

## ***Interactive comment on “Quantifying the impact of emission outbursts and non-stationary flow on eddy covariance CH<sub>4</sub> flux measurements using wavelet techniques” by Mathias Göckede et al.***

### **Anonymous Referee #2**

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Göckede and others compare established eddy covariance and wavelet-based flux calculation techniques as well as gap filling techniques to measure methane flux - including episodic ebullition events - in an arctic ecosystem. The manuscript as written is acceptable for publication following minor improvements in my opinion.

Regarding the introduction, the case of ebullition extends beyond arctic ecosystem examples. Arctic ecosystems are of course important, but this approach can extend beyond them.

In section 2, please write scientific names in italics.

Does the filter on p 5 line 10 filter out many extreme values or many values close to  
C1

the thresholds? Just curious if methane ebullition events may be excluded by this filter. (see also p. 17 L. 25).

Page 5 line 15 check 'NN, Dengel' reference.

I understand that the wavelet approach is described in detail elsewhere, but more detail in the present manuscript would help the reader grasp the basics of the approach without having to read other manuscripts to understand the present one.

From the results, do you suspect that atmospheric conditions may lead to ebullition events? In other words, does a Venturi effect occur with higher atmospheric wind speeds that results in pressure pumping? (see manuscripts by Bill Massman on this notion for soil and snow gas exchange).

The manuscript as a whole is cautious, insightful, and well-written but the Discussion section could use moderate restructuring so that it is a bit more succinct.

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