

Interactive comment on “Does *Juncus effusus* enhance methane emissions from grazed pastures on peat?” by A. Henneberg et al.

Anonymous Referee #1

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This manuscript describes CH₄ emissions from grazed pastures in peatland. The authors found that aerenchymatous plants could be act as point sources of CH₄ from drained peatlands. These results could enhance our understanding the effects of aerenchymatous plants on CH₄ emissions in the peatlands and aerenchymatous plants may resulting in potential CH₄ emissions from drained peatlands may depend on micro-site conditions. Several items in the manuscript need attention before it should be reviewed again. Suggest some minor revisions. Below I outline some of the key items that could be revised.

Suggestions:

-Page 4, lines 7-10: Why there was not sample conduction in July? Each sampling campaign was conducted in a day or several days, especially for CH₄ flux measure-

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ments and soil CH₄ concentration profiles?

-Page 5, lines 3-15: Why did not measure CH₄ content in groundwater? This CH₄ content could be very high, even higher than the content in the up soil layer.

-Page 7, lines 9-16: The soil moisture were lower in the soil layers of 68-98cm and 102-132cm of soil at Mørke (Table 2), but the GWL were higher in this site (Table 1). Using a stainless steel corer to collect the soil samples could result in the loss of the soil water, especially for deeper soils at Mørke. The results of this part should be considered again.

-Page 11, lines 1-2: “Hence, there was strong evidence for methanogenesis above the water table at all three sites.” This result needs to be considered again and these CH₄ could be accumulated. Measurements of the characterization of the microbial diversity could better support this conclusion.

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