The manuscript has greatly improved, is much better structured in its revised form and generally more convincing. The mechanism proposed has a few minor errors that would need correction.

I therefore suggest publication after taking the following remarks into account:

Minor corrections:

p.26, L11: it feels more logical to have the sunlight experiment introduced fully here, and move it up from L14-16, as it's also used in Figure 10. Suggestion to move the rest of the sentence L14-16 to L23, after the discussion of Fig 10.

p.30, L10-11: I suggest to phrase this a little differently, to avoid confusion: 'This is evident from relative increase of $C_8H_{12}O_4$ in total liquid-phase products during the experiment with pure nitrogen, where it becomes the main product, despite a much lower overall production"

p.35: the reaction scheme needs some revision:

- reaction (1) and (3) are wrongly depicted: 4-BBA should only be excited AFTER the arrow with the hv , next a second arrow would lead from the excited (4-BBA*) to the products. Also, reaction (1) is not equilibrated – I would suggest to start the mechanism with reaction (3) where the 4-BBA radical is created from the H-abstraction on NA.

- Perhaps different colours could be used to indicate which compounds have been observed and which ones are purely speculative.

- An alternative for the formation of $C_9H_{14}O_3$ and $C_9H_{16}O_4$ could be the RO_2+RO_2 reaction, as suggested in reaction 5, after another H-abstraction from 4-BBA.

- Reaction (8) seems a little unlikely, but this product is a 'far' evolved product, for which any reaction path presented will be rather unsure.

Conclusion: p.44, L9-10: the differences between both studies could also be due to differences in volume, notably for the gas phase and of duration of irradiation (1h in Tinel et al, 3h here)

Language and editing:

p.2, L29: …relevant in aerosols formation…' this does not seem right, as this is not specific to aerosol formation – I think the authors mean product formation?

p.5, L16: please put the reference to Dommer et al. after '35 ppt'

p.6, L5: suggestion to replace 'urgently' by 'still'

p.7, L10 : not only for aerosols, please add 'and water surfaces'

p.7, L17: suggestion to replace 'but only report…' by 'explore their…'

p.10, L1: Quartz window => **A** quartz window

p.10, L32: Ethanol => ethanol

p.15, L15: it should read 'the latter', please correct

p.17, L4-5: please precise which figure you are discussing here

p.17, L9: '…between… with… 'please replace 'with' by 'and'

p.18, L6: 'This radical play a role… ': please correct to plays

Figs 8-9-10-11: please indicate what the error bars indicate

p.30, L14: ‘hydrogen abstraction on **NA**’ please complete

p.44, L28: …that **the increase** of salinity….