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Biogeosciences Discussions

Interactive comment on "Cushion bogs are stronger carbon dioxide net sinks than moss-dominated bogs as revealed by eddy covariance measurements on Tierra del Fuego, Argentina" *by* David Holl et al.

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This is a very nice comparative analysis of the NEE, GPP, and ER of a southern hemisphere Sphagnum dominated bog and a cushion plant dominated bog. The authors clearly show that the cushion plant system has a greater NEE and they convincing show it is do to greater light use efficiency. They deduce this from eddy covariance measurements in the two systems. The authors provide the details in their methods and data processing – it all seem very sound.

The authors' data suggest there is something different in the photosynthetic efficiency of the cushion plants relative to Sphagnum. More correctly, they show the PAR saturation of Sphagnum occurs at a lower level of PAR. How Sphagnum photosynthesize is still a bit of a mystery. Are there any physiological and biochemical explanations why the cushion plants are adapted for higher light levels? Has any body done AiC curves for the cushion plants? These questions are at the root of the differences. Not suggesting the authors should know the answers but discussion along these lines would be useful.

The manuscript is very clean. Only editorial comments is Mer Bleue should have an 'e' at the end.

Nigel Roulet, McGill University, June 2019

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