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## Comment on Emission and Deposition

Thomas Karl

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Community comment on "Opinion: Papers that shaped tropospheric chemistry" by Paul S. Monks et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-1266-CC9>, 2021

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This is an excellent and broad perspective on tropospheric chemistry. As such it will certainly become a valuable reference and resource. As already pointed out by Nick Hewitt, it was actually Sanadze who first reported substantial isoprene emissions from plants in Russia (1957). Rasmussen independently found similar results in the US. I highly recommend the review article by Sharkey and Monson on 60 years of isoprene research. (Isoprene research – 60 years later, the biology is still enigmatic, doi: 10.1111/pce.12930, 2017). Further it is mentioned that "recent interest in deposition reemerged", but that physio-chemical parameters are lacking. Physio – chemical parameters for most gases (e.g. HLC, vapor pressure, reactivity etc.) are very well established and an important reason why the 'Wesely scheme' works quite well for classic air pollutants over many surface types. I would argue that the complication stems more from a range of oxygenated VOC that can exhibit bi-directional exchange above vegetation (e.g. doi: 10.1126/science.1192534, doi: 10.1126/science.1235053). Moreover it was recently demonstrated that plants can also "reprocess" OVOCs, produced during atmospheric oxidation, through enzymatic reactions (doi: 10.1038/s43247-020-00041-2 ). The concept of bi-directional exchange is not included in the theoretical framework of emission and deposition models as there is little need for most gases. Yet, it is somewhat overlooked when discussing the fate of reactive organic carbon as many oxygenated volatile species can reside in this no-man's land.