

## ***Interactive comment on “Vegetation structure and fire weather influence variation in burn severity and fuel consumption during peatland wildfires” by G. M. Davies et al.***

### **Anonymous Referee #3**

Received and published: 7 December 2015

#### General comments:

Overall, the manuscript presents a very well-designed examination of wildfire consumption patterns in temperate peatlands. Patterns are linked back to core ecological and plant physiology processes. The robust statistics adds a measure of confidence in the data, though it would improve the paper if more was done with the careful GLMM presented in the paper, even if that outcomes was to highlight the importance of within-fire differences.

#### Specific comments:

Page 1, Line 25: the term "ancient carbon" seems a bit gimmicky. Realistically, much  
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of the upper peat horizons that are most vulnerable to wildfire consumption are from the last 100-200, so aren't nearly "ancient". At a global scale, northern peatlands are at most since the last glaciation. Consider using "sequestered" or "stored" instead.

Page 7, line 26: are you using a Pearson or a Spearman correlation here? Are all of your variables normally distributed?

Page 8, line 5-6: I realize the authors are being very conservative in their GLMM, but it does little to inform the reader other than that there are differences within and between fires. There are mentions of the impacts of Calluna and Sphagnum impacts of fuel consumption, but those are not linked back to the GLMM.

#### Technical comments:

Page 1, Line 26: peatland carbon is equivalent to 75% of atmospheric carbon. Consider adding "equivalent to" to make this less ambiguous.

Page 2, line 8: "far from being disturbed" is a bit convoluted. Just say temperate peatlands have more historical disturbance compared to boreal and subarctic ones.

Page 4, line 19: for those unfamiliar with geography here, is Scotland part of the UK for the purposes of this paper? It would appear not in this paragraph, but in the author address Scotland is listed as part of the UK.

Page 5, line 3: I'm not sure if there is a formal convention, but I typically see R packages italicized, rather than in quotes.

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Interactive comment on Biogeosciences Discuss., 12, 15737, 2015.