Referee 1.

Editor. Happy with responses and the additional material added to the main MS and also the SI.

Referee 2.

Says:

General comments.
While the agreement between observations and the MCM model is impressive, this reviewer is concerned that a single experiment may not cover a sufficient range of conditions (e.g. NO, O3 and MBO levels, j - values) to fully test the MCM MBO oxidation mechanism. Because of this, it is premature to conclude that MBO oxidation chemistry is fully understood. It is important to conduct experiments at very low NO levels, so that the other peroxy radical chemistry can compete with oxidation by NO.

Your response is:

A total of three experiments were performed at very similar conditions as the one analyzed in this work but two of them were affected by instrumental failures and are therefore not included in this study. However, the good agreement between modelled and measured radical and trace gases found in the experiment shown in this work and also the results from theoretical work, from which no effect from additional radical chemistry is expected (Knap et al., 2016), led us to the decision that there was no need to perform more MBO chamber experiments, which require a high effort compared to typical laboratory experiments. The purpose of this work was to investigate the chemistry of MBO under conditions expected in a rural environment. The values of ozone and NO used during this experiment are comparable with what was observed in the two MBO field campaigns compared with this study (~50 ppbv of ozone and 150 pptv of NO). Therefore it is reasonable to say that, at typical atmospheric conditions in which MBO was previously measured in forests, this work shows that the MBO oxidation chemistry is fully understood.

Editor: I like this response, but can you please incorporate some of this into the revised MS? I think it would be useful for readers to see the reasons to justify why the three experiments are sufficient for this study.

The referees also says:
Page 4, lines 23 - 25. Is it possible to obtain concentrations of other hydrocarbon products that are expected (e.g. glycoaldehyde, HMPR, and others)? Also, do the PTR mass spectra offer any insight into the missing OH reactivity? A statement as to why certain species are observed and others are not would be instructive for the reader.

Your response:
The PTRMS was only calibrated for the species shown in the figures and as such concentrations of other products are not available.

Editor:
Again I like the response, but can you incorporate some of this response into the revised MS so the reader can gain insight into this.