

Biogeosciences Discuss., referee comment RC2
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Reply on AC2

Anonymous Referee #1

Referee comment on "Microbial labilization and diversification of pyrogenic dissolved organic matter" by Aleksandar I. Goranov et al., Biogeosciences Discuss.,
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I agree that radical oxygenation is a potential source of the molecular diversity of DOM, but I still think that the 3.3 section of this paper (Radical oxygenation as a potential source of molecular diversity) is an overinterpretation of the FT-ICR-MS results. I have read the references cited by the authors, in studies of Waggoner et al., lignin-derived organic matter (OM) was treated by hydroxyl radicals originating from Fenton reactions, and the new produced molecular formula, including condensed aromatic compounds, alicyclic compounds and oxidized compounds, were observed using FT-ICR-MS. It is no doubt that the new products were produced due to the reactions between hydroxyl radicals and initial OM. Studies suggest that oxidized products can be produced by radical oxygenation of DOM. However, this does not mean that the presence of oxidized molecules is necessarily the result of radical oxygenation. On the other hand, the authors cannot sure that formula $C_cH_hO_o+1$ is just from the oxygenation of $C_cH_hO_o$ but not from other precursors or other pathway. On the base of above appoints, although the authors observed the presence of oxidized products of pyDOM, the evidence to support radical oxygenation of pyDOM in this study is very limited. Therefore, I recommend the author to provide direct evidence of the presences of ROS especially hydroxyl radical in the system. If so, this would be an excellent work.