots. Points indicate means ($n = 3$) and shaded area indicates SE. The vertical lines indicate the ‘growing season’, e.g. May 1 through Sep 30.
Figure S5. Mean concentrations of CH$_4$ and SO$_4$ for each plot and month that porewater was sampled. Colors indicate temperature treatment. The vertical dashed line indicates the 4 mm [SO$_4$] threshold below which acetoclastic and hydrogenotrophic methanogenesis are released from substrate competition.
Figure S6. Methane emissions compared to gross primary productivity measured at the same time. CH$_4$ emissions were strongly correlated with GPP.
Figure S7. Comparison of DOC in July 2019 from the C\textsubscript{3} community dominated by Schoenoplectus (open bars) and the C\textsubscript{4} community dominated by Spartina and Distichlis (grey bars). Left: In the dominant rooting zone (10-20 cm); Right: below the rooting zone (40-120 cm). Error bars indicate SE.